HISTORY OF TEMPEH

AND TEMPEH PRODUCTS

(1815-2011):

EXTENSIVELY ANNOTATED

BIBLIOGRAPHY AND SOURCEBOOK

Compiled

by

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DEDICATION AND ACKNOWLEDGMENTS

This book is dedicated to Clifford W. Hesseltine, Hwa L. Wang, and Keith H. Steinkraus (microbiologists); The Farm (Summertown, Tennessee) and KOPTI (Indonesia); Darwin Karyadi and Mary Astuti.

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This book, no doubt and alas, has its share of errors. These, of course, are solely the responsibility of William Shurtleff.

■ This bibliography and sourcebook was written with the hope that someone will write a detailed and well-documented history of this subject.

INTRODUCTION

Brief Chronology/Timeline of Tempeh Worldwide.

The word *tempe* appears to have originated in Central Java, in today's Indonesia. It is not derived from Chinese (as are the names of so many other Indonesian soyfoods) and it does not start with the prefix *tau* or *tao* (as do *tauci, tauco, taugé, taujiong, tahu, takua*) (Astuti 1999, p. 2-15).

"In Javanese literature, the word *kedelai* (written as *kedele* in Javanese), was first recorded in the Serat Sri Tanjung manuscript, believed to have been written in the 12th or 13th centuries" (Astuti 1999, p. 3).

1815 – The earliest known reference to tempe is found in the *Serat Centhini* manuscript. This document was first cited for its early reference to tempe in *History of Tempeh*, by Shurtleff & Aoyagi (July 1984, p. 9; May 1985, p. 9), then in *The Book of Tempeh*, 2nd ed., by Shurtleff & Aoyagi (1985, p. 145, 169). The story in the manuscript is set in the reign of Sultan Agung (1613-1645) and the descriptions purport to be of that time, so it is possible that tempeh existed in Java in the early 1600s.

A more detailed explanation and translation was given by Astuti (1999, p. 4-15).

1875 – The earliest known reference to tempe by a European appears in the *Javaansch-Nederduitsch Handwoordenboek*, by J.F.C. Gericke and T. Roorda.

1895 and 1896 – Two articles by the Dutchman H.C. Prinsen Geerligs (who lives in Java) usher in the era of scientific research on tempeh by European microbiologists and food scientists. The 1896 article (which is a German translation of his 1895 Dutch-language article) is the first to spell the word "tempeh" (with an "h" on the end). It is also the first to give the name of the tempeh mold as *Rhizopus Oryzae*.

But other early Western authors, especially the Dutch, use the spelling *témpé* (Gericke and Roorda 1875; Heyne 1913) or tèmpé (Vorderman 1902; Stahel 1946).

1900 – The Dutchman Dr. P.A. Boorsma, who lives in Java and does original laboratory tests, publishes the first detailed description (in Dutch) of the traditional Indonesian process for making *Tempe kedeleh* (soybean tempeh).

1905 – Dr. Kendo Saito, a professor in the Plant Physiology Laboratory of the Botanical Institute at Tokyo Imperial University, first describes (in German) and illustrates what is today considered to be the main tempeh microorganism, *Rhizopus oligosporus*. He did not, however, mention tempeh (*Zentralblatt fuer Bakteriologie* 14:623-27).

1912 – Dr. Ryoji Nakazawa, the great Japanese microbiologist, is the first Japanese to study tempeh. He asks a person from Southeast Asia to bring him samples of tempeh and oncom (ontjom, made from peanut presscake); he analyzes their microorganisms. He was working at the Taiwan High Commissioner's Office Central Research Laboratory at the time.

1926 – Dr. Nakazawa takes a research trip to Java and Sumatra, where he collects 22 samples of soy tempeh and oncom from various markets and small manufacturers. He and Takeda analyze the microorganisms used and in 1928 publish "On the filamentous used to make ontjom and tempeh in the South Pacific," in Japanese in *Nihon Nogei Kagakkai Shi* (4:252-63).

1931 – The first English-language information about tempeh appears in *Vegetables of the Dutch East Indies*, by J.J. Ochse (p. 391). He describes the tempeh-making process in detail and says that the mold used is *Aspergillus oryzae*.

1936 – In about this year (according to van Veen 1962) a group of missionaries from Travancore, a poor region of southern India, wanted to make and introduce soy tempeh. For 3 weeks van Veen gave them short courses in how to make tempeh. When the missionaries returned to Travancore they made tempeh and it was fine "but the Indian population did not have any interest in this unknown fermentation product and the experiment failed." This is the earlist known introduction of tempeh to India.

1946 April – ENTI (*Eerste Nederlandse Tempe Industrie*), the first tempeh-making company in Europe is founded by a Dutch couple whose last name was Wedding; they had learned how to make tempeh while living in Indonesia. The origins and history of this company are shrouded in the mists of time; it is not clear when they actually started (perhaps 1948) and when they started to sell the tempeh they made.

1946 Dec. – The first English-language article specifically about tempeh is written by Gerold Stahel, director of the Agricultural Experiment Station in Paramaribo, Surinam (a Dutch colony). He wrote: "Here in Surinam, as in the East Indies, most of the soybeans are consumed in this form." This was also the earliest known article about tempeh published in the United States (in the *Journal of the New York Botanical Garden*), and the earliest reference to tempeh in Latin America.

1944 – Dr. Masahiro Nakano (age 37), one of Dr. Nakazawa's youngest but eventually best-known students of microbiology, goes to Japan's National Food Research Institute (NFRI) (Shokuryo Kenkyujo) in Tokyo and creates a Department of Applied Micro-biology. After World War II (starting in about 1946) Dr. Nakano and his student, Teruo Ohta, introduce tempeh to Japan. They are the first to make and serve tempeh in Japan and they wrote numerous articles about this food (Nakano 1959; Ohta, Ebine & Nakano 1964; Ohta 1965, Nakano 1967, Ohta 1971; Watanabe, Ebine & Ohta 1971, etc.).

1950 June – P.M.L. Tammes (in Dutch) gives the first detailed discussion of Indonesian starter culture (*ragi*) and how ragi is used to make tempeh.

1950 – Van Veen and Schaefer are the first to spell the word "tempeh" in an English-language article. The final "h" was added to prevent the word from being pronounced "temp." The new spelling quickly caches on. Steinkraus et al. (1960) are the first in the United States to spell it "tempeh." Most Westerners feel that correct pronunciation is more important than correct spelling. However most Indonesians now spell the word "tempe," which is the correct spelling in their language.

1958 – Scientific research on tempeh in the United States begins when Ms. Bwee Hwa YAP of Indonesia begins to work with Dr. Keith H. Steinkraus, a top microbiologist, and his Cornell group at Geneva, New York. The first of their many pioneering papers is published in Dec. 1960.

1959 Jan. – Firma E.S. Lembekker is founded in Amsterdam; it is Europe's 2nd earliest tempeh maker.

1960 – Scientific research on tempeh at the USDA Northern Regional Research Laboratory in Peoria, Illinois, begins when KO Swan Djien arrives from Indonesia to study industrial fermentation. Dr. Hesseltine, another world-class microbiologist, encourages him to start by studying the tempeh fermentation; he knows tempeh well but has never studied it. The first of their many pioneering papers was published in 1961.

1960s – Another center of tempeh research in Japan develops during the early 1960s at the Food and Nutrition Laboratory, in the Faculty of Science of Living, at Osaka City University. Early research there (on antioxidants in tempeh) is done by Dr. Kiku Murata, Dr. Hideo Ikehata, and co-workers. Between 1964 and 1980 Dr. Murata is the senior author of eight publications on tempeh and co-author of five others.

1961 – The first commercial tempeh shop in North America, Joy of Java Tempe, is opened by Mary Otten, of Indonesian ancestry, in Albany California (Shurtleff & Aoyagi, *History of Tempeh (HOT)* 1985, p. 39).

1963 – "Investigations of tempeh, an Indonesian food," by Hesseltine et al. is the first scientific article to investigate many different tempeh cultures (including 26 strains of *Rhizopus*) and to select one strain (NRRL 2710) as being best suited for making tempeh from soybeans. They later find it is also best for making tempeh from cereal grains, and from mixtures of both. This strain soon becomes the first choice of tempeh makers, big and small, in North America. This 1963 article also contains the first detailed discussion of tempeh starter culture in English.

1964 May – The use of perforated plastic bags and tubes as containers for tempeh fermentation is first proposed by Martinelli and Hesseltine in an article in the journal *Food Technology*. This new idea and new technology is quickly transferred to tempeh makers in Java, where it becomes widely used.

1964 May – KO Swan Djien of Indonesia presents a 17-page paper titled "Tempe, a fermented food from soybeans," at the International Symposium on Oilseed Protein Foods, held May 11-16 in Tokyo, Japan. It contains the most complete information seen to date on tempeh, especially tempe in Indonesia. The section titled "Preparation of tempe" contains the first tempe recipes seen in English. Three common ways of cooking tempeh are given, with ingredients (but no exact amounts) and procedure; no recipe names are given. It is also the earliest known reference to the use of okara in making tempe.

In this document, Ko is the first to signal what he hopes will be the beginning of a new image for tempe Indonesia: "But there is no doubt that the time will come when Indonesians will be proud of their tempe, in the same way as the Japanese are proud of their sake, the French people of their wine, Italians of their macaroni, Indians of their curry, Russians of their caviar, the Dutch of their cheese, etc." Unfortunately, the paper was never published.

1969 – Handelsonderneming van Dappern is founded in the Netherlands by Robert van Dappern, with the help of his Dutch father (Herman), his Indonesian mother (Aveline), and Dutch-Indonesian wife. He paid the Dutch-Indonesian sailor (who had founded Firma ENTI) a substantial sum of money to teach him how to make tempeh. By 1970 they were making tempeh in a small warehouse in Rotterdam. By 1972 or 1973 they moved the thriving company to Kerkrade, in southern Holland near the family home in Heerlen, and started mass production. By mid-1982 the company was making 6,000 to 8,000 lb/week of tempeh, making it the largest tempeh manufacturing company in the world. In 1983 the company was renamed Tempe Production Inc. By early

1984 production had increased to 13,200 pounds a week.

1970 – *Cooking the Indonesian Way*, by Alec Robeau, is published in New South Wales, Australia. It contains four named tempe recipes, with the amount of each ingredient given: Sajur oblok, Sajur gudek, Sajur kangkung, and Tempe goreng. These are the world's first real tempeh recipes in English.

1972 Feb. – *Introduction of Soybeans for Human Nutrition, Republic of Zambia*, by Dr. Thio Goan Loo, a 51-page report, is published jointly by the Government of The Netherlands and the Republic of Zambia. A description of workshops held at 8 places in Zambia in Aug. and Sept. 1971, it introduces tempeh, tofu, soymilk, and other soyfoods to Zambia. This is the 2nd earliest reference to tempeh in Africa. The author is Senior Technologist at the Royal Tropical Institute, Dep. of Agricultural Research. Amsterdam. It includes a recipe for making "Soy Steak (Tempeh)" at home.

1972 – The Farm, a large spiritual community of several thousand "hippies" in Summertown, Tennessee, starts making tempeh for its members. Alexander Lyon is the pioneer, soon joined by many other Farm residents. They start the first Caucasian (though non-commercial) tempeh shop in North America. They play a key role popularizing tempeh in the United Sates and Canada (*The Farm Vegetarian Cookbook* 1975).

1975 Feb. – Gale Randall starts the Indonesian Tempeh Co., the first Caucasian-run commercial tempeh shop in North America, in Unadilla, Nebraska, making Soy- and Wheat-Soy tempeh (*HOT*, p. 49).

1975 Feb. – *The Farm Vegetarian Cookbook*, is published by The Farm (Summertown, Tennessee, 128 p.). It contains a section titled "Tempeh" (p. 60-62). This book played an important role in introducing tempeh, soyfoods, and a vegan diet to America. It is The Farm's earliest publication that contains a tempeh recipe (Indonesian Fried Tempeh).

1976 May – *Mother Earth News* publishes an article about tempeh. This and a number of subsequent magazine articles listed the USDA's Northern Regional Research Lab. (Peoria, Illinois) as America's only source of tempeh starter. Over the next few years the Peoria group sent out some 25,000 tempeh starter cultures and instructions and instructions for making tempeh, free of charge, to people and organizations requesting them; by 1981 the number sent out had reached 35,000.

1976 July – "Tempe," by Cynthia Bates, a 4-panel (blue on white) leaflet is published at The Farm in Summertown, Tennessee. It describes how to make 5 pounds of tempe, and the differences between good and bad tempeh (with photos showing each). It gives four recipes, including one for a "Tempe burger." This is the earliest known reference to that term. This leaflet was distributed with Cynthia's tempeh starter and "Fermentation Funnies" (cartoons designed to help introduce tempeh). Thus in 1976, the Farm became a source of commercial tempeh starter (powdered, pure culture), made by Cynthia Bates at the Tempeh Lab.

1976 Aug. – America's first Soy Deli, established in the Farm Food Company's storefront restaurant in San Rafael, California, features tempeh in Tempeh Burgers, Deep-fried Tempeh Cutlets, and Tempeh with Creamy Tofu Topping. The first tempeh dishes sold in an Americans-style restaurant, they are made from tempeh produced by Don Wilson in the rear of the building (*HOT*, p. 44).

1976 – A.I. Nelson and L.K. Ferrier at the University of Illinois, Department of Food Science, develop a low-tech, build-it-yourself soybean dehuller and hull separator. It works well for making tempeh, is not patented, and was first used commercially in Feb. 1981 by Soyfoods Unlimited, Inc. in California. Also in Feb. 1981 an article about it by Steve Fiering (illustrated by Akiko Aoyagi) appeared in *Soyfoods* magazine.

1977 Jan. – A media blitz for tempeh begins in the United States with major articles in *Organic Gardening* (circulation 1.35 million), *Mother Earth News*, and *East West Journal* (July 1978).

1977 early – The Farm (Summertown, Tennessee) starts selling America's first commercial tempeh starter. It is made by Cynthia Bates. In 1977 when Farm Foods was founded, it took over marketing of the tempeh starter. They also sold America's first Tempeh Kit, made at The Farm.

1978 June – Robert Walker starts making Canada's first tempeh, at a commercial kitchen in his home in Port Perry, Canada. His inspiration came from an article titled "Tempeh, a new health food opportunity," by Robert Rodale published in July 1977 in *Prevention* magazine. By early 1983 there were five tempeh companies in Canada. All were quite small, making less than 200 pounds of tempeh a week.

1979 Feb – White Wave of Boulder, Colorado, launches Soya Rice Tempeh, America's first multi-grain tempeh and the first to contain rice.

1979 early – There are 13 commercial tempeh shops in operation in the United States, 1 in Canada, and 4 in Europe (all in the Netherlands) (Shurtleff & Aoyagi 1979, p. 148-49).

1979 March 11 – KOPTI, the Cooperative of Tempe and Tofu producers of Indonesia is founded, with Achmad Rouzi Noor as director in Jakarta. By 1983 KOPTI had over 28,000 members in Java; 72% of these ran home industries (*HOT*, p. 26).

1979 April – In Sri Lanka, from April to June, 1979, Dr. Thio Goan Loo, a Chinese-Indonesian stationed at the Royal Tropical Institute in Amsterdam, taught many people, especially those associated with the Soyafoods Research Center at Gannoruwa, how to make and serve tempeh.

1979 June – Farm Foods (in Lanark, Ontario, Canada) starts making and selling tempeh. The main tempeh makers are Susan and Allan Brown. They learned how to make tempeh and tempeh starter at The Farm in Summertown, Tennessee.

1979 July – *The Book of Tempeh*, by Shurtleff & Aoyagi, is published by Harper & Row (New York City, 160 p.). The world's first book devoted entirely to tempeh in any language.

1979 Sept. – The Tempeh Works, founded by Michael Cohen in Greenfield, Massachusetts, starts making and selling tempeh. It is the first U.S. company to set up shop in a commercial building strictly for the purpose of making tempeh. By Sept. 1981 The Tempeh Works was making 6,800 pounds/week of tempeh.

1980 March – *Tempeh Production: A Craft and Technical Manual*, by Shurtleff and Aoyagi is published by the authors (176 p.). It describes how to start and run a commercial tempeh manufacturing company on any of six different scales. It is the first such book written in the Western world.

1980 June – Noble Bean, founded by Allan and Susan Brown, starts making tempeh in the heart of Toronto's Chinatown. They bought Robert Walker's equipment. In June 1985 they moved to R.R. 1, McDonalds Corners (near Elphin), Ontario, Canada. Today they are Canada's largest tempeh maker.

1980 Aug. – Island Spring (in Vashon, Washington) introduces the world's first commercial "Tempeh Burgers." They are made on a small scale in individual round petri dishes.

1980 Aug. – Pacific Tempeh is started in Emeryville, California, by Travis Burgeson.

1980 June – GEM Cultures, started by microbiologists Gordon McBride (PhD) and Betty Stechmeyer in Fort Bragg, California, becomes the first source of "Living Tempeh Starter" (LTS) in both Kit and Professional sizes. Gordon is the former manager of the Living Culture Department at Ann Arbor Biological Center, Inc. (in Michigan) (*Soyfoods*, summer 1980, p. 4). In July 1981 GEM Cultures launches Powdered Tempeh Starter (PTS).

1980 Dec. – Turtle Island Soy Dairy, founded by Seth Tibbott, starts making soy tempeh inside the Hope Co-op in Forest Grove, Oregon. Their next two products, launched in June 1981 are Tempehroni (herb-seasoned tempeh in sausage-like rolls), and Five Grain Tempeh (with soybeans, rice, millet, sunflower seeds and sesame seeds); this is America's 1st herbed tempeh and America's 2nd multi-grain tempeh (but America's 1st multi-grain with three or more grains). In Feb. In June **1981** – Soyfoods Unlimited launched a Soy & Rice Tempeh (using brown rice).

1980 – The earliest known tempeh companies start in Australia. The first two to start were Dharma, part of Earth Foods in Waverly, run by Swami Veetdharma, and a small shop at Bodhi Farm, New South Wales, run by John Seed.

1981 Jan. – Pacific Tempeh introduces the world's 2nd tempeh burger – but the first made and marketed on a large scale; they quickly become very popular and widely imitated. The company also sells the world's first vacuum-packed tempeh. In March 1982 they develop a handsome full-color poster advertising their tempeh burger.

1981 Jan. – Paul's Tofu & Tempeh is in operation at 155 Archway Rd., Highgate, London – the first European tempeh shop outside of the Netherlands.

1981 Jan. – *Soyanews* (in Sri Lanka) introduces tempeh to its many readers, with a description of how to make tempeh at home plus many recipes. Sun-dried tempeh came to be called *"soya karawala," karawala* being a popular type of dried fish, which tempeh apparently was found to resemble in texture and flavor. By May 1981, tempeh starter was available at SFRC (Soybean Foods Research Centre) at Gannoruwa. Soya Karawala was first introduced commercially in 1982, the first of about 7 commercial tempeh products made in Sri Lanka. Many subsequent articles about tempeh were published in *Soyanews.*

1981 – Starting this year and for the next decade, Dr. M.P. Vaidehi (of the Department of Rural Home Science, University of Agricultural Sciences at Bangalore, India) did a great deal to introduce tempeh to Indian villages and to promote its use. She made her own tempeh, then did a study serving tempeh curry and tempeh chips to 100 villagers and 100 urban consumers. The two products were well received (Vaidehi 1981; Vaidehi 1993).

1981 Feb. 15 – Valerie, John and Gary Robertson start to

make tempeh at Soyfoods Unlimited Inc. in their $100,000 state-of-the American-art plant in San Leandro, California. In June 1981 they launch Soy & Rice Tempeh and in Sept. 1981 Tempeh Burgers (marinated, non-fried, vacuum packed). By Oct. 1982 they are running beautiful full-page color ads for the burgers under the slogan "All the Sizzle.., None of the Steak" in *Vegetarian Times* and *East West Journal*.

1982 May – About 19,055 pounds of tempeh are being made each week in the United States; a year later that amount has increased by 34% to 25,590 pounds (*Soyfoods Industry and Market*, by Soyfoods Center).

1982 July - Cyril and Elly Cain start making tempeh in Australia at Beancoast Soyfoods, Maroochydore, Quensland.

1983 Feb. – Pacific Tempeh introduces Tempeh Lite, America's first commercial okara tempeh; it contains 25% by weight of brown rice. Low in cost and high in fiber, it is marketed like fish sticks.

1983 July – Travis Burgeson sells Pacific Tempeh to Quong Hop & Co., a large manufacturer of tofu and soymilk that had not previously made tempeh. Pacific Tempeh was kept as the brand name for Quong Hop's line of tempeh products. By Jan. 1984 production has risen to 7,000 pounds a week, making Quong Hop the largest tempeh manufacturer in the United States, followed by White Wave (CO), then Soyfoods Unlimited (CA), then The Tempeh Works (MA).

1983 – Starting this year, five organizations deserve the lion's share of the credit for commercializing tempeh in Japan: Torigoe Flour Milling Co. (started making and selling tempeh in June 1983, the first company in Japan to do so), the National Food Research Institute (NFRI), The Japan Natto Association, Marukin Foods, and Marusan-Ai (Shurtleff & Aoyagi 1985, p. 153-55).

1984 Jan. – In the United States, 53 companies are producing 34,675 pounds of tempeh each week at an average retail price of $2.50 per pound; this is the equivalent of $4.96 million per year (*HOT*, p. 59).

1984 March – *Tempeh Cookery*, edited by Colleen Pride, is published by The Book Publishing Co. (Summertown, Tennessee; 127 p.). America's fourth popular book about tempeh, it is the first with full-page color photos. It becomes a perennial best-seller.

1984 July – *History of Tempeh: A Fermented Soyfood from Indonesia*, by Shurtleff and Aoyagi, is published by the authors (81 pages, 375 references). A slightly revised 2nd edition is published in May 1985 (91 p.). Much of the above history is documented in these books.

1984 July – In Japan the Tempe Research Society (*Tenpe Kenkyu-Kai*) is founded in Tokyo by various friends of tempeh (incl. Dr. Kiku Murata and Mrs. Yasuko Torii) as a membership organization (with annual dues) to provide a forum for ongoing investigation, discussion and popularization of tempeh. The proceedings of each meeting were distributed to members.

1984 Nov. – Tempehworks, Inc. (Greenfield Massachusetts) launches Lightlife Meatless Fakin' Bacon (made from tempeh). The first marinated tempeh strip, and a best-seller, it was renamed Marinated Smoky Tempeh Strips in about April 1997.

1985 March – *The Book of Tempeh, 2nd ed.*, by Shurtleff and Aoyagi published by Harper & Row (New York City, 175 p). Appendix A, "A brief history of tempeh East and West" (p. 145-56) is greatly expanded and updated (based largely on *History of Tempeh*, 1984, 1985), as is Appendix B, "Tempeh makers in the West" (listed alphabetically by state in the USA and by country overseas). Marusan-Ai, which started making tempeh in Japan in 1983, is now the world's largest tempeh manufacturer, making 15,148 lb (6,885 kg) per week (p. 155).

1985 Sept. – The Tempeh Works is renamed Tempeworks, Inc., gets large loans, and introduces its first non-tempeh product – Tofu Pups: The Uncommon Dog (a meatless hot dog whose main ingredient is tofu).

1986 Dec. 1 – White Wave of Boulder, Colorado, acquires Soyfoods Unlimited, Inc. Each of the three Robertsons ended up owning 1% of White Wave. With this acquisition, White Wave becomes the largest tempeh maker in the United States.

1987 April 1 – Tempehworks, Inc. is renamed Lightlife Foods, Inc. The company now makes Tempehworks Tempeh, Tofu Pups (meatless hot dogs) and Cookie Heaven (ready to bake cookie batter).

1987 – The Plenty Canada Soya Utilization Project (related to but separate from The Farm in Tennessee) starts to play an important part in introducing tempeh to Sri Lanka.

1987 Sept. – Centro de Soya, Soy Dairy in San Bartolo, Solola, Guatemala, starts making the first commercial tempeh (named "Tempi") in Latin America outside of Surinam (a Dutch colony). The tempeh is made by Amado del Valle and his business partner, Philippe. Members of The Farm (Summertown, Tennessee) are instrumental in starting and maintaining this company, and in introducing this product. By the mid-1990s this company was renamed

Alimentos San Bartolo.

1991 Oct. – Jiangdou Nutritive Food Factory (Jongdou, Jiangsu province, China) introduces the earliest known commercial tempeh in China. Founded by Dong Min-Sheng of the Dept. of Food Science, Nanjing Agricultural University, the product is named "Tempeh."

1997 April – Dakini Health Foods Pvt. Ltd. of Pune / Puna, India, starts making the first commercial tempeh in India. The very successful company, founded and run by Seemo (Mr. H. Shapiro from Israel) and Khairava (Mrs. J. Spaelstra from the Netherlands) also makes two types of tahini, peanut butter, hummus, and (in Aug. 1999) tofu ("soymilk paneer"). They came to India to be at the ashram of Sri Rajneesh (Osho) in Pune.

1997 – Mary Astuti (PhD, Gadjah Mada University, Yogyakarta, Indonesia) presents a superb paper on the "History of the development of tempeh," with much new information on the early history of tempeh, tempeh starter, and soybeans in Indonesia; it was published in 1999 (*The Complete Handbook of Tempe*, p. 2-15).

1997 July – "Current state of the North American tempeh market," by Seth Tibbott (founder and owner of Turtle Island Foods) is published in *Reinventing the Hidden Miracle of Tempeh*, Proceedings of an International Tempe Symposium held in Bali, Indonesia (p. 28-35). It gives a good update of tempeh history and the tempeh market in the USA from 1985 to May 1997.

2000 July 14 – Conagra, one of the world's largest food companies (with annual sales of more than $25 billion), acquires Lightlife Foods, Inc., of Turners Falls, Massachusetts.

2000 – Rustono, who was born in Java, Indonesia, starts to make tempeh in Japan – but he sells it only to Indonesians. He lives in a Japanese village about an hour's drive from Kyoto with his wife and two children. On 3 Oct. 2003 he starts to make tempeh in Otsu, Japan – and for the first time starts selling it to Japanese. He soon becomes known as the "King of tempeh." (Sudiarno 2008; Rustono Oct. 2011).

2009 March – Turtle Island (Oregon) launches the first line of marinated tempeh strips in three flavors. Smoky Maple Bacon was added to this in March 2010. Turtle Island was already in mass supermarkets in the southeastern United States, but by mid-2011 the tempeh products were added as line extensions in those accounts – especially in Florida, North Carolina, South Carolina, and Georgia, in that order. The Sesame Garlic and the Smoky Maple flavors are the best sellers in the line.

2009 April – The Soybean Company in Kerkrade, Netherlands (founded by Robert van Dappern but now owned by Angelo Croci, an Italian) is now the largest tempeh maker in The Netherlands and in Europe. The company is making about 15,000 lb/week of soy tempeh.

2011 – Pasteurizing tempeh by using vacuum sealing for longer refrigerated shelf life. This has been taking place since the mid-1990s, but it has been steadily improved. Refrigerated tempeh has a better texture and flavor than frozen tempeh, and requires much less energy use.

2011 – People are increasingly becoming aware of the many important benefits of fermented foods and fermented soyfoods, and of a "whole foods, plant-based diet."

2011 Oct. – Lightlife Foods, Inc. of Turner Falls, Massachusetts, is by far the biggest tempeh maker in the United States, followed by Turtle Island Foods, Inc. of Hood River, Oregon, then by Hain ("Where good brands go to die" – which now makes Westsoy Tempeh, which was originally made by Steve Demos of White Wave and is probably still made at the former White Wave plant in Boulder, Colorado), then (in the natural foods market) Surata Soyfoods (Oregon), Northern Soy / Soyboy (Rochester, New York), Rhapsody (Vermont), Wildwood Natural Foods (Pulmuone, southern California, made by Turtle Island), Bountiful Bean (Madison, Wisconsin), Central Soyfoods (Lawrence, Kansas), 21st Century Foods (Jamaica Plain, Massachusetts), Sweet Earth (Birmingham, Alabama), M Café, and Hearty Vegan (Texas).

2011 – How big is the market for tempeh in the United States?
First, in the natural foods channel / market: Total sales of refrigerated meat alternatives for the year ending Aug. 2011 were at least $51.6 million.
19.3% of this was refrigerated tempeh (up 14.0% over the previous year).
Second, in the mainstream / mass market (including conventional supermarket chains): Sales of refrigerated meat alternatives for the year ending Aug. 2011 were at least $65.9 million.
4.47% of this was refrigerated tempeh (up 14.1% over the previous year).

2011 – Interest in and research on tempeh in the United States and Europe has enhanced the image of tempeh in Indonesia.

ABOUT THIS BOOK

This is the most comprehensive book ever published about the history of tempeh. It has been compiled, one record at a time, over a period of 35 years, in an attempt to document the history of this remarkable fermented soyfood. It is also the single most current and useful source of information on this subject.

This is one of more than 100 books compiled by William Shurtleff and Akiko Aoyagi, and published by the Soyinfo Center. It is based on historical principles, listing all known documents and commercial products in chronological order. It features detailed information on:

- 71 different document types, both published and unpublished.
- 2,705 published documents - extensively annotated bibliography. Every known publication on the subject in every language.
- 374 original Soyinfo Center interviews and overviews never before published.
- 554 unpublished archival documents
- 537 commercial tempeh products.

Thus, it is a powerful tool for understanding the development of this subject from its earliest beginnings to the present.

Each bibliographic record in this book contains (in addition to the typical author, date, title, volume and pages information) the author's address, number of references cited, original title of all non-English language publications together with an English translation of the title, month and issue of publication, and the first author's first name (if given). For most books, we state if it is illustrated, whether or not it has an index, and the height in centimeters.

For commercial soy products (CSP), each record includes (if possible) the product name, date of introduction, manufacturer's name, address and phone number, and (in many cases) ingredients, weight, packaging and price, storage requirements, nutritional composition, and a description of the label. Sources of additional information on each product (such as advertisements, articles, patents, etc.) are also given.

A complete subject/geographical index is also included.

ABBREVIATIONS USED IN THIS BOOK

A&M = Agricultural and Mechanical
Agric. = Agricultural or Agriculture
Agric. Exp. Station = Agricultural Experiment Station
ARS = Agricultural Research Service
ASA = American Soybean Association
Assoc. = Association, Associate
Asst. = Assistant
Aug. = August
Ave. = Avenue
Blvd. = Boulevard
bu = bushel(s)
ca. = about (circa)
cc = cubic centimeter(s)
Chap. = Chapter
cm = centimeter(s)
Co. = company
Corp. = Corporation
Dec. = December
Dep. or Dept. = Department
Depts. = Departments
Div. = Division
Dr. = Drive
E. = East
ed. = edition or editor
e.g. = for example
Exp. = Experiment
Feb. = February
fl oz = fluid ounce(s)
ft = foot or feet
gm = gram(s)
ha = hectare(s)
i.e. = in other words
Inc. = Incorporated
incl. = including
Illust. = Illustrated or Illustration(s)
Inst. = Institute
J. = Journal
J. of the American Oil Chemists' Soc. = Journal of the American Oil Chemists' Society
Jan. = January
kg = kilogram(s)
km = kilometer(s)
Lab. = Laboratory
Labs. = Laboratories
lb = pound(s)
Ltd. = Limited
mcg = microgram(s)
mg = milligram(s)
ml = milliliter(s)
mm = millimeter(s)
N. = North
No. = number or North
Nov. = November
Oct. = October
oz = ounce(s)
p. = page(s)
photo(s) = photograph(s)
P.O. Box = Post Office Box
Prof. = Professor
psi = pounds per square inch
R&D = Research and Development
Rd. = Road
Rev. = Revised
RPM = revolutions per minute
S. = South
SANA = Soyfoods Association of North America
Sept. = September
St. = Street
tonnes = metric tons
trans. = translator(s)
Univ. = University
USB = United Soybean Board
USDA = United States Department of Agriculture
Vol. = volume
V.P. = Vice President
vs. = versus
W. = West
°C = degrees Celsius (Centigrade)
°F = degrees Fahrenheit
> = greater than, more than
< = less than

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Click the small down-pointing arrow just to the right of that box to get a menu.
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When asked: "What word or phrase would you like to search for?" type that word or phrase in the box. For example: Rustono or Turtle Island. No need to use quotation marks. Then click "Search."
At "Results" click any line that interests you.

For those using a Mac without Acrobat Reader: Safari is often the default browser. Click "Edit" in the toolbar at top. In the dropdown click "Find," then click "Find..." again. A search bar will open across top of screen with a search box at right. In this box type a word or phrase you would like to search, such as Rustono or Turtle Island. Click "Done" then scroll through the various matches in the book.

Chronological Order: The publications and products in this book are listed with the earliest first and the most recent last. Within each year, references are sorted alphabetically by author. If you are interested in only current information, start reading at the back, just before the indexes.

A Reference Book: Like an encyclopedia or any other reference book, this work is meant to be searched first - to find exactly the information you are looking for - and then to be read.

How to Use the Index: A subject and country index is located at the back of this book. It will help you to go directly to the specific information that interests you. Browse through it briefly to familiarize yourself with its contents and format.

Each record in the book has been assigned a sequential number, starting with 1 for the first/earliest reference. It is this number, not the page number, to which the indexes refer. A publication will typically be listed in each index in more than one place, and major documents may have 30-40 subject index entries. Thus a publication about the nutritional value of tofu and soymilk in India would be indexed under at least four headings in the subject and country index: Nutrition, Tofu, Soymilk, and Asia, South: India.

Note the extensive use of cross references to help you: e.g. "Bean curd. See Tofu."

Countries and States/Provinces: Every record contains a country keyword. Most USA and Canadian records also contain a state or province keyword, indexed at "U.S. States" or "Canadian Provinces and Territories" respectively. All countries are indexed under their region or continent. Thus for Egypt, look under Africa: Egypt, and not under Egypt. For Brazil, see the entry at Latin America, South America: Brazil. For India, see Asia, South: India. For Australia see Oceania: Australia.

Most Important Documents: Look in the Index under "Important Documents -."

Organizations: Many of the larger, more innovative, or pioneering soy-related companies appear in the subject index – companies like ADM / Archer Daniels Midland Co., AGP, Cargill, DuPont, Kikkoman, Monsanto, Tofutti, etc. Worldwide, we index many major soybean crushers, tofu makers, soymilk and soymilk equipment manufacturers, soyfoods companies with various products, Seventh-day Adventist food companies, soy protein makers (including pioneers), soy sauce manufacturers, soy ice cream, tempeh, soynut, soy flour companies, etc.

Other key organizations include Society for Acclimatization (from 1855 in France), American Soybean Association, National Oilseed/Soybean Processors Association, Research & Development Centers (Peoria, Cornell), Meals for Millions Foundation, and International Soybean Programs (INTSOY, AVRDC, IITA, International Inst. of Agriculture, and United Nations). Pioneer soy protein companies include Borden, Drackett, Glidden, Griffith Labs., Gunther, Laucks, Protein Technologies International, and Rich Products.

Soyfoods: Look under the most common name: Tofu, Miso, Soymilk, Soy Ice Cream, Soy Cheese, Soy Yogurt, Soy Flour, Green Vegetable Soybeans, or Whole Dry Soybeans. But note: Soy Proteins: Isolates, Soy Proteins: Textured Products, etc.

Industrial (Non-Food) Uses of Soybeans: Look under "Industrial Uses ..." for more than 17 subject headings.

Pioneers - Individuals: Laszlo Berczeller, Henry Ford, Friedrich Haberlandt, A.A. Horvath, Englebert Kaempfer, Mildred Lager, William Morse, etc. Soy-Related Movements: Soyfoods Movement, Vegetarianism, Health and Dietary Reform Movements (esp. 1830-1930s), Health Foods Movement (1920s-1960s), Animal Welfare/ Rights. These are indexed under the person's last name or movement name.

Nutrition: All subjects related to soybean nutrition (protein quality, minerals, antinutritional factors, etc.) are indexed under Nutrition, in one or more of 14 subcategories.

Soybean Production: All subjects related to growing, marketing, and trading soybeans are indexed under Soybean Production, e.g., Soybean Production: Nitrogen Fixation, or Soybean Production: Plant Protection, or Soybean Production: Variety Development.

Other Special Index Headings: Browsing through the subject index will show you many more interesting subject headings, such as Industry and Market Statistics, Information (incl. computers, databases, libraries), Standards, Bibliographies (works containing more than 50 references), and History (soy-related).

Commercial Soy Products (CSP): See "About This Book."

SoyaScan Notes: This is a term we have created exclusively for use with this database. A SoyaScan Notes Interview contains all the important material in short interviews conducted and transcribed by William Shurtleff. This material has not been published in any other source. Longer interviews are designated as such, and listed as unpublished manuscripts. A transcript of each can be ordered from Soyinfo Center Library. A SoyaScan Notes Summary is a summary by William Shurtleff of existing information on one subject.

"**Note**:" When this term is used in a record's summary, it indicates that the information which follows it has been added by the producer of this database.

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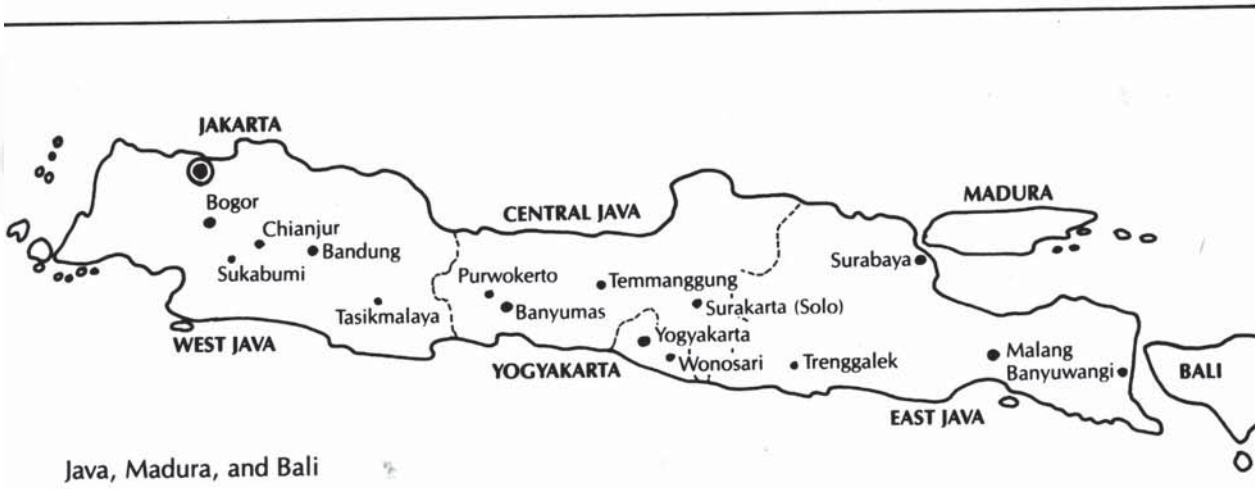


Java, Madura, and Bali

HISTORY OF TEMPEH AND TEMPEH PRODUCTS

1. Serat Centhini [The Centhini manuscript]. 1815. In: Codex Orientalis 1814 of the Leiden University Library. Vol. 1. See p. 295. [Mal]
• ***Summary:*** "Serat" means manuscript or work or tale. "Centhini" (also spelled "Centini") refers to a character in the book. From a letter dated 16 Nov. 1984 from Dr. S.O. Robson, expert in Javanese languages at the State University of Leiden in the Netherlands: *The Serat Centhini* is a classic work of modern Javanese literature, written in verse. It tells of the adventures of "students" wandering in the Javanese countryside in search of truth, and in the course of this story, information (often very detailed) is given on many different subjects–not just religion but also various aspects of Javanese culture and life. Hence the term "encyclopedic" is applied to this work.

On one page the word "tempeh" appears. For the full page of text, see next page.

The word for "tempeh" can be seen in detail.

The Serat Centhini as we now have it was probably written around A.D. 1815 on the orders of Sunan Sugih, then Crown Prince and later Pakubuwana V of Surakarta. The main author was probably Rangga Sutrasna, although he was probably assisted by others; there are various traditions on this point. The work as a whole, however, is quite possibly based on much older sources. The story is *set* in the reign of Sultan Agung (1613-1645), and the descriptions purport to be of that time.

Codex Orientalis of the Leiden University Library bears the date 1846; it originated from Surakarta and consists of five volumes. The text was published in the *Verhandelingen van het Koninklijk Bataviaasch Genootschap voor Kunsten en Wetenschappen* (Batavia, 1912-15), and a summary of contents was published by Th. Pigeaud (VBG LXXII, 2, Bandung 1933). For further information, see his short introduction.

The passage quoted here is from Canto 31, stanzas 211-213, on page 82 of volume I-II of the printed version referred to above. It occurs in a description of the prosperous village Wanamarta, in the context of a reception and meal given for Jayèngwèsti. This involves all sorts of food. The line mentioning témpé reads: "onions (or garlic) and uncooked témpé."

Note 1. This is the earliest document seen (Sept. 2011), worldwide, that mentions tempeh.

Note 2. This document was first cited for its early reference to tempeh in *The Book of Tempeh,* 2nd ed., by Shurtleff and Aoyagi (1985, p. 145, 169).

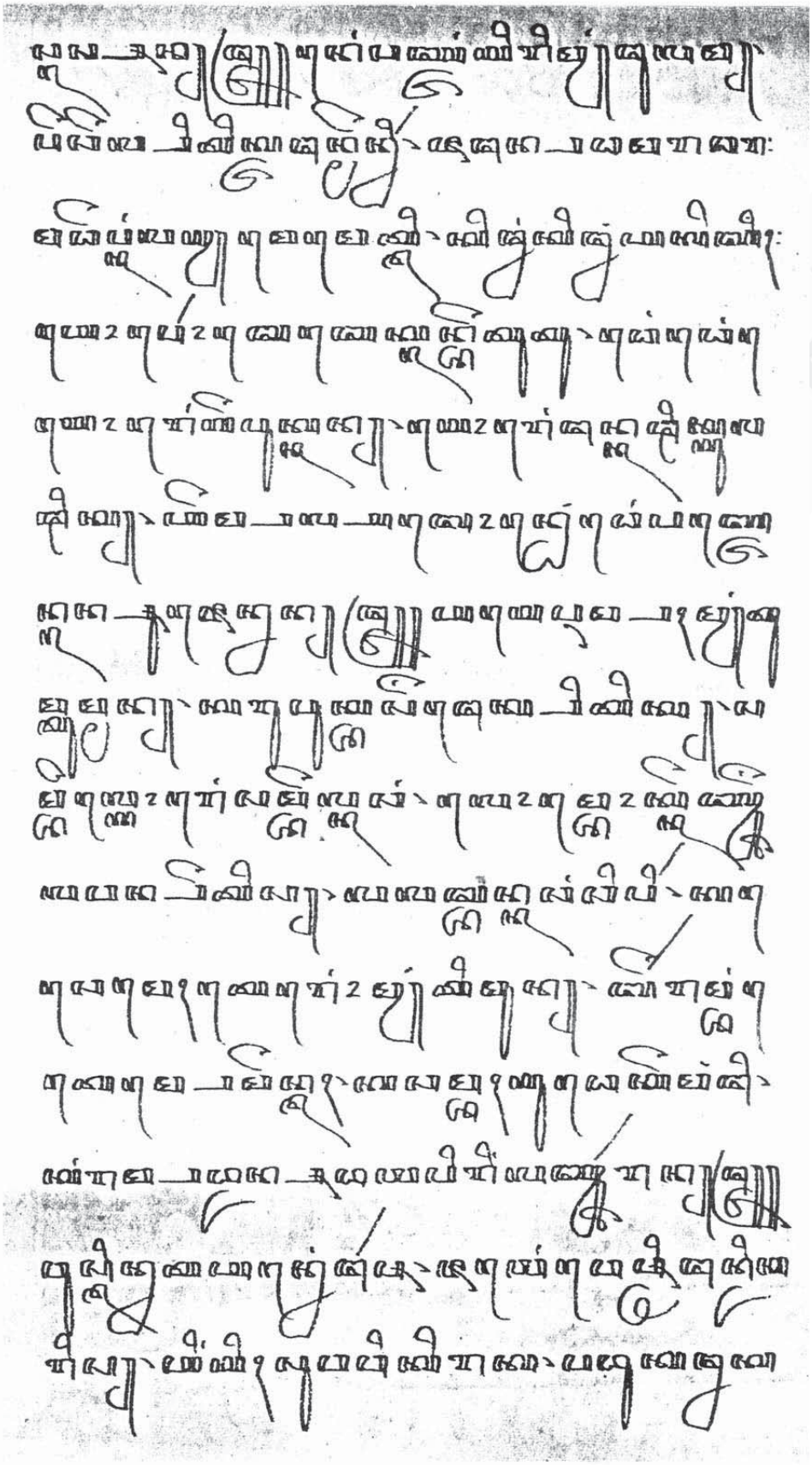
2. Ehrenberg, Christian Gottfried. 1821. De Mycetogenesi ad Acad. C.L.C.N.C. Praesidem epistola [Letter to the President of the Emperor Leopold II Academy of the Curiosities of Nature, on the origin of fungi]. *Nova Acta physico-medica Academiae Caesareo Leopoldinae Carolinae Naturae Curiosorum* 10(1):159-222 + plates. See p. 198-205. [Lat]
• ***Summary:*** Page 198 is titled "Rhizopus nigricans nov. gen. Syn. Mucor stolonifer Ehrenbg. Sylv. Mycol. Tab. XI. Fig. 1-7." (Mucor stolonifer Ehrenb. was first described in: Silvae Mycologicae Berolinensis 1818).

Note: This is the earliest document seen (Sept. 2011) that mentions *Rhizopus* without mentioning tempeh. Address: Med. Doct., Acad. C.N.C.S.

3. Serat Centhini [The Centhini manuscript]. 1846. In: Codex Orientalis 1814 of the Leiden University Library. Vol. 1. See p. 295. Reprinted in *Verhandelingen van het Bataviaasch Genootschap voor der Kunsten en Wetenschappen* (Batavia, 1912-15), Vol, I-II. p. 82, Canto 31, stanza 212. [Ind]
• ***Summary:*** Mentions tempeh.

4. Crawfurd, John. 1852. A grammar and dictionary of the Malay language: With a preliminary dissertation. 2 vols. London: Smith, Elder, and Co. 21 cm.
• ***Summary:*** Vol. I, "Dissertation and Grammar," contains two parts: A long essay about the language (p. i to ccxci), and a "Grammar of the Malay language" (84 p.). On p. clxxxiv is a list of cultivated plants. *Kachang* means "pulse" in both Malay and Javanese. Malay is always written in the Arabic alphabet, to the 28 letters of which 6 are added using diacritical marks to express sounds unknown to the Arabic language. Of the 34 letters, there are only 3 vowels, all long (p. 1). The Arabic alphabet is very ill adapted to pronunciation of the Malay language, whose native sounds "can be expressed with ease and precision by Roman letters, and with a few trifling modifications, so as to furnish one unvarying character for every sound" (p. 2).

Vol. II is titled "Malay and English, and English and Malay Dictionaries" (208 + 201 p.). Abbreviations: J. = Common to the Malay and Javanese. v. = variants / variant of. Soy-related words and terms include: "Kachang (J.). A common term for pulses or leguminous plants." "Kachang-jâpun. The Japan or soy bean, *Soja hispida."* "Kachang kâdâle (Telinga). Hairy-podded bean, *Phaseolus max."* "Ragi



(J.). Yeast, barm. In Javanese, it more frequently means spiceries."

The following soy-related terms do *not* appear: Bungkil, bunkil, kachap, kechap, kechipir, onchom / ontjom, tahu, tahua, takoa, takua, taosi, tausi, tapai, tapé, tauchi, tauge, tempe.

Other terms that do appear: "Agar-agar. The name of the alga or sea-weed which is a considerable article in the Chinese trade, *Plocaria candida"* (p. 2). "Bijen (J. wijen). The sesame plant, *Sesamum indicum."* Note 1. This is the earliest English-language document seen (Jan. 2005) that contains the word "sesame."

"Kachang-china. Chinese pulse, *Phaseolus lunatus;* v. Kachang-mas." "Kachang-goreng. The ground-nut, *Arachis hypogæa;* v. Kachang-tanah and Kachang-miñak." "Kachang-gunung. Mountain pulse, *Hedisarum* [*Hedysarum*] *gangeticum."* "Kachang- ijau. Green pulse [mung bean], *Phaseolus radiatus."* "Kachang-jâriji. The lablab bean, *Lablab vulgaris."* "Kachang-kakara, v. Kachang-jâriji." "Kachang-kakara-gatal. Cowitch, *Dolichos pruriens."* "Kachang-kayu. The pigeon pea, *Cytisus cajan."* "Kachang-kâchil. Rayed bean *Phaseolus radiatus humilis."* "Kachang-manila. The Manilla bean [Manila bean] *Voandzeia subterranea."* "Kachang-mas. Golden bean, or Chinese bean *Phaseolus radiatus;* v. Kachang-china." "Kachang-miñak. Oil bean or ground-nut, *Arachis hypogæa;* v. Kachang koreng and Kachang-tanah." "Kachang-moñat. Monkey bean or snail-flower, *Phaseolus caracalla."* "Kachang-pendek. Lowly bean, *Phaseolus compressus."* "Kachang-putih. White bean, *Dolichos kachang."* "Kachang-tanah. Ground-nut or oil bean, *Arachis hypogæa."* "Lânga (J. oil). The sesame plant, *Sesamum indicum."* "Wijen (J.). The sesame or oil plant, *Sesamum orientale.* In Javanese it has the epithet of, alas, 'wild,' or 'of the forest.'"

John Crawfurd lived 1783-1868.

Note 2. This is the earliest English-language document seen (Aug. 2007) that contains the term "pigeon pea."

Note 3. This is the earliest English-language document seen (May 2008) that contains the term "ragi," which is the Malay / Indonesian word for a "starter culture," such as "ragi tempe," which is tempeh starter made with predominantly *Rhizopus* mold grown on soybeans.

Note 4. "Cowitch, *Dolichos pruriens,"* probably refers to the velvet bean, *Mucuna pruriens* (L.) DC. If it does, this is the earliest document seen (April 2007) and the earliest English-language document seen (April 2007) that mentions this plant. Address: Author of "The History of the Indian Archipelago" [London, England].

5. Tieghem, Ph. van. 1875. Nouvelles recherches sur les Mucorinées [New investigations on the Mucorinees]. *Annales des Sciences Naturelles, Series VI.* 1:5-175. [Fre]*
• ***Summary:*** The author describes a small *Rhizopus* species. See Plates I-V, Figures 1-177. Letter from Dr. C.W. Hesseltine. 1988. Oct. 28. "Van Tieghem described at least two species of *Rhizopus* and described several genera of the Mucorales. Modern classification began with his studies." Neither soy nor tempeh are mentioned.

6. Gericke, J.F.C.; Roorda, T. 1875. Javaansch-Nederduitsch Handwoordenboek [Javanese-Low German concise dictionary]. Amsterdam, Netherlands: Johannes Mueller. 1051 p. See p. 378, bottom right. Foreword by A.C. Vreede. Also in 2nd edition, 1901. p. 695. [Dut; Jav; Mal]
• ***Summary:*** This is the second earliest document seen (Sept. 2011) that mentions tempeh, which is defined as "Fermented soybeans or presscake (bunkil) baked or fried in flat pressed cakes. It is well-liked as a side dish with rice."

This is the earliest Dutch-language document seen (Sept. 2011) that mentions tempeh, which it calls "témpé."

In the 1901 edition, under the heading témpé is a textual reference to "Tjentini I, 295," which refers to Volume I of LOr 1814, a 5 volume manuscript of the Centini stored in the Leiden Oriental Department of the Leiden University Library. Address: Indonesia and Netherlands.

7. Saccardo, Pier Andrea. ed. 1888. Sylloge fungorum omnium hucusque congnitorum. Vol. VII. Gasteromyceteæ, phycomyceteæ, myxomyceteæ, ustilagineæ et uredineæ [Compendium of information on all fungi known to date... Vol. 7. Gastromycetes, phycomycetes, myxomycetes, ustilaginae and uredinae]. 882 + lix p. See p. 181-83, 190-91, 212-14. 23 cm. Reprinted in 1966 by Johnson Reprint Corp., New York and London. [Lat]
• ***Summary:*** The genus Rhizopus is discussed in the section titled Phycomyceteæ by Dr. A.N. Berlese and Dr. J.B. de Toni (Scholæ Botanicæ Patavinæ). It is classified under Family 1. Mucoraceæ de Bary, Subfamily 2. Mucoreæ. The genus Rhizopus was named by Ehrenberg in De Mycetogenesi in Nova Acta X, p. 198. The following species are described: 1. *Rhizopus circinans* Van Tiegh. 2. *Rhizopus echinatus* Van Tiegh. 3. *Rhizopus nigricans* Ehrenberg. 4. *Rhizopus microsporus* Van Tiegh. 5. *Rhizopus minimus* Van Tiegh. 6. *Rhizopus Cohnii* Berl. et De Ton. 7. *Rhizopus elegans* (Eidam) Berl. et De Ton. 8. *Rhizopus reflexus* Bain. 9. *Rhizopus? fructicola* (Corda) Berl. et De Ton.

8. Gorkom, K.W. van. 1890. Supplement op De Oost-Indische Cultures, in betrekking tot handel en nijverheid [Supplement to East-Indian crops: In relation to commerce and industry]. Amsterdam, Netherlands: J.H. de Bussy. vii + 303 p. See p. 283-87. Supplement to the 1884 publication of the same title. 25 cm. [2 ref. Dut]
• ***Summary:*** The section titled "Kadelé" (Soybeans) discusses the cultivation of soybeans (also called *katjang djepoen* [Japan beans], Soya, *Glycine hispida,* or *kadelé boontjes*) on Java and the experimental culture in Europe. Interest is shown in the cultivation of soybeans as a food for

diabetics.

Soya is cultivated in Java both for its seed and for its green leaves which are used as animal feed. The small soy beans are roasted by the indigenous people or, in the form of cakes / patties (*tetempé* [tempeh]), eaten like bean-cheese (*boonen-kaas* [tofu]). (*"De kadele boontjes worden door de inlanders geroosterd of, in den vorm van koeken* (*tetempé*)*, als boonen-kaas gegeten"*).

The author considers that Indonesian soy sauce (*kétjap*) is inferior to Japanese soy sauce. Nutritionally, soya is rich in proteins (*proteïnestoffen*) (± 38%) and fat (± 21%), and low in starch and sugar.

In Germany and Austria, many years have been spent in developing and cultivating varieties of soybeans adapted to the European climate. Dr. Haberlandt, professor at the University of Vienna, distinguished himself for this work, even to the extent that a variety was named after him. In the experimental gardens at the National Agricultural in Wageningen [Netherlands], a field of soya is cultivated, but the results are not yet satisfactory. Yields are low, especially during the dry and warm summers, when the plant flowers abundantly, but the seeds don't have time to develop properly. The author hopes that through continued experiments, a suitable variety will be developed.

The soya bean has received attention from the medical profession because of its composition. Dr. Le Cerf of Paris was one of the first to try using soya with diabetic patients. He introduced soya bread instead of an almond bread and was successful with it. Dr. Stokvis, a professor in Amsterdam, recommended soy bread (see *Nederlandsch Tijdschrift voor Geneeskunde* No. 10), and the chemical analyses published by Mr. L.C.W. Cox in the same journal (issue No. 19) supported the recommendation. Patients were content with the bread, although they did not find it very appetizing. The author states that if rye or wheat flour could be used together with soy flour, they would yield a very digestible and nutritious food. For this reason also he recommended experiments aimed at acclimatizing soya to Europe.

Dr. Sollewijn Gelpke has published a work titled "The Yield and Cultivation of Dryland Crops," in which he writes that the cultivation of soya is quite easy and in Java takes place on sawahs (wet rice fields) and clay, in contrast to peanuts (*katjang-tanah*), which is grown on tegals and sand. [Note: A tegal is a dry (not irrigated) field, near the rice fields, but used for vegetables and other secondary crops.] Soya beans are sun-dried, soaked in water for 24 hours, then sown on land that has first been flooded with water. Otherwise they are sown by poking holes in the ground and dropping in the seeds. Gelpke says that soya is so appealing to the indigenous people that, if the soil is hard, he just opens the surface with a crowbar and sows his seeds. This way of cultivation is seen especially on the heavy clay soils of Java.

In the Netherlands it is not well known that soya is cultivated in Java, because it could be imported for less money than is currently the case. The author has samples of the beans and has noticed that the seeds from European experiments are smaller in size than those grown in Java.

Various laboratory analyses are given. It is noted that soya flour coming from Hungary is used for the production of soy bread, baked by Mr. Koehler of Amsterdam. Mr. Cox studied this bread. The author believes that the sugar content of this bread is high enough to make it unsuitable for diabetic patients, and notes the presence of starch and dextrin. Morawski and Harz have confirmed that ripe soya beans don't contain starch, whereas unripe beans do.

Note 1. Kempski (1923) says: "see van Gorkom's Oost-Indische Cultures, neu herausgeg. von Prinsen-Geerligs, Verlag de Bussy, Amsterdam, 1913, Vol. III, p. 283/86."

Note 2. This is the earliest Dutch-language document seen (Aug. 2003) that uses the word *proteïnestoffen* (or *proteïnestoff*) to refer to proteins in connection with soybeans. Address: Dr., Former Head Inspector of Crops, Dutch East Indies (Oud-Hoofd-Inspecteur der Cultures in Nederlandsch Oost-Indië).

9. Vorderman, Adolf G. 1893. Analecta op bromatologisch gebied. I. [Writings on foods: Mold-fermented foods. I.]. *Geneeskundig Tijdschrift voor Nederlandsch-Indie* 33(3):343-99. Sept. See p. 350-360. [Dut]

• ***Summary:*** The Dutch microbiologist discusses bean sprouts (p. 350-54; *taôge*), light-colored, brown and black soybeans (p. 354-56; *kadelé poetih, merah, item* [*Bat. maleisch*], *Licht gekleurde, bruine en zwarte soja-boontjes*), tofu (p. 356-57; *tao-hoe*), firm or pressed tofu (p. 357-59 (*tao-koa*)), ragi (p. 359-60; a traditional inoculum, though he does not mention tempeh), tapej (p. 360; [tapeh], Tsao in Chinese), arak (p. 369-78). Plates at the end show microorganisms for ragi, tapej, sugarcane brem, and rice wine.

Note: This is the earliest document seen (April 2001) that contains the term *tao-koa.* Address: Inspect. burg. geneesk. diest voor Java en Madoera (Civil Medical Service in Java and Madura).

10. Prinsen Geerligs, H.C. 1895. Eenige Chineesche voedingsmiddelen uit Sojaboonen bereid [Some Chinese foods made from soybeans]. *Pharmaceutisch Weekblad voor Nederland* 32(33):1-2. Dec. 14. Summarized in Teysmannia (1897) 7:413-15. [5 ref. Dut; eng]

• ***Summary:*** Contents: Introduction. Tofu or bean cheese (*Tao-hoe of boonenkaas*). Chinese soja or Fao-ijoe (boonenolie; soybean oil). Japanese soya (soy sauce; In Japanese: Shoijoe; in Chinese: Sex-sze-ijve). Taucho or bean paste (*Fao toio of boonenbrei*).

In the section on tofu, soymilk is mentioned twice.

Note 1. This is the earliest Dutch-language document seen (Oct. 2003) that uses the term *melkachtige, vettige vloeistof*

("milky, fatty liquid") or *gefiltreerde melkachtige vleistof* ("filtered milky liquid") to refer to soymilk.

Note 2. This is the earliest document seen (March 2009) that mentions Indonesian-style miso, which it calls "Fao toio." This would later be spelled tao-tjo, taotjo, tauco, or taucho.

At the end of the section on tofu, the author continues: Another widely used bean preparation is soy sauce (de Soja), of which two kinds exist: the Japanese and the Chinese Soja. The first-mentioned has already been repeatedly described, for example by König (1889, p. 241), further by J.J. Hoffman in his "Contributions to the Knowledge of the Language, Geography, and Ethnology of the Netherlands Indies" (*Bijdragen tot de Taal-, Land- en Volkenkunde van Nederl. Indië;* Vol. V, p. 192), and recently by G. Schlegel in T'oeng pao [T'oung Pao 1894] (Part 5, No. 2) and O. Kellner in *Chemiker Zeitung* (1895, p. 120). While I could not find anything in the literature about the preparation of Chinese soy sauce (*Soja*), I have copied the following from the manufacturers themselves.

Chinese Soja or Fao-ijoe (bean oil). For this, only black varieties of the *Soja hipida* [*sic, hispida*] *humida* □ *atrosperma* or *Soja hipida platycarpa* □ *melanosperma* have been used. Their seeds are cooked and the water poured off, after which the beans are left in the sun for half a day to dry. Now they are cooled on big trays of woven bamboo out of the sun, then covered with leaves of a *Hibiscus* variety. On the beans there will always appear a type of mold, the *Aspergillus Oryzae* to be precise, which, at least on Java, appears every time again on moist soybeans exposed to the open air, but strangely enough does not appear on other foods. The beans are allowed to stand until the mold sporulates, which can be seen by the green color of the mold threads (hyphae), then they are dried again for some days and then put in a strong salt solution that has been cooled. This mixture is put in the sun for 8 days and afterwards it is boiled. The salt solution is then poured off from the beans and saved. The beans are boiled again and the water is added to the first salt solution. This process is repeated as many times as it takes to extract the residue completely.

"The decoction is strained through a fine sieve, boiled again, and the sugar from the areng palm, star anise (not the leaves), and some other herbs (which are available from Chinese druggists as "soya herbs") are added. Finally, this dark brown, pleasantly aromatic liquid is boiled down until salt crystals start to appear on the surface, indicating that the liquid is completely saturated with salt. After cooling, the soy sauce (*soja*) is ready to use. It yields a spice which is used together with all different kinds of foods as a pleasant condiment, and in the Chinese, Javanese, and even the European kitchen on Java it is an irreplaceable ingredient.

"Soy sauce is sold in several quality grades, of which the best is a thick sauce with a special aroma. The lesser kinds are thinner and are made by diluting the thick soy sauce with salt water, while in the very low-grade kinds, instead of the pleasantly sweet-tasting palm sugar, the bitter, sour-smelling unassimilated molasses from sugar factories is used.

Note 3. This is the earliest document seen (May 2010) that describes the preparation of a sweet Indonesian-style soy sauce quite similar to *ketjap manis* (which seems to have been first created about 1960), yet the writer does not mention its name.

"The Chinese soy sauce appears as a black colored, thick, clear liquid in which sometimes a viscous sediment can be found. When diluted with water it turns turbid or cloudy, but after adding salt this cloudiness disappears. Here is an analysis of one of the most common varieties: Specific gravity 1.254, saccharose and glucose 15.60%, nitrogen containing substances (*stikstofhoudende stof*) soluble in alcohol 4.87%, nitrogen containing substances not soluble in alcohol 2.62%, nitrogen-free substances soluble in alcohol 0.25%, nitrogen-free substances (*stikstofrije stof*) not soluble in alcohol 0.75%, salt 17.11%, other ash components 1.65%, water 57.12%. Total 100%.

"The substances insoluble in nitrogen consist (except for peptone) mainly of legumin, which is soluble in strong salt solutions (compare Beilstein, *Handbuch Organische Chemie,* III, p. 1275) and will precipitate when diluted. This protein product (*eiwitstof*) has, by repeated precipitation with alcohol and renewed dilution in water and salt, been cleaned and could be recognized as a legumin. The elementary analyses gave these figures: Carbon 51.6, hydrogen 7.1, nitrogen 15.9.

"Furthermore, the dilution in water was precipitated by ammonium sulfate, magnesium sulfate and sodium sulfate and not by a large quantity of sodium chloride.

"The nitrogen containing substances soluble in alcohol were leucine, tyrosine and aspartic acid, all breakdown products of legumin, plus a little ammonia. Nitrogen-free extraction substances are almost not present and consist of a little pectin and the black coloring agent from the skin of the soybeans, which gives the black color to the soya.

"Just like Kellner (*Chemiker Zeitung* 1895, p. 121) remarks, the composition of the soya is very similar to the one of meat extract, by which the big importance of this condiment in countries, where mainly vegetable type food is consumed, can be readily explained. Very peculiar moreover is the way in which during the preparation of the soya the heavily digestible protein substances, which are locked into the thick skinned cells of the soya, have been converted into an easily digestible, very delicious food.

"One lets the boiled beans mold by means of the *Aspergillus oryzae,* which above all has the quality of changing amylodextrine and starchy substances into sugars followed by carbonic acid and water breakdown. We can say that a microscopic investigation of a molded soybean shows that the mold threads (hyphae) penetrate the cell walls of the complete soybean and partly dissolve them so the contents will be more readily available. When the mold has used up

all that food, as shown by its fructification, the beans are put into a strong solution of salt water so that the legumin will dissolve, producing a thick fluid liquid. At the same time, the broken down substances of the legumin will dissolve pepton [peptone], leucine, tyrosine and ammonia, next to the aromatic substance that will start to form in this stage. The continued manipulations, addition of sugar, herbs, etc., are of course of minor importance, but principally the clever way in which the mold is being used to dissolve the cell walls is highly interesting. This, like so many Chinese preparations, is completely empiric and no Chinese would have the slightest notion of what all this molding is about."

This article describes the first attempt to identify the tempeh mold. In the section on Indonesian miso (taucho), the author notes: "In a similar way, in Java, other molds are used to make leguminous seeds into more digestible foods. Thus the presscake, which remains after making peanut oil and would be indigestible without further preparation, is subjected to the action of molds. In central and eastern Java *Chlamydomucor Oryzae* [now known as *Amylomyces rouxii*] is used, whereas in western Java an orange mold of the family Oospore (Neurospora) is used. In the former case, the food is called 'bongkrek,' and in the latter 'ontjom.' If soybeans are molded with *Chlamydomucor* the spice is called 'tempets' [sic, tempeh]. In the preparation, the seeds are boiled, spread, mixed with a little molded cake from a former batch, and left alone for a while until the mass is bound into a solid white cake.

"All the aforementioned molds have the ability to break starch and pectin substances down into sugars, by which means the cell walls are opened and the seeds made more easy to digest.

"In the case of the starch-containing peanut presscakes, the breakdown of starch into sugars, followed by the use of the resulting sugars, proceeds so rapidly that the cakes become warm and within 1 day about 5% of their weight will disappear.

Kagok Tegal 28.9.95.

Note 4. This is the earliest document seen (Feb. 2004) written only in Dutch that mentions tofu, which it calls "Tao-hoe" or "boonenkaas." Earlier documents written in Latin and Dutch also mentioned tofu.

Note 5. This is the earliest document seen written only in Dutch that mentions Indonesian miso, which it calls *Fao toio* or *boonenbrei,* and *tao tsioe.*

Note 6. This is the earliest document seen stating that Hibiscus leaves are used in Indonesia to make soyfoods–in this case soy sauce.

Note 7. This is the earliest document seen (Sept. 2011) that mentions "bongkrek"–but the explanation is incorrect.

Note 8. This is the earliest document seen (Sept. 2011) that mentions "ontjom." Address: Java, Indonesia.

11. Prinsen Geerligs, H.C. 1896. Einige chinesische Sojabohnenpraeparate [Some Chinese soybean preparations]. *Chemiker-Zeitung* 20(9):67-69. Jan. 29. (Exp. Station Record 8:72). [3 ref. Ger]

• ***Summary:*** This is a German translation of the author's 1895 Dutch article, but with two mistakes concerning tempeh corrected. He changed the name of the mold from *Chlamydomucor Oryzae* to *Rhizopus Oryzae* and he changed the name of the product from "tempets" to "tempeh." He added in conclusion that "it was finely sliced and enjoyed, mold and all." But he continued, apparently mistakenly, to refer to tempeh as a Chinese soyfood.

He also improved his description of Chinese-style soybean paste, which he now calls *Tao-tjiung* (*Bohnenbrei*) [*doujiang*], and says has much similarity with the miso of the Japanese (p. 68 R.7).

Note 1. These two articles by Prinsen Geerligs ushered in the era of scientific research on tempeh by European microbiologists and food scientists.

Note 2. This is the earliest document seen (Sept. 2011) that contains the word "tempeh"–spelled with an "h" on the end.

Note 3. It is also the earliest German-language document seen (Sept. 2011) that mentions tempeh, which it calls "tempeh."

Note 4. This is the earliest German-language document seen (Oct. 2003) that uses the term *milchweisse Flüssigkeit* ("milk-white liquid") to refer to soymilk. Address: Java, Indonesia.

12. Wehmer, Carl. 1900. Der javanische Ragi und seine Pilze. I. [Javanese ragi and its fungi. I.]. *Zentralblatt fuer Bakteriologie. Series 2.* 6(19):610-19. Oct. 12. See also Part II. 7:313-26. [6 ref. Ger]

• ***Summary:*** Includes a discussion of *Rhizopus oryzae* Went und Prinsen Geerligs, *Mucor Rouxii, Chlamydomucor Oryzae,* and *Mucor javanicus* nov. spec. (new species). Illustrations show three cakes of Javanese ragi by Kagok-Tegal (about 3/4 size). Address: Technical Hochschule, Hannover, Germany.

13. Sack, J. 1900. Samenstelling van Indische voedingsmiddelen: Tweede serie (LI-C) [Composition of Indonesian foods: Second series (51-100)]. *Bulletin van het Koloniaal Museum te Haarlem* No. 23. p. 85. Nov. Fold-out table bound at the end of No. 23. [3 ref. Dut]

• ***Summary:*** This is the second such table published in this Bulletin. The first table by J. Sack was published in Bulletin No. 22 (March 1900). Dr. M. Greshoff supervised the work. The composition of fifty Indonesian foods is given, with two lines of notes in one wide column after each. Each food is numbered: 51-100. Soy-related foods are: 56. Black soybeans (*Katjang kadelé itam; zwarte soja*). 76. Tempeh (*Tempé*). 81. Japanese shoyu (*Japansche soja*).

Also discusses: 57. *Katjang poetih* (Poetih [putih] means

"white." A note says this is a type of soybean but we think it is a species of *Vigna*). 58. Katjang ketjipir (*Psophocarpus tetragonolobus*). 67. Sesame seeds. 82. Agar-agar. Address: Assistent bij het Laboratorium, van het Koloniaal Museum te Haarlem [Netherlands].

14. Sack, J. 1900. Samenstelling van één honderd Indische voedingsmiddelen [Composition of one hundred Indonesian foods]. *Bulletin van het Koloniaal Museum te Haarlem* No. 23. p. 68-73. Nov. [Dut]
• ***Summary:*** This is a detailed summary of information published in two fold-out tables by J. Sack, published in Bulletin No. 22 (March 1900) and No. 23 (Nov. 1900). Here, however, the 100 foods are listed in a different sequence–alphabetically by Indonesian name.

Soy-related foods are: 33 and 34. Soybeans (*Katjang kadelé; Glycine*). 35. Black soybeans (*Katjang kadelé itam*). 84. Japanese shoyu (*Soja; Japansche*). 90. Tempeh (*Tempé*).

Also discusses: 1. Agar-agar (*Eucheuma*). 36. Winged beans (*Katjang ketjipir; Psophocarpus tetragonolobus*). 43. Peanuts (*Katjang tanah; Arachis*). 81. Sesame seeds (*Sesamzaad; Sesamum*). Address: Assistent bij het Laboratorium, in het Laboratorium van het Koloniaal Museum te Haarlem [Netherlands].

15. Boorsma, P.A. 1900. Scheikundig onderzoek van in Ned.-Indie inheemsche voedingsmiddelen. De sojaboon [Chemical analysis of some indigenous foodstuffs in the Netherlands Indies. The soybean]. *Geneeskundig Tijdschrift voor Nederlandsch-Indie* 40:247-59. [18 ref. Dut]
• ***Summary:*** Contents: Literature review. Introduction (Boorsma is living in Java). Chemical composition of indigenous soybeans: Table giving figures (based on Boorsma's original research) for large black, large yellow, small yellow, unripe or immature black soybeans, soy protein (*eiwit in de soja*) or legumine, the oil (*De vette olie*), analysis of the ash, starch, the black soybean (*zwarte kedeleh*), use of soybeans in Java and Japan. Japanese soya preparations (*soja preparaten*): Shoyu (soja) made with koji, tofu, yuba, miso and natto. Indigenous (Chinese) preparations: Tempeh (*tempe kedeleh*), Indonesian soy sauce (*Ketjap–Bataviasche soja*), tofu and pressed tofu (*Tao-hoe en Tao-koan*), Indonesian miso and soy nuggets (*Tao-tjo en Tao-dji*).

Note 1. This is the earliest Dutch-language document seen (May 2010) that mentions soy nuggets, which it calls *Tao-dji.*

Note 2. This is the 2nd earliest document seen (March 2009) that mentions Indonesian-style miso, which it calls "Tao-tjo." This is the earliest Dutch-language document seen (Feb. 2009) that uses the word "Tao-tjo" to refer to Indonesian-style miso.

This excellent article contains a 4½-page description (the best seen to date) of the traditional process for making soybean tempeh (*Tempe kedeleh*). The soybeans are parboiled, soaked in water for 2-3 days, drained, steamed in a steamer (*koekesan*), spread in a layer several centimeters thick on woven bamboo trays in shelves, and covered completely with banana leaves. They are then inoculated with the *bijang,* which is the "mold containing residues of a previous preparation." This is mixed in here and there, then the trays are covered lightly with banana leaves so as to let in some air. "Rampant growth of the mold soon begins. In the evening the mass is molded a little and after two 24-hour periods one will obtain a coherent cake, which is cut into pieces and taken as is to the market."

The cotyledons are stuck together by a dense mycelium, which has grown into a somewhat white covering. According to Prinsen Geerlings [sic, Prinsen Geerligs] (cited above), the name of the mold is *Chlamydomucor Oryzae.*

During the two days of rampant mold growth, a radical conversion takes place in the components of the seeds; a lot of water, carbonic acid, and heat start to develop... A thermometer inserted into the fermenting mass shows a temperature 10-12ºC above that of the environment.

As the preparation is finished, the banana leaves are taken away; the temperature drops slowly to normal, the rampant mold growth stops, and the mass dries out slightly. In this condition, the tempeh can be kept for several days with spoiling.

When the rampant mold growth is allowed to continue for a third day, simply by leaving the banana leaves in place, the conversion will soon become much stronger as noted by the formation of ammonia. Also poisonous products start to form; a monkey, given a little bit [of overripe tempeh] among his other foods that day was vomiting violently one hour later. Thus we should admit that the stories about poisonings caused by various sorts of tempeh [such bongkrek, made from coconut presscake] probably have some foundation. But there is little fear of this from soybean tempeh.

After microscopic examination, Boorsma concluded that Prinsen Geerligs and others were wrong in stating that (1) the mold hyphae penetrate and dissolve the hard soybean cell walls, and (2) cellulose is decreased during tempeh (*tempe*) fermentation. He studied the chemical and compositional changes at four stages during a 3-day tempeh fermentation; a table shows his findings. He observed that fats and soluble carbohydrates decreased substantially, while nitrogen decreased only slightly. He also discussed the hydrolysis of soybean lipids, and why tempeh is easier to digest than whole soybeans.

Note 3. This is the earliest Dutch-language document seen (Sept. 2011) that uses the term *tempe kedele* or the word *tempe* to refer to tempeh.

Note 4. This is the earliest document seen (Sept. 2011) that describes how to make tempeh on a commercial scale.

On page 258 Boorsma briefly discusses Ketjap (which he called *Bataviasche soja,* or Jakarta soy sauce) and Tao-hoe and Tao-koan (tofu and firm tofu), based on information

from Prinsen-Geerligs (for both) and Vorderman (for firm tofu). For each he gives a nutritional composition. On page 259 Boorsma briefly discusses *Tao tjo* and *Tao-dji* (Indonesian-style miso and soy nuggets). Note 5. This is the earliest Dutch-language document seen (Dec. 1999) that uses the term *Tao tjo* to refer to Indonesian-style miso or tauco / taucho.

Note 6. This is the earliest document seen (April 2001) that contains the term *Tao-koan.*

Note 7. This is the earliest Dutch-language document seen (Feb. 2004) that contains the term *natto.*

Note 8. This is the earliest Dutch-language document seen (Oct. 2008) that mentions yuba, which it calls *Yuba* and describes as *een nog vetrijker product dat verkregen wordt bij uitdampen van de roomloog, die zich bij de zooeven genoende boonenmelk aan de oppervlatke verzamelt."*

Note 9. Boorsma was a Dutch naturalist who lived in Indonesia in the early 1900s. Address: Netherlands.

16. Wehmer, Carl. 1901. Der javanische Ragi und seine Pilze. II. [Javanese ragi and its fungi. II.]. *Zentralblatt fuer Bakteriologie. Series 2.* 7(9/10):313-26. May 6. [8 ref. Ger]
• ***Summary:*** One table (p. 524) gives details on *Mucor rouxii, Mucor javanicus / M. dubius, Rhizopus oryzae,* and *Chlamydomucor oryzae.* A second table (p. 325) gives additional details on *Mucor rouxii, Mucor javanicus,* and *Rhizopus oryzae. Rhizopus oryzae* was first isolated from Javanese rice flour cake (*javanischen ragi*), and described. Neither the word "tempeh" nor "tempe" is mentioned. Address: Technical Hochschule, Hannover, Germany.

17. Went, F.A.F.C. 1901. *Monilia sitophila* (Mont.) Sacc., ein technischer Pilz Javas [*Monilia sitophila*, an industrial fungus from Java]. *Zentralblatt fuer Bakteriologie. Series 2.* 7(15):544-50. July 12; 7(16):591-99. Aug. 10. [1 ref. Ger]
• ***Summary:*** The author reported that the mold *Monilia sitophila* plays an important role, because of its enzymes, in the production of ontjom, a good-tasting cake made by fermentation of peanuts. Tempeh is not mentioned.

18. D.A.R. 1901. Katjang-Kedelihpraeparaten [Soyfoods]. *Orgaan van de Vereeniging van oud Leerlingen der Rijks Landbouwshool* (*see Landbouwkundig Tijdschrift*) 13(161):242-45. Dec. [Dut]
• ***Summary:*** The author wrote an article in the April issue of this magazine about soybean cultivation. Now he will discuss how soybeans are used to make foods. As mentioned in the previous article, soya beans as such are not good to eat, even boiled or roasted; they need to be processed so as to digest the indigestible protein; then this protein can be absorbed by the digestive enzymes of the stomach and intestines.

As Japan is *the* soya country, we will start with the product that is most popular there, soy sauce, which has also earned its place in Europe. It is made from equal parts of roasted soybeans and wheat, 1-3 parts water, and much salt. The koji is fermented for a long time. Prof. Dr. M. Fesco [sic, Fesca], who provided much of this information, said it takes about 20 weeks to 5 years. The longest and slowest fermentation gives the best quality product. In Japan, every housewife makes her own soya sauce and there is competition for the best homemade soy sauce. Late-ripening protein-rich soybeans, called shoyu-mame, are used. In Java, the residue from soy sauce is used a lot, along with peanut presscake, for fertilizing sugar-cane fields.

In the Netherlands Indies, ketjap [Indonesian-style soy sauce] is made solely by the Chinese. Also called Tao-yoe, it is prepared by covering cooked soybeans with hibiscus (*waroe*) leaves. The age and variety of the leaves is very important. The mold that grows produces substances [enzymes] that digest legumin [soy protein]. More of the process is described.

Note 1. This is the earliest document seen (Feb. 2009) that contains the term Tao-yoe. H.T. Huang (e-mail of 25 Feb. 2009) states: "Tao-Yoe sounds like Cantonese for *Douyou* (pinyin) or *tou yu* (W.-G.) which in Mandarin mean soy sauce, and which first appeared in about 1750 in the *Xingyuan Lu* (*Hsing Yüan Lu*). See Huang 2000, p. 371-73.

Star anise (Hades manies) is also added to Indonesian soy sauce. Some Chinese have gained a reputation for their knowledge of the different additives (*boemboengs*). 61. kg of soybeans (1 gantang or 10 katties) can yield 3 bottles of number 1 ketjap (which retails for 50 Dutch cents per bottle), plus 3 bottles of 2nd extraction ketjap (each 40 cents), plus 3 bottles of ketjap no. 3 (which is little better than salt water with a light brown tint; each 20 cents).

The Japanese also use soybeans to make tofu (*tofoe*). Precipitated with magnesium chloride, it is a greyish-white dough, or sometimes yellow product. Although containing 90% water, it is a concentrated food. A table (based on analyses by E. Kirch [sic, Kinch] of Tokyo) shows the composition of tofu and kori-tofu; the latter is made by freezing tofu then thawing it. Tofu is a good product for vegetarians, but beware than it can act as a laxative because of the magnesium chloride.

Note 2. This is the earliest Dutch-language document seen (Sept. 2011) with the term "Katjang-Kedelihpraeparaten" in the title; it means "Soyfoods."

Note 3. This is the earliest Dutch-language document seen (Feb. 2004) that mentions dried-frozen tofu, which it calls "kori-tofu."

19. Wilkinson, Richard James. 1901-1902. A Malay-English dictionary. Singapore: Kelly & Walsh Ltd. 700 p. 31 cm.
• ***Summary:*** This book was published in two parts in 1901 and 1902 but continuously paginated. Under *tempe* we read (p. 190): "Jav. A kind of dish; beans prepared in a certain way." Under *tauge:* "[Chinese tau-ge]. A vegetable; bean sprouts." The soybean is mentioned under *kachang* (p.

492) and is written *"K. jepun*–the soy bean, soya hispida. Other entries at kachang are: *K. botor–psophocarpus tetragonolobus. K. china*–the pea-nut, *arachis hypogæa. K. goreng*–the pea nut, *arachis hypogæa. K. kedelai*–a bean (*dolichos lablab ?*). *K. kelisah*–(Kedah) *psophocarpus tetragonolobus.* Also *k. kotor. K. menila–voandzeia subterranea.*

Also discusses: *bijan* (sesamum-seed, sesamum indicum, p. 139). *tapai* (rice fermented with ragi [tapeh], p. 151). *ragi* (yeast or leaven, p. 316). *kedelai–Kachang kedelai:* a plant, *phaseolus mungo;* Height about 180. Also *kedele* and *kedeli* (p. 508).

Note 1. This book is hard to use since the order of words follows the Malay alphabet. The digital edition on Google Books is easier to use.

Note 2. This is the earliest English-language document seen (Sept. 2011) that mentions tempeh, which it calls *tempe.*

Note 3. The author lived 1867-1941. Address: Straits Settlements Civil Service.

20. Bie, H.C.H. de. 1901. De landbouw der inlandsche bevolking op Java [The agriculture of the indigenous people in Java]. *Mededeelingen uit 's Lands Plantentuin* (*Buitenzorg*) No. 45. 143 p. See p. 97, 99, 138-43. [Dut]

• ***Summary:*** The soybean is discussed in the chapter titled "Cultivation of crops other than paddy rice: Cultivation of secondary crops (*Palawidja*)*."* Soya bean is one of the secondary foods served with rice, but it is mostly used to make soy sauce and tempeh (*tempe*). One variety of soybean, which originally came from Japan, is widely grown as a second crop on the wet rice fields (*sawahs*), and it is easy to cultivate at altitudes of 1,200 to 1,500 feet above sea level. It is called *katjang kedele* in Central and East Java, but *katjang djepoen* in Sunda or West Java (*de Soendalanden*). A description of the plant and the method of cultivation in Java is then given. It is planted much more on wet rice fields than on dry (non-irrigated) fields (*tegalans*) near the rice fields used for vegetables and secondary crops. Usually the soybean seeds are planted right after the paddy stumps have been cut away, but sometimes they are planted just before or during the paddy harvest, and pressed into the earth under the feet of the paddy cutters. They are rarely weeded, excepted when the crop is suffocated by tall weeds. At harvest, the plants are pulled completely out of the ground and bound into bunches. At night they are stored under a specially-constructed roofed shelter in the field, and during the day they are sun-dried on bamboo structures or on the ground. This takes at most 3-4 days, if the plants are really ripe and the weather is good, after which the bunches are put on bamboo mats in heaps and threshed. To protect the seeds from damage, one preferably uses pieces of banana tree branches which still have fibrous veins. The fibrous plant stems and branches are removed together with the soybean pods and burned on the sawah fields. Poor people first sort out the pieces good enough for fuel and take these home. Immature green leaves are fed to animals. Sometimes soybeans are planted on the dikes of the paddy fields at the same time as or a few days later than the paddy rice. The fresh seeds from this harvest are then planted in the sawah fields after the paddy is harvested. Soybeans planted in this way are called *katjang apitan.*

There are two varieties of soya: one has an ivory yellow seed coat and the other is black. The latter is used almost exclusively to make soy sauce; the former to make pastry and condiments for rice or as a vegetable (*sayur*). Soya is cooked with salt in the green pod and eaten as a snack.

The indigenous people don't concern themselves with the production of ketjap (soy sauce). The work is too involved and takes too long before the product is ready to be sold. Most people are too inexperienced and there is not enough of a market for the product.

The only food that most people make out of soybeans is tempeh (*tempe*), which plays the same role in Central and East Java as does ontjom in Sunda or West Java, and is prepared similarly. The tempeh-making process is described. It takes place indoors, out of the light. It is sometimes cut into smaller pieces. It is usually eaten pan-fried after being soaked in a solution of tamarind and salt. It is also cooked with vegetables.

Most soybean seeds are sold to the Chinese, who export them or process them to make soy sauce and other products. To make soy sauce, the seeds are roasted to aid in removing the hulls. Some people pound the seeds instead. They are cleaned, boiled in water, drained, spread on flat bamboo trays (*tampah* or *njiroe*) and dried daily for a week in the wind. They are washed again then soaked for 30-40 days in salt water which has been boiled then cooled. This mash is mixed thoroughly and strained through a cloth. To the black liquid is added a boiled and cooled mixture of cane sugar and water, then the mixture is boiled until its volume is reduced by 20%. If the solid residue removed by filtering still tastes salty, it is put into water, kneaded and strained again. A sugar solution is added and all is boiled down as before to make second-grade ketjap.

To make *taoetjo* (*tauco, taucho* or Indonesian-style miso), the soybeans are soaked in fresh water, the hulls are removed, the seeds boiled and spread on bamboo trays to cool. Rice or glutinous rice flour is roasted until golden brown, then mixed with the seeds and set aside for 2-3 days to ferment between hibiscus (*waroe*) leaves on flat trays. When the mass has molded, it is sun dried for a few days until very hard. Note: This is the soybean koji used making taucho.

Remove the leaves and put this mass of soybean koji into salt water. On the third or fourth day, add some yeast (*gist*) and some cane sugar syrup. Continue the soaking and fermentation in salt water for 2-3 weeks. Place it [in crocks] daily outside in the dew, taking care that no rain gets on it.

To stimulate the fermentation, take steamed rice or glutinous rice that is only half cooked. Add *ragi* starter and allow it to ferment for 2-3 days until a sweet, alcoholic flavor develops. This kind of fermented rice is called *peujeum* in West Java, or *tapé* in Central or East Java. Now add this fermented rice to the soybeans in salt water to enhance both the fermentation and the product.

After 3-4 weeks the soybeans should be very soft like porridge; then the taucho is ready to be used. It is eaten raw with cooked or raw vegetables, or mixed with meat or rice dishes; other condiments are also made from it.

Another product that the Chinese make out of soybeans is tofu (*tahoe* or *tauwhoe*). Soaked soybeans are ground and the puree is mixed with fresh water. Then a milky liquid (*melkachtige vloeistof*) is filtered off and coagulated. The Chinese use a coagulant called *tjiogo* (gypsum or calcium sulfate), which is specially imported from China and is not always available, even to the Chinese apothecary. It is first burned, then cooled before being added to the milky liquid. The white mass which is precipitated is called tofu. A similar product can be made from mung beans. Address: Batavia (Jakarta), Java.

21. Bie, H.C.H. de. 1901. De cultuur van cassave in de Preanger-Regentschappen en het gebruik, dat van dit gewas door de bevolking wordt gemaakt en hare verwerking tot tapioca-meel [The culture of cassava in the Praenger Regency, its use by the population, and its processing into tapioca flour]. *Teysmannia* (*Batavia* [*Jakarta*]) 11:273-98. See p. 273, 288-89. [Dut]
• ***Summary:*** The soybean (kadele, sojaboon) is mentioned only in passing (p. 273). Ontjom is described as a tempeh substitute in Java (p. 288-89). Address: Controleur voor de landrenteonderzoeking te Bandong.

22. Went, F.A.F.C. 1901. Ueber den Einfluss der Nahrung auf die Enzymbildung durch *Monilia sitophila* (Mont.) Sacc. [On the influence of food on enzyme production by *Monilia sitophila* (Mont.) Sacc.]. *Jahrbuecher fuer Wissenschaftliche Botanik* 36:644-52. [36 ref. Ger]
• ***Summary:*** *Monilia sitophila* is a mold used in Java to make onchom. However, neither onchom nor tempeh are mentioned in this article. This mold can produce at least ten different enzymes. Contents: 1. Historical. 2. Maltoglucase. 3. Trehalase. 4. Raffinase. 5. Invertase. 6. Cytase. 7. Diastase. 8. Lipase. 9. Tyrosinase. 10. Labenzym. 11. Trypsin. 12. Summary of results. Address: Utrecht [Netherlands].

23. Went, F.A.F.C. 1902. Ueber den Einfluss der Nahrung auf die Enzymbildung durch *Monilia sitophila* (Mont.) Sacc. [On the influence of food on enzyme production by *Monilia sitophila* (Mont.) Sacc.]. *Zentralblatt fuer Bakteriologie. Series 2.* 8(10):313-16. March 8. Extract from Pringsheim's Jahrbuch 36:611 (1901). [1 ref. Ger]
• ***Summary:*** Neither onchom nor tempeh are mentioned.

24. Neuville, Henri. 1902. Les ferments industriels d'Extrême-Orient (Biologie, emploi et produits) [Industrial fermentations of East Asia (biology, utilization, and products)]. Paris: Masson et Cie. 192 p. 19 cm. Encyclopédie Scientifique des aide-memoire publiée sous la direction de M. Léauté. [60+ ref. Fre]
• ***Summary:*** Chapter 4, titled "Food products obtained by fermentation of amylaceous [starch-like] substances," discusses the following fermented soyfoods and related products: Shoyu and miso, koji, brem, and ontjom. Contains a good bibliography. Neuville lived 1872-. Address: Préparateur au Muséum d'Histoire Naturelle.

25. Vorderman, Adolf G. 1902. Analecta op bromatologisch gebied. IV. [Writings on mold-fermented foods. IV.]. *Geneeskundig Tijdschrift voor Nederlandsch-Indie* 42:395-431. See p. 411-31. [10 ref. Dut]
• ***Summary:*** Describes the "ontjom" and "tèmpé" [he spells the word tempeh with these two accents throughout] processes, including *ontjom beureum* [a Sundanese food made from *boengkil katjang* (bean waste or okara) and *Monilia sitophila* mold], onggok, and tempe-kedele. He describes two ways of making tempeh that he saw. The first is the well-known one in which soybeans are fermented between banana leaves. In the second way the soybeans are wrapped in a banana leaf to form a package about 20 cm (8 inches) long and 7 cm (2.8 inches) wide, then wrapped in a djati (jati) leaf. These packages are stacked in a bamboo basket covered with sacks for 24 hours, then taken out and spread on the floor to cool for another 24 hours.

He also describes: Tempe bongkrek katjang; same as ontjom beureum [okara onchom] except that a *Rhizopus* mold is used. Ontjom bodas; same as tempe bongkrek katjang except that another *Rhizopus* mold, not similar to Oryzae, is used. Tempe bongkrek kelapa (from South Banjoemas); Quite similar to ontjom beureum, it is made from pressed coconut and inoculated in the old leaves from tempeh kedele. It is eaten mostly by poorer people because of its lower price. Tempe morrie made with Soempiaoeh type soybeans (from Banjoemas) and coconut residue pressed 3 times. The soybeans are treated like soy tempeh up to the laroe process. Then they are mixed with coconut presscake, which has been washed, steamed, and inoculated with ground bibit leaves on which there is *Rhizopus oryzae.* Finally it is packed in the skin of the banana stem to make long slender rods, and fermented. Tempe enthoe, from South Bagelen, is made from coconut (no soy) wrapped in a banana stem. Tempe tjenggereng is made with coconut presscake (called gatok in Banjoemas) and ragi, no soy; "This tempeh has, like the tempeh bongkrek kelapa, led to several cases of fatal food poisoning. Dagé [Dageh, Dage] is made with bacteria rather than molds on a substrate of oilseed cakes,

primarily pressed coconut, sesame seeds, or peanuts."
The last page contains detailed illustrations (drawings) of *Rhizopus* species from *Ontjom bodas* and *Rhizopus oryzae* from *tempe kedele,* each magnified 60 times.

Note 1. This is the earliest Dutch-language document seen (Oct. 2001) that mentions okara, which it calls *boengkil katjang.*

Note 2. This is the earliest document seen (Sept. 2011) that mentions and correctly describes tempeh bongkrek, which, for the sake of clarity, he describes as *tempeh bongkrek kelapa.*

26. Vorderman, Adolf G. 1902. De oranje ontjomschimmel (Monilia sitophila Mont.) en hare verschijning als eerste vegetatie op de aschvelden van den kloet [The orange ontjom mold (Monilia sitophila Mont.) and its appearance as first vegetation on the ash fields of the"Kloet" (a recently erupted volcano)]. *Teysmannia* (*Batavia* [*Jakarta*]) 12:274-79. [Dut]
• ***Summary:*** Soybeans are not mentioned. In 1896 Dr. Vorderman was an inspector of the civil medical service. He spent time at Buitenzorg. Address: Soekaboemi (Sukabumi), Indonesia.

27. Saito, Kendo. 1904. Eine neue Art der "Chinesischen Hefe" [A new type of Chinese yeast]. *Zentralblatt fuer Bakteriologie. Series 2.* 13(5-7):153-61. Oct. 7. [7 ref. Ger]
• ***Summary:*** The newly named species of mold (*Pilz*) is *Rhizopus chinensis.* It is used in China in the city of Shao-hing, province of Che-kiang to make an alcoholic beverage named "Shao-hing-Chew." Soy is not mentioned. Two illustrations show the mold. Address: Plant Physiology Lab., Botanical Inst., Tokyo Imperial University.

28. Burg, Cornelis Leendert van der. 1904. De voeding in Nederlandsch-Indië [The foods of the Netherlands Indies]. Amsterdam, Netherlands: J.H. de Bussy. viii + 526 p. See p. 210-20, 222-23, 255-56. Index. 24 cm. [49 ref. Dut]
• ***Summary:*** Burg describes the preparation of tempe as follows: "Yellow soy-beans are boiled, soaked in cold water for 48-72 hours, squeezed out between cloths, and then steamed in a conical basket, made of flattened bamboo or of cane (Malay: kukusan) till they are done. Afterwards they are spread out on wire frames, which are entirely covered with banana leaves, and mouldy remains of a previous preparation are added, then all is covered again with banana leaves. The whole mass is stirred a few times, and after 2 days a cake has been formed, from which pieces are cut, which are fried in cocoanut oil and eaten afterwards. During the preparation, the cotyledons have been bound together by a tight mycelium, much water and carbonic acid being secreted in the meantime and the temperature of the mass rising 10 to 12ºC above that of the surroundings. The cellular walls are not dissolved by the hyphae, but the soluble carbohydrates and the fat diminish, the nitrogen content remains about the same, but in tempé only 70% is to be found of the protein, as originally present in the beans."

He also describes, on Prinsen Geerligs' authority, the preparation of *tao-tjo* (Indonesian-style miso). Peanuts are discussed on p. 220; *tempé boengkil, tempé bongkrek, ontjom beurreum, ontjom bodas* on p. 222.

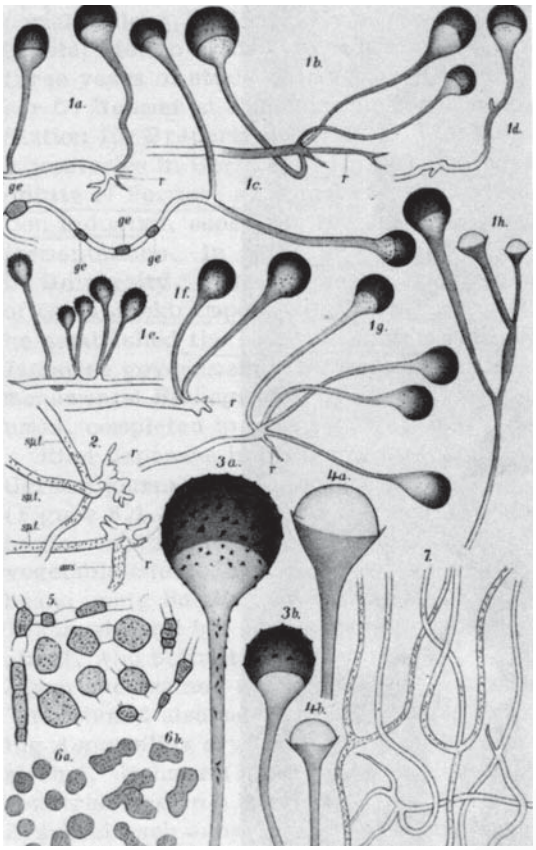
29. Saito, Kendo. 1905. Microbiological studies on the brewing of Japanese Soja-Sauce. *Botanical Magazine* (*Tokyo*) 19(216):75-77. Jan. 20. Bound after p. 119 of Japanese text. [1 ref. Eng]
• ***Summary:*** The author has been able to isolate the following microorganisms from koji and moromi: 1. Moulds: *Aspergillus Oryzae, Rhizopus sp., Tieghmella sp.* Others incl. *Penicillium glaucum, Cladosporium herbarum,* etc. 2. Bacteria: *Sarcina Hamaguchiae* and *Bacterium Soja* (both new species). 3. Yeasts: *Saccharomyces Soja* (new species) grows copiously in moromi [the mash]. Film yeasts incl. *Saccharomyces farinosus* Lindner [Pichia farinosa (Lindner)], *Mycoderma sp.,* etc.

Note 1. This is the earliest document seen (Jan. 2009) describing Japanese investigation on the yeasts in shoyu mash (*moromi*).

Note 2. This is the earliest document seen (Jan. 2009) which mentions that *Saccharomyces* yeasts are involved in the shoyu fermentation. Address: Botanical Inst., Imperial Univ., Tokyo, Japan.

30. Torii, G. 1905. Chôsen kôji-kin ni kansuru kenkyû hôkoku [Studies on Korean koji mold]. *Jozo Shikensho Hokoku* (*Report of the Brewing Experiment Station*) No. 4. p. 7-19. Oct. Presented 22 April 1905. Also in Yakugaku 675. [Jap]
• ***Summary:*** Mentions the mold *Rhizopus.* Address: Moto Jozo Shikensho Gishu.

31. Saito, Kendo. 1905. Rhizopus oligosporus, ein neuer technischer Pilz Chinas [*Rhizopus oligosporus,* a new industrial fungus from China]. *Zentralblatt fuer Bakteriologie. Series 2.* 14(18/20):623-27. [10 ref. Ger]
• ***Summary:*** In this document the author announces the discovery of *Rhizopus oligosporus.* Through a friend, Prof. J. Takano, at the technical high school in Tokyo, he obtained a rice meal cake which Chinese in the city of Kobe use for the preparation [inoculation] of an alcoholic beverage made from rice. They say that the original material for these cakes comes from Shantung province, China. The author then gives a detailed description of *Rhizopus oligosporus* including its morphology, physiology, affinities (similar molds), and a diagnosis. A full-page illustration (next page) shows 7 parts and sexual phases of the mold in detail. Address: Prof., Dr., Plant Physiology Lab., Botanical Inst., Imperial University, Tokyo, Japan.



32. Stuerler, F.A. von. 1906. Nederlandsch Oost-Indische cultuurgewassen: Hunne kenmerken, teelt en bereiding [Crops of the Dutch East Indies: Their characteristics, cultivation and preparation]. Tiel: A. van Loon. ii + 373 p. See p. 341-43. Illust. Index. 25 cm. [5 ref. Dut]

• ***Summary:*** The subsection on the hibiscus plant (*De Waroeboom, Hibiscus tiliaceus,* p. 334) states that the leaves are used in making foods from soybeans [tempeh].

In the chapter on crops that yield oils and fats (*Vette oliegewassen,* p. 335-44), the section titled "Soja" (p. 341-43) has the following contents: General botanical characteristics: Introduction, the plant, stem, leaves, flowers, fruit, seeds. Cultivation. Chemical composition of the seeds, preparation, and uses.

The main product made with soybeans is soy sauce (*kètjap*). The Chinese in Java cook the soybeans and inoculate them between hibiscus leaves (*Hibiscus tiliaceceus*) to make tempeh (*tèmpé*). They also make *tao-tjo,* a sort of bean paste (Indonesian-style miso). And with the black soybeans they make a sort of bean cheese, tao-djie (soy nuggets). Also discusses peanuts (*aardnooten,* p. 335-37), sesame seeds (*sesam,* p. 337-39), the castor oil plant (*ricinus,* p. 339-41), other crops that yield oils and fats (p. 343-44).

Note: This is the earliest document seen (Sept. 2011) stating that molds grown on Hibiscus leaves are used in Indonesia to inoculate tempeh. Address: Leiden.

33. Clercq, Frederik S.A. de. 1909. Nieuw plantkundig Woordenboek voor Nederlandsch Indië [New botanical dictionary for the Netherlands Indies]. Amsterdam, Netherlands: J.H. de Bussy. xx + 395 p. See p. 248, no. 1664. [1 ref. Dut]

• ***Summary:*** In the following, we will spell out, then translate, abbreviations in square brackets: "1664 *Glycine Soja* Sieb. et Zucc. * Nat. fam. der Leguminosae. Dekeman, Jav. Kr. D. [Krama-Doesoen of Hoog-Dorps-Javaansch = Mount Dusun high-level village Javanese]; Dele, Jav. [Javaansch = Javanese]; Gadele, Jav. [Javanese]; Kadele, Boeg. [Boegineesch = Buginese, spoken in South Sulawesi], Makas. [Makasaarsch = Makassarese, from Makassar, the provincial capital of South Sulawesi, Indonesia]; Kadale, Jav. [Javanese]; Kadheli, Madoer. [Madoereesch = Madurese, spoken in Madura {Dutch: Madoera}, an Indonesian island off the northeastern coast of Java]; Katjang djepoen, Soend. [Soendaasch = Sunda, the language of the Sundanse people of Western Java]; Katjang kedelai, Mal. [Maleisch = Malay, the language of Malaysia and Brunei, lingua franca of the Malay Archipelago]; Katjang kedele, Mal. Batav. [Bataviasch-dialect van Maleisch = the Batavian dialect of Malay; Batavia was the colonial Dutch name (1600s to 1942) for today's Jakarta]; Kedangsoel, Jav. Kr. D. [high-level village Javanese]; Kedelai, Mal. [Malay]; Kedele, Balin. [Balineesch = Balinese, the language of the Indonesian island of Bali], Jav. [Javanese], Mal. Batav. [the Batavian dialect of Malay]; Keudeule, Soend. [Sunda]; Lawoeï, Biman. [Bimaneesch = Bima, language of the Bimanese people, spoken on the Indonesian island of Sumbawa and its city of Bima]; Leboewi bawak, Sas. [Sasaksch = Sasak, spoken by the Sasak people on the Indonesian island of Lombok]; Retak medjong, Lamp. [Lampongsch = Lampung, spoken by the Lampung people in the Indonesian province of Lampung, on the southeastern tip of Sumatra].

"Variëteiten (*Varieties*) *in Soend.* [*Sunda*]*: Katjang djepoen beureum; Katjang djepoen bodas; Katjang djepoen hedjo; Katjang djepoen hideung.–Kruid* (*herb, plant*)*, de sojaboon.*

"Uses: Known for the high protein content of its beans, consumed mostly by indigenous people as green vegetable soybeans (unripe). For the preparation of Batavian ketjap or Soy (*Bataviasche ketjap of soja*)*,* black-seeded soybeans are used. In addition, the beans are boiled, beaten into flat cakes, and inoculated with a particular type of mold to obtain tempeh (*tempe*)*,* which is very much liked in Java." Address: in Leven, Oud-Resident van Ternate en van Riouw.

34. Saito, Kendo. 1909. Tôyô-san yûyô hakkôkin [Useful fermentation microorganisms from East Asia]. Tokyo: Hakubunkan. 200 p. See p. 14-17, 108-09, 122-25, 144-47, 162-64. [Jap]

• ***Summary:*** This book contains a little information about *Rhizopus oligosporus,* onchom, and miso or *Tao-Tjiung*

[probably *doujiang*]. Address: Botanical Inst., Tokyo Univ., Japan.

35. Saito, Kendo. 1910. Notizen ueber einige koreanische Gaerungsorganismen [Notes on some Korean fermentation organisms]. *Zentralblatt fuer Bakteriologie. Series 2.* 26(13/15):369-74. Feb. 23. [4 ref. Ger]
• ***Summary:*** Mentions the molds *Aspergillus oryzae* and *Rhizopus Tamari.* Address: Botanical Institute, Tokyo.

36. Quintus Bosz, J.E. 1911. De samenstelling van Indische voedingsmiddelen [The composition of Indonesian foods]. *Bulletin van het Kolonial Museum te Haarlem* No. 46. 261 p. March. Also published in Amsterdam by J.H. de Bussy as a book. [8 ref. Dut]
• ***Summary:*** The nutritional composition and the source of information is given in a table for the following: Soybean seeds (p. 74-77). Soybean oil (*sojaboonen-olie*) (p. 76-77). Soybean flour or meal (p. 154-55). Soybean biscuit (*Beschuit,* 170-71). Japanese soy sauce and soybean tempeh (*Japansche soja, Tempé kedeleh* p. 242-43). Indonesian soy sauce (*Ketjap, Bataviasche soja* p. 244-45). Firm tofu (*Tao-koan,* 79.8% water. p. 244-45). Address: Dr., naar onderzoekingen in het Laboratorium van het Koloniaal Museum verricht onder leiding van Dr. M. Greshoff.

37. Nishiwaki, Yasukichi. 1911. Kaki-iro kabi, kôji kabi oyobi kumonosu kabi o motte, shôyu jôzô hikaku kenkyû [Shoyu manufacturing experiment using orange-colored mold, koji mold, and *Rhizopus* mold]. *Kogyo Kagaku Zasshi* (*J. of the Society of Chemical Industry, Japan*) 14(166):1161-65. Dec. [Jap; eng]
• ***Summary:*** The orange colored mold is actually called "persimmon colored" and refers to *Oidium lupli* or *Monilia sitophila* (used to make onchom or ontjom). The koji mold is *Aspergillus oryzae. Rhizopus japonicus* is called "spider-web mold." It is clear that shoyu can be made with molds other than just the koji mold. Good shoyu koji was made easily with the orange mold, which is little attacked by other molds. The *Rhizopus* mold gave unfavorable results. Address: Nôgaku-shi, Japan.

38. Lafar, Franz. 1911. Technical mycology: The utilization of microorganisms in the arts and manufactures. Vol. II. Eumycetic fermentation. Translated from the German by Charles T.C. Salter. London: Charles Griffin & Co. ix + 558 p. Illust. Index. 23 cm. [3240* ref. Eng]
• ***Summary:*** An extensive bibliography (3,240 references) for both this volume and volume I appears at the back of this volume (p. 417-518). The opening chapter begins: "Already in the first volume (sect. 22) the algae and the fungi were arranged in a single group. that of the Thallophytes, in contradistinction to all other plants, the latter being classed in the group Cormophytes." The latter group has "an articulation of the body of the individual organism into leaf and stem."

Chapter 43, titled "Morphology and systematology of the Mucors (p. 48+) contains sections on "Subdivision of the Mucor family" (p. 49-51), "The genus Mucor" (p. 51-53; The genus was established by Micheli as far back as 1729. It contains *Mucor Rouxii* and *Mucor mucedo*), and "Rizopeæ" (p. 53-56). An illustration (p. 55) shows *Rhizopus nigricans* (After Brefeld). *Rhizopus nigricans* is the best and longest known member of this family. In 1818 it was described by Ehrenberg under the name *Mucor stolonifer,* which is still used by several workers." "The name *Rhizopus oryzae* has been given by Went and Prinsen Geerligs (I.) to a fungus discovered by them in Ragi (sect. 241), the sporangia and spore of which organism are considerably smaller than those of *R. nigricans.*

Chapter 44, is titled "Fermentation by Mucors" (p. 57-62). Chapter 45, titled "The use of Mucoreæ in the spirit industry" (p. 63-71) has three sections: Sect. 240. "Mucor rouxii and other species of Amylomycetes" (p. 63-67) states: "For the preparation of rice spirit there is produced in China, Cochin China, and neighboring countries, an article known as Chinese Yeast, and put on the market in the form of flat mealy balls, about the size of a half-crown. Its preparation, composition, and application were first described in 1892 by E. Calmette (I.), whose reports were extended and supplemented by C. Eijkman (II.) in 1894." The method of preparation is given. More important than its bacteria are "the yeast cells, which must be regarded as the exciting agents of the alcoholic fermentation; and certain Mucors, which affect the saccharification of the starch. Of the last-named organisms, which concern us here,. Calmette isolated a species which, in honour of his teacher and colleague, E. Roux, he named *Amylomyces Rouxii."* Two illustrations show this organism, which produces a "diastatic enzyme" (p. 65). The so-called amylo process and the work of Colette and Boidin with □-*Amylomyces* and □-*Amylomyces* in this process are discussed (p. 65-66).

Sect. 241 titled "Ragi and tapej" [tapé or tapeh] (p. 67-69) states that "Tapej... is prepared from rice by the aid of a secondary auxiliary material, which the Malay natives of Java term Ragi or Raggi, and the Chinese settlers call Peh-Khah." A.G. Vorderman (1893) describes the preparation of Ragi. According to Eijkman (1894) Tapej, which is also called Tsao, is prepared with the aid of Ragi, by boiling husked Mochigome rice (*Oryza glutinosa* [*Oryzae sativa glutinosa*], known as "Ketan" in Java) in water until soft. The flora of Ragi and Tapej comprises three groups of microorganisms; bacteria, budding fungi, and fungi belonging to the family *Mucoraceæ.*

Sect. 242, titled "The so-called Amylomyces process," (p. 69-71), or Amylo process for short, states that "this is the name given to the process for the industrial utilisation of the diastatic activity of *Mucor Rouxii* and several allied

fungi. A company, the *'Société d'Amylo,* was founded by A. Collette and A. Bodin (I, 1897), who also, in 1897, took out in the name of this company a German patent for a 'process for producing alcohol from starchy materials, by means of aseptic saccharification and fermentation with *Mucedineæ,...'"*

Fernbach (II, 1899) has given a lucid description of the practical performance of this process in the patentees' works, the maize distillery at Seclin near Lille, France. This description is summarized. "An English patent for the mechanico-technological modification of the process was also taken out by Collette and Boidin (III.) in 1898." See also two other 1897 English patents by Collette and Boidin No. 19858 and No. 1155. "The reader interested in this matter will find more precise data in the review published by M. Delbrück (III, 1899). The chief advantage of the Amylomyces process is the abolition of the expensive additions of malt requisite in the older method of saccharification, the amount formerly needed being up to 15 per cent. in the case of maize, and 2 to 3 per cent. in the case of potatoes. With regard to the yield furnished by the Amylomyces process, it is stated that in the Seclin works, 37.8 litres of absolute alcohol are obtained per 100 kilos. of maize containing 57.5 p, a yield corresponding to 66.2 litres per 100 kilos of starch. Owing to the large amount of mycelial hyphae, the residue filters easily." "Finally it should be said that, since 1898, the aforesaid patentees have replaced *Mucor* (*Amylomyces*) *Rouxii* by another species, namely, so-called *Beta-Amylomyces,* or *Mucor Beta.* This organism is capable of dealing with more highly concentrated mashes than the other, and enables a charge of 25,000 kilos. of maize to be mashed to 1000 hl (22,000 gallons) of goods. per cent. of starch

Page 213 states that *Pichia farinosa* (Synonym: *Saccharomyces farinosus* Lindner, a film yeast) has been found by K. Saito (II, 1905, *Botanical Magazine,* Tokyo) in Japanese Soja sauce.

Chapter 51 discusses the genus *Aspergillus* (p. 228-31) with many fine illustrations, including conidiophores, conidia, ascospores, different stages of *A. oryzae* and *A. glaucus.* Page 228-29 state: *"Aspergillus Wentii,* Wehmer, was observed by Went in the preparation of Tao Yu (*see* vol. 1, p. 248) according to the method practised in Java, and was described by Wehmer (XIX.) in 1896. It appears spontaneously on the boiled Soja beans that have been covered with *Hibiscus* leaves, and affects a loosening and disintegration of the firm tissue of the bean. The species forms a pale coffee-coloured, dense mold vegetation (Fig. 167)."

In Chapter 57 titled "Chemical activity of the Aspergillaceæ," by Prof. Dr. C. Wehmer, page 270 states: "Two species, *Asp. oryzæ* and *Asp. Wentii* are reported as able to grow through the substance of soft-boiled rice and Soja beans..." The "enzyme mixture from *Asp. oryzae* (the so-called 'Takadiastase')" is also mentioned.

Chapter 62 titled "The Monillæ and Oidia," by Dr. H. Wichmann mentions *Monilia javanica* (occurring in association with others in Ragi, p. 333)., *"Monilia sitophila* (Mont.), Saccardo, is said by Went (IV.; reference missing) to be used by the natives in West Java in the preparation of a sweetmeat known as 'ontjom' composed of the seeds of the ground-nut or earth-nut (*Arachis hypogæa*). The ground-nuts, which are thoroughly permeated by the fungus, are made up in the form of small, orange-colored cakes, the surface of which is covered with the conidia, whilst the interior is both chemically altered and loosened in structure by the mycelium." Sect. 315 (p. 336-39) is titled "Oidium lactis and allied species." Also discusses *Oidium lupuli,* Matthews and Lott (p. 338). Address: Prof. of Fermentation-Physiology and Bacteriology, Imperial Technical High School, Vienna.

39. Hanzawa, Jun. 1912. Studien ueber einige *Rhizopus*-arten [Studies on some species of *Rhizopus* molds]. *Mycologisches Centralblatt* 1(12):406-08. Dec. 13. [8 ref. Ger]
• ***Summary:*** Discusses *Rhizopus tanekoji, R. bankul, R. Batatas, R. Tonkinensis, R. Delemar, R. nigricans, R. nodosus, R. arrhizus, R. oryzae, R. Chinensis, R. japonicus,* and *R. tritici.* No mention is made of tempeh, soybeans, or onchom. Address: Laboratorium fuer Technische Bacteriologie, Technische-Chemische Institut, Kgl. Technische Hochschule, Hannover.

40. Heyne, K. 1913-1917. De nuttige planten van Nederlandsch-Indië, tevens synthetische catalogus der verzamelingen van het Museum voor Technische- en Handelsbotanie te Buitenzorg [The useful plants of the Netherlands Indies. 4 vols.]. Batavia [Jakarta]: Printed by Ruygrok & Co. Vol. 1, 250 + xxvii p. Vol. 2, 349 + xxxix p. Vol. 3, 402 + xlviii p. See vol. 2, p. 242-43, 316-22. See also 2nd ed. 1927 and 3rd ed. 1950. 24 cm. [12+ ref. Dut]
• ***Summary:*** Contains detailed information on soybeans in Indonesia, including various local names, soybean production in Indonesia by province from 1918-1925 (the top producers in 1925 were Madoera and Madioen; total production grew from 222,426 to 260,125), soybean culture, imports, exports, tempeh, tofu (tao hoe), tao koan, tao tjo (Indonesian miso), and soy sauce (ketjap). Also discusses ontjom and dagé made from peanuts.

Note 1. This is the earliest document seen (May 2010) that gives soybean production or area statistics for the Dutch East Indies (later Indonesia).

Note. This is the earliest document seen (April 2001) that contains the term *tao koan.* Address: Chef van het Museum voor economische botanie te Buitenzorg (Bogor).

41. Paerels, J.J. 1913. Tweede Gewassen [Second crops]. *Oost-Indische Cultures* (*Dr. K.W. van Gorkom's*) 3:276-88. [11 ref. Dut]

• ***Summary:*** See Prinsen Geerligs (1913, vol. 3, p. 276-88). Address: Indonesia or Netherlands.

42. Prinsen Geerligs, H.C. ed. 1913. Dr. K.W. van Gorkom's Oost-Indische Cultures, opnieuw uitgegeven onder redactie van H.C. Prinsen Geerligs. Compleet in drie deelen [Dr. K.W. van Gorkom's East-Indian crops. New edition. 3 vols.]. Amsterdam, Netherlands: J.H. de Bussy. See vol. 3, p. 276-88. Illust. Index. 27 cm. [7 ref. Dut]
• ***Summary:*** In vol. 3 is a section on "Second crops (*Tweede Gewassen*)*"* (p. 243-91). Chapter 4 (*Hoofdstuk IV*) of that section is titled "Soybeans (*Soja*)*"* (p. 276-88). Contents: Origin and native land. The soybean plant: Botanical description (flowers, seeds, fertilization, germination), types and varieties, geographical distribution. Cultivation of soybeans: General instructions for growing, planting, manuring, diseases and pests. Production, trade, and use of soybeans: Tofu (*Tao-Hoe*)*,* Chinese soy sauce (*Tao-Yoe*)*,* soybean paste (*Tao-Tjiong*)*,* Tempeh, composition and nutritive value (*samenstelling en voedingswaarde*).

Note: This is the earliest document seen (Feb. 2009) that contains the term Tao-Tjiong, a term, and perhaps a product, that appears to be between *doujiang* (Chinese-style miso) and *tao-tjo* (Indonesian-style miso).

Photos show: (1) A soybean plant that bears black-seeded varieties (p. 277). A soybean plant that bears white-seeded varieties (p. 278).

Also discusses (in vol. 2): Peanuts (p. 227-41). Sesame seeds (p. 247-51).

Reprinted in Van Gorkom 1918, p. 839-51. Karel Wessel van Gorkom lived 1835-1919. Address: Amsterdam, Netherlands.

43. Usami, K. 1914. Mykologische notizen ueber Awamori-Koji-Pilze (*Aspergillus*) und *Rhizopus Delemar* [Mycological notes on awamori koji molds (*Aspergillus*) and *Rhizopus Delemar*]. *Mycologisches Centralblatt* 4(4):193-96. May 13. [4 ref. Ger]
• ***Summary:*** Twelve years ago the author isolated two black *Aspergillus* species from "Awamori Koji." They were probably *A. luchuensis* and *A. niger.* Descriptions and illustrations of all 3 molds are given. Address: Fukuoka, Japan.

44. Hanzawa, Jun. 1914. Studien ueber einige *Rhizopus*-arten [Studies on some species of *Rhizopus* molds]. *Mycologisches Centralblatt* 5(5):230-46. Dec. 19. [7 ref. Ger]
• ***Summary:*** Gives a systematic description, with an illustration, of each of the following species: *Rhizopus nigricans, R. oryzae, R. arrhizus, R. chinensis,* and *R. japonicus*. Address: Sapporo, Japan; and Technical Hochschule, Hannover, Germany.

45. Takahashi, Teizô; Yukawa, Matao. 1915. On the budding fungi of "shôyu-moromi" and "shôyu-koji." *J. of the College of Agriculture, Tokyo Imperial University* 5(3):227-61. March. [10 ref. Eng]
• ***Summary:*** "Up to now several studies on the budding fungi of 'shôyu-moromi' and 'shôyu-koji' have been published, but with regard to the botanical classification all these studies have very little merit, as we cannot derive any systematic classification from them."

The author gathered 52 samples of moromi, aged for 2 to 24 months, from 11 shoyu factories in various parts of Japan. The factories were: 1. Shichirouemon Mogi's shoyu brewery at Noda, Shimousa province. 2. Saheiji Mogi's shoyu brewery at Noda, Shimousa prov. 3. Hamaguchi's shoyu brewery at Choshi, Shimousa prov. 4. G. Tanaka's shoyu brewery at Choshi, Shimousa prov. 5. J. Iwasaki's shoyu brewery at Choshi, Shimousa prov. 6. K. Nakamura's shoyu brewery at Goyu, Owari prov. 7. Asai shoyu brewery at Tatsuno, Harima prov. 8. Maruo shoyu brewery company at Tatsuno, Harima prov. 9. Kikuichi shoyu brewery company at Tatsuno, Harima prov. 10. Tatsuno shoyu brewery company at Tatsuno, Harima prov. 11. Kagawa shoyu brewery experimental station at Shôtoshima, Sanuki prov.

The following budding fungi were isolated from the samples: 1. *Zygosaccharomyces major* [a yeast] nov. spec. 2. *Zygosaccharomyces soja,* nov. spec. 3. *Zygosaccharomyces japonicus,* Saito. 4. *Zygosaccharomyces salsus,* nov. spec. 5. An asporogenic species of *Zygosaccharomyces* (?). 6. Two species of *Mycoderma.* 7. *Pichia alcoholophila,* Kloecker var. 8. Several species of *Torula.* 9. A species of *Monilia* [Note 1. The mold *Monilia sitophila* is used to make onchom in Indonesia].

"General conclusions: The occurrence of *Zygosaccharomyces* in 'shôyu'-mash furnishes us with a very interesting field for future researches in microbiology. The application of pure cultures of *Zygo. major* and *Zygo. soja* must naturally result in the future improvement of our 'shôyu.' The two species of *Zygosaccharomyces* i.e. *japonicus* and *salsus,* and the species of *Torula* and *Monilia* must be regarded as harmful or damaging fungi for 'shôyu', but their common property of decolorizing 'shôyu' may sometimes be utilized for the preparation of the colorless or 'shiro-shôyu', by taking the precaution of lessening the deteriorating effect of the fungus. The *Mycoderma* species in 'shôyu-koji' will be more appreciated in future on account of its energetic generation of a pleasant aroma."

Note 2. This is the earliest document seen (June 1999) that mentions the shoyu yeasts *Zygosaccharomyces major Zygosaccharomyces salsus.*

Note 3. This is the earliest English-language document seen (June 2006) that uses the term "shiro-shôyu" to refer to clear shoyu, which has the lightest color of the five basic types of Japanese shoyu. Address: Tokyo, Japan.

46. Usami, K. 1915. Mykologische notizen ueber Awamori-Koji-Pilze (Aspergillus) und Rhizopus Delemar [Mycological notes on awamori koji molds. *Aspergillus* and *Rhizopus Delemar*]. *Zentralblatt fuer Bakteriologie, Series 2* 43(10/11):250. April 10. [1 ref. Ger]
• ***Summary:*** Abstracted from *Mykologisches Centralblatt.* 1914. 4:193-96. Address: Japan.

47. *Chemisch Weekblad.*1917. Algemeene vergadering de Nederlandsche Chemische Vereeniging te 's-Gravenhage op 28 December 1916 [General assembly of the Dutch Chemical Union at the Hague on 28 Dec. 1916]. 14(1):4-15. Jan. 6. [Dut]
• ***Summary:*** Includes the paper *"Ueber die Anwendung von Enzymwirkungen in der Ostasiatischen Hausindustrie* [On the application of enzymes in East Asian cottage industries"], by H.C. Prinsen Geerligs, followed by a long discussion.

48. Prinsen Geerligs, H.C. 1917. Ueber die Anwendung von Enzymwirkungen in der Ostasiatischen Hausindustrie [On the application of enzymes in East Asian cottage industries]. *Zeitschrift fuer Angewandte Chemie, Wirtschaftlicher Teil* 30(3):256-57. May 8. [Ger]
• ***Summary:*** Paper read before the *Niederlaendische Chemische Vereinigung* (Dutch Chemical Union), General session in The Hague, December 28, 1916.

This paper is on the domestic application of enzyme actions in Eastern countries, and describes, among other things, the making of fermented and non-fermented soybean food products. "To make soymilk (*Milchersatz*), only white soybeans are used, softened in water for 3 hours until they have swollen to 3 times their original size. Then, while water is added continuously, they are milled between two hard stones and fall through a hole in the bottom stone into a pail. A very small amount of the thin soybean slurry is set aside; through the proliferation of lactic acid bacteria it quickly becomes so sour that after several hours that lactic acid content has risen to 1.5%. The above mass is cooked in a large pan. The now pasteurized liquid is filtered through a large sieve to remove the hulls and hard pieces. The filtered milk-white liquid has, in appearance and chemical composition, the greatest similarity with animal milk. A sample contains 6.9% solids, 3.13% protein, and 1.89% fat. It gives an alkaline reaction and contains a solution of legumin bound to potassium phosphate, while the fat is emulsified in the thick protein solution. Unfortunately this soymilk (*Bohnenmilch*) tastes very much like raw French-beans (*Schneidebohnen*), so that people who are accustomed to cow's milk do not enjoy it much. But infants should be very content with it.

"If cheese is to be made from this milk, a small amount of the slurry soured with lactic acid is added to it. Thereby, the legumin (protein) is dissolved from the potassium phosphate and coagulated, then settles out with the fat with which it is emulsified. When the milk, through several hours mixing with the coagulation liquid, has become fully firm, it is packed in cloths and pressed between boards, in order to remove any excess water. Then the cakes are cut into square pieces; if they are to be eaten raw, it must be done quickly, lest they continuing souring and spoil. In order to impart a pleasant color to the cakes, they may be placed for several moments in a Curcuma [turmeric] decoction. Mostly the cakes of cheese (*Kaesekuchen*) are dried in the sun or fried (*gebraten*). They then keep better and acquire a pleasant flavor."

"Of much greater significance is the preparation of the most popular and prevalent soybean preparation, soy sauce (*der Soja*), which in East Asia is an indispensable seasoning for a variety of dishes, and is produced and used in unbelievably large quantities. There are various types, some of which contain wheat flour. But here we will consider only the type that is made [in the Dutch East Indies] with soybeans plus some added ingredients to improve the flavor. For the preparation of soy sauce, brown or black soybeans are cooked for several hours. After pouring off the cooking water, the beans are placed in flat trays (*Hürden* [*tampah*]) of woven bamboo and dried for half a day in the sun, then cooled in the shade. When they are cooled, the beans are covered with leaves of *Hibiscus tiliaceus,* a species of mallow, and they are soon covered with a layer of Aspergillus mold, which is usually found on the tiny hairs or cilia on the underside of the hibiscus leaves and so is transferred to the beans. The mold filaments or hyphae penetrate between the tough and thick cell walls, dissolve these through hydrolysis, and thus make the cell contents accessible to the influence of the molds. The mold is allowed to work until it forms spores (*Fruchtstaende*). The beans then appear to be covered with a brownish green felt. The beans are then dried in the sun and placed in a strong, cold salt solution. The mixture is placed in the sun for several days and then cooked. The brine solution, which contains the soybean extract, is poured off and the beans are cooked several more times until they have lost their salty taste. The various cooking extracts are mixed, filtered through a fine sieve, then mixed with palm sugar, aniseed [*Pimpinella anisum*], and an herb extract, which one can buy at a druggist's shop, and finally cooked until salt crystals appear. The soy sauce (*Soja*), which is now ready to use, is a dark brown, thick, very salty liquid, in which a viscous sediment forms. By diluting with water, it becomes turbid. But the solution again becomes clear with the addition of salt. This thorough investigation has shown that the mold hyphae branch out into the cell walls, hydrolyze and dissolve the pectin substances, and likewise break down the protein content of the cells to leucine, tyrosine, asparagine, and other decomposition products of legumes.

"But this action and result is of secondary importance. The main point is the dissolution of the cell walls, whereby

the protein becomes free and can be dissolved in the concentrated salt solution. The composition of soy sauce, except for the salt content, is very similar to that of meat extract, so that it can completely replace meat in the largely vegetarian diets of the people of the East.

"In a similar way, various other foods are obtained, whereby a mold dissolves the cell wall and so fulfills the function otherwise accomplished by cooking. We mention here only the bean paste (*Bohnenbrei*) [*tao-tjo*], for the preparation of which, dehulled white soybeans are cooked and then mixed with rice flour and glutinous rice flour (*Kleereismehl*). The mixture is placed in a small basket that is lined with the same hibiscus leaves mentioned above, and the Aspergillus molds growing on the leaves are allowed to develop. This saccharifies the rice starch flour and dissolves the bean cell walls. Thereby, the mixture becomes sticky and glutinous, and tastes sweet. It is dried and placed in a pot with saltwater. There it remains until each bean is permeated with salt and a sample tastes salty. Palm sugar is added to taste and it is ready for use without further cooking. Microscopic analysis showed that the cell walls were completely dissolved and the contents lay free, so that the mold growth had greatly improved the digestibility of the beans.

"In Java, soybeans are also cooked and made into flat cakes on a flat bamboo lattice. A small piece of an old cake is added and the mass is covered with banana leaves. One soon observes a rise in temperature and the development of moisture. The mass is penetrated by hyphae of *Rhizopus Oryzae,* which again dissolves the cell walls and frees their contents. The cake [tempeh, though the term is not mentioned] with its covering of mold, is consumed without further processing, raw or fried (*gebraten*).

Also discusses the preparation of onchom from peanut press-cake. Address: PhD, Netherlands.

49. Prinsen Geerligs, H.C. 1917. Domestic application of enzyme actions in Eastern countries (Abstract). *J. of the Society of Chemical Industry* (*London*) 36(12):662-63. June 30. [1 ref]
• ***Summary:*** A summary of a paper read before the *Niederlaendische Chemische Vereinigung* (Dec. 28, 1916) and published in the *Zeitschrift für Angewandte Chemie, Wirtschaftlicher Teil* 30(3):256-57 (1917, May 8).

"A milk-like product produced by grinding soya beans with water contains 6.9% of total solids, 3.13% of proteins, and 1.89% of fat; this product, unless boiled, rapidly undergoes lactic acid fermentation, and a cheese may be obtained by the addition of a quantity of the fermented liquid to a larger volume of the normal liquid. To prepare an extract [soy sauce] resembling meat extract, the cooked beans are subjected to the action of fungi which are found on the leaves of a species of mallow (*Hibiscus tiliaceus*), the mass is then extracted with salt solution, spices are added to the extract, and this is then concentrated to a thick syrup. A similar product is prepared from a mixture of soya beans and rice by the action of fungi. Another food [tempeh] is obtained by submitting soya bean cakes to the action of fungi found on banana leaves, etc. The fungi found in rice meal and rice straw are utilised for converting rice meal into alcohol; rice meal may be saccharified by treatment with the fungi occurring on banana leaves and the liquid obtained is subsequently converted into rice wine. One of the most important results of enzyme action is the production of sugar in the palm; the stem of the latter is free from sugar but contains large quantities of starch; the conversion of the starch into sucrose proceeds in the tree, but laboratory experiments with the separated enzyme resulted in the formation of dextrose alone."

Note: This early English-language document describes tempeh, although the term is not actually mentioned.

50. Yamazaki, Momoji. 1918. Shina-san hakkô kinrui no kenkyû. III. Shôshu shuyaku no kumonosu kabi-zoku ni tsuite [Studies on the Chinese fermentation organisms. III. Some species of *Rhizopus* from the Chinese yeast of spirituous liquor]. *Nogaku Kaiho* (*J. of the Scientific Agricultural Society, Japan*) No. 193. p. 983-1028. Sept. 5. [Jap]
• ***Summary:*** Mentions *Rhizopus liquefaciens* Yamazaki. Address: Nôgaku-shi, Japan.

51. Paerels, J.J. 1918. Soja [Soya]. In: Dr. K.W. Van Gorkom's Oost-Indische Cultures. 1918. Amsterdam: J.H. de Bussy. 2nd ed. Vol. 2. Edited by Dr. H.C. Prinsen Geerligs. See p. 839-51. Figs. 285-86. [8 ref. Dut]
• ***Summary:*** This is a reprint of Paerels 1913. Contents: Origin and native land. The soybean plant: Botanical description (flowers, seeds, fertilization, germination), types and varieties, geographical distribution. Cultivation of soybeans: General instructions for growing, planting, manuring, diseases and pests. Production, trade, and use: Tofu (*Tao-Hoe*), Chinese soy sauce (*Tao-Yoe*), soybean paste (*Tao-Tjiong* [a term, and perhaps a product, between *doujiang* and *tao-tjo,* Indonesian-style miso]), composition of the seeds and nutritive value (*samenstelling en voedingswaarde*). Photos show: Plants of a black variety (p. 840), and a white variety of soybeans (p. 841). Address: Netherlands.

52. Yamazaki, Momoji. 1919. Shina-san hakkô kinrui no kenkyû. IV. Shujôshu yaku no kumonosu kabi-zoku ni tsuite [Studies on Chinese fermenting microbes. IV. Some species of *Rhizopus* from Chinese yeast]. *Nogaku Kaiho* (*J. of the Scientific Agricultural Society, Japan*) No. 202. p. 575-601. June 5. [Jap]
Address: Nôgaku-shi, Japan.

53. Jansen, B.C.P. 1923. On the need of anti-beri-beri-vitamin of the animal organism and on the amount of this vitamin in different foodstuffs. *Mededeelingen van den Burgerlijken Geneeskundigen Dienst in Nederlandsch-Indie* p. 1-122. See p. 65-73. [60* ref. Eng]

• ***Summary:*** Eykman, who discovered the nutritional cause of beri-beri, quickly pointed out the great importance of determining the protective power of various substances against beri-beri. It has been known for 25 years that living mainly on polished rice contributes to beri-beri, "whilst unpolished rice entirely protects against this disease." Most Javanese farmers still pound their own rice; when they do, only a part of the pericarp is removed by pounding. This sort of rice contains sufficient vitamin to protect the population from beri-beri. Industrial workers, who have neither time nor opportunity to pound their own rice, buy polished rice (with the whole pericarp removed) from rice mills. Though nearly devoid of vitamin, it is a product which "much more lasting with regard to storage and transport, and which at the same time by its nicely white aspect fetches a much better price on the market." Therefore the authors are investigating foods that can be eaten with polished rice to help prevent beri-beri.

Section 8, titled "Katjang kedele (Soy-beans)" (p. 65-73) begins: "This is a very important kind of beans for the native dietary." Soy-beans were fed to pigeons with white rice in varying proportions. The higher the proportion of soybeans, the better the health of the pigeons. When a large proportion of the diet was washed and polished white rice, the birds developed polyneuritis and often died or became paralyzed.

On page 68 the author notes that in Java, "soy-beans are not only eaten as such, but also very much in the shape of different native concoctions. It has been asserted (by C.L. van den Burg, 1904) that in this way the hard-to-digest legumins would be made easier to digest. However as far as I know, this assertion has not been founded on any experiment. A priori I think it as probable that by making tempé of the beans the taste is changed to such an extent, that they may be used continually, without being objected to. I hope some time to find an opportunity of experimentally deciding this question. Till at present I only examined, whether in these concoctions the vitamin-content either has increased or lessened... I now experimented with tempe kedele and with tao-tjo" [Indonesian-style miso].

Tempe, purchased on the market in Batavia, was fed in place of the soybeans. The results showed "a rather considerable loss of vitamins may be seen to have taken place during the preparation of tempe kedele from the soy-beans." Tao-tjo (Indonesian-style miso) was then used in place of soybeans, and it too was found to be a poor source of vitamins.

Note 1. This is the earliest English-language document seen (Sept. 2011) that mentions tempeh, which it calls "tempé" or "tempe" or "tempe kedele." These terms are not italicized in the text.

Note 2. This is the earliest English-language document seen (March. 2009) uses the word "tao-tjo" to refer to Indonesian-style miso. Address: Dr., Head of the Chemical Dep., Medical Lab. at Weltevreden.

54. Kempski, Karl E. 1923. Die Sojabohne: Geschichte, Kultur und Verwendung unter besonderer Beruecksichtigung der Verhaeltnisse in Niederlaendisch-Indien [The soybean: History, culture and use, with special attention to the situation in the Netherlands-Indies]. Berlin: Paul Parey. 88 p. Illust. Index. 22 cm. [101 ref. Ger]

• ***Summary:*** Contents: Introduction. Some remarks on the soybean's early history. Overproduction of soybeans in Manchuria after the Russo-Japanese War–English oil mills make their first trials. Soybean production in Manchuria. Soybean production in Korea. Soybean production in Japan. Soybean production in America–Soybean meal and soybean milk are introduced. Soybean production has also expanded in Africa, British India, and the Philippines. The introduction of soybean cultivation to Europe. The many uses of the soybean in Europe. Uses of soy oil. Old and new methods of obtaining soy oil. Soybean production and use of soybeans in the Netherlands-Indies. Appendix: Descriptions of how the most important soybean products are manufactured: In Java (tao-hoe [tofu]), tempeh, ketjap [soy sauce], tao-tjiong [or tao-jiung, a term, and perhaps a product, between *doujiang* and *tao-tjo,* Indonesian-style miso], in China and Japan (soy sauce, miso, tofu, frozen tofu, natto, soymilk) (p. 62-68). Supplements: I: Soybeans in Manchuria. II; Hansamuehle [Hansa Muehle] in Hamburg, Germany. III: *The Soybean* by Piper and Morse.

Note the extensive, early bibliography. Unfortunately, it contains many errors.

This book is largely a review of the literature, but with some original information, especially on Indonesia and Germany. In 1923 Java imported 150,000 to 200,000 tons of soybeans and had a population of 35 million. The area of soybeans planted in Java (including Madura) increased from 157,600 ha in 1918 to 164,700 ha in 1922 (p. 32). In 1921, 67.3% of Java's soybean acreage was in Central Java, 20.7% was in East Java, and only 5.7% was in West Java. (p. 35). Large quantities of soybeans are imported to the Netherlands-Indies from Manchuria: 35,105 metric tons (tonnes) in 1920, rising to 95,742 tonnes in 1922. From these and local soybeans are made tempeh [spelled like this!], tofu (*tahoe; Bohnenkäse*), soy sauce (*Ketjap, Sojasauce*), etc. In Java, mostly black soybeans are grown. To make tofu yellow, it is cooked in an extract of the *Curcuma* root / rhizome. Sometimes it is also sun-dried or fried/roasted (*gebraten*). Tempeh is inoculated with a piece of tempeh from a previous fermentation, and often fried in coconut oil. Detailed descriptions are given of the production of soy sauce (*ketjap;* which is made from black soybeans) and Indonesian miso (*taucho; tao-tjiong*). The author (p. 64) states that ketjap

and tao-tjiung are both inoculated using *Hibiscus tiliaceus* (hibiscus) leaves, called *waroe* in Java. Today Germany, like America, produces fresh and dried soymilk, fresh and dried soya cream, meat analogs, and soy sauce (p. 25).

This book contains 17 interesting, old photos. Descriptions of those reproduced from other periodicals are omitted. (1) A soybean field on the farm Kikai Nojo near Sempo-Station, Korea, owned and run by Mr. Moegling (p. 12). (2) A combine used for harvesting regular beans in California in 1918 (p. 19). (3) Many hydraulic presses in a modern American oil factory (p. 29). (4) The equipment used in steaming the soybeans before they are crushed in an American "steam mill" type oil mill (p. 31). (5) The interior of a British oilmill (p. 33). (6) The electrical generators in a modern oilmill (p. 34). (7) Soybeans being harvested manually at Madioen [Madiun, in East Java], Java (p. 48). (8) Harvested soybeans being dried on racks in a field in Java, and carried away by one worker (p. 48). (9) Workers dividing up the harvest in Java (p. 50). (10) Threshing soybeans with bamboo flails in the courtyard of a small farmer in Java (p. 51). (11) Selling soybeans in a small market in Central Java (p. 51).

Tables show: (1) Imports of soybeans to Germany from 1910 (43,500 tonnes) to 1912 (more than 125,200 tonnes) (p. 24). (2) Soybean acreage in Java (including Madoera) from 1918 (157,600 ha) to 1922 (164,700 ha) (p. 32). (3) A breakdown of soybean area in Java in 1921 (of 226,186 bouws) into West Java (12,980 bouws), Central Java (152,154 bouws), and East Java (61,082 bouws) (p. 35). Note: 1 bouw = 1.754 acres (Johnstone 1975). (4) Imports of Manchurian soybeans to Java (including Madoera) and other parts of the Dutch East Indies (mainly Sumatra) from 1920 to 1922 (p. 36). (5) Yields (average or range) of soybeans in various countries: Germany, Italy, British Indies, Manchuria (incl. China and Korea), Japan, America (up to 2,700 kg/ha), Java (p. 52). (6) Comparison of the nutritional composition of soybeans, peas, and regular beans (Phaseolus varieties) (p. 53). (7) Comparison of the nutritional composition of soya cheese (*Sojakäse,* tofu), beef, and lean pork (p. 53). (8) The prices of white and of black soybeans in Java during January and December 1922 and the same two months of 1923 (in Gulden) (p. 56). (9) Comparison of yields, price, costs, and profit for peanuts (*Katjang tanah*) and soybeans in Java (p. 57-58). (10) Nutritional composition of canned frozen tofu (based on E. Senft) (p. 68). (11) Exports of soybeans from five Manchurian ports (Dairen, Antung, Newchwang, Suifenho [Suifenhe], and Sansing) in 1919, 1920, and 1921 (p. 70). (12) Exports and value of soybeans from all of China to four countries (Netherlands, Russia, Japan, Dutch East Indies) in 1919, 1920, and 1921 (p. 72). (13) Exports of soybean oil from five Manchurian ports (Dairen, Antung, Newchwang, Suifenho [Suifenhe], and Harbin) in 1919, 1920, and 1921 (p. 72). (14) Exports and value of soybean oil from all of China to five countries (England, Netherlands, Belgium, Japan, USA) in 1919, 1920, and 1921 (p. 72). (15) Exports of soybean meal from four Manchurian ports (Dairen, Antung, Newchwang, Suifenho [Suifenhe]) in 1919, 1920, and 1921 (p. 73). (16) Exports and value of soybean meal from all of China to three countries (Japan, Russia, USA) in 1919, 1920, and 1921 (p. 73). (17) Names of the five major railway lines in Manchuria (South Manchuria Railway, Chinese Eastern Railway, Peking Mukden Line, Kirin-Changchun Line, Saupingkai-Taonan Line) (p. 74). (18) Amounts (in tons) of soybeans, soybean cake, and soy oil (*Sojaöl*) shipped over the South Manchuria Railway, and the Chinese Eastern Railway in one year (p. 74). (19) Railway transport and production amounts of the mills (in tons) in Dairen and Newchwang of soybeans, soybean cake, and soy oil (*Sojaöl*) during the year 1921 (p. 74). Address: Agricultural Expert in Poerbasari te Pengalengan, Java.

55. Nishiwaki, Yasukichi. 1924. Soja-Bereitung mit *Oidium lupuli*, *Aspergillus oryzae*, und *Rhizopus japonicus* [Preparation of soy sauce with cultures of *Oidium lupuli*, *Aspergillus oryzae*, and *Rhizopus japonicus*]. *Zentralblatt fuer Bakteriologie. Series 2.* 63(1/8):28-30. Nov. 27. [2 ref. Ger]

• ***Summary:*** The author reports experiments concerning the production of soy sauce using three different types of mold: Oidium [one of the early names for Neurospora before the sexual stage was described in 1927], Aspergillus (the mold generally used in soy sauce production in Japan), and Rhizopus (the mold widely used to make tempeh). Surprisingly, the soy sauce fermented with Oidium was considered to be the best quality. It can also be used to make good quality miso. The quality of soy sauce made with Rhizopus molds was considered to be poor, and the yield of soy sauce was low. Onchom is not mentioned. Address: Professor, Technischen Hochschule zu Osaka, Japan.

56. Nishiwaki, Yasukichi. 1924. Biologische Untersuchungen ueber den Koji-Pilz des Okazaki-Hatchomiso-Koji und der Kaboch-Bana des Tome-Koji [Biological investigations on the koji mold of Okazaki Hatcho miso koji and the "orange flowers" of "tome koji"]. *Zentralblatt fuer Bakteriologie. Series 2.* 63(1/8):25-28. Nov. 27. [2 ref. Ger]

• ***Summary:*** "On Tome-Koji, a type of koji produced during the warmer times of the year, one can often observe that the surface is covered with a red- to reddish-yellow mycelium of mold. Because of its yellowish-red [orange] coloring, which is reminiscent of the Japanese cucurbit [pumpkin] named Kabocha, this koji is usually called *Kabochabana* ("Kabocha flower"). Japanese koji manufacturers ascribe no significance to the appearance of this mold and consider it harmless since the quality of the Tome or Miso made from this koji is not found objectionable. In the production of koji for Okazaki Hatcho Miso, a large quantities of this yellowish-red mold appear and, in fact, the manufacturers consider this type of

koji as the best, since the Okazaki Hatcho miso made from it is regarded as the best.

"In 1911, through the friendliness of manufacturers Aoki, Hayakawa, Hattori, and Ito, I obtained samples of *Kabochabana,* which I investigated. I became convinced that the mold in question was a type of fungi imperfecti, the *Oidium lupuli* Matthews & Lott = *Monilia sitophila* Mont. (Saccardo)." Note: The genera Oidium and Monilia were later renamed Neurospora.

The author concludes that this mold is especially found on Hatcho miso koji. He notes that in 1901 Went reported that in Java, this mold plays an important role, because of its enzymes, in the production of ontjom, a good-tasting cake made by fermentation of peanuts. Address: Prof., Technischen Hochschule, Osaka, Japan.

57. Jansen, B.C.P.; Donath, W.F. 1924. Metabolic experiments on rats and digestibility of the proteins of some foodstuffs. *Mededeelingen van den Burgerlijken Geneeskundigen Dienst in Nederlandsch-Indie* p. 25-45. [6 ref. Eng]
• ***Summary:*** Concludes from rat feeding experiments that "the digestibility of the proteins of *tempe kedele* [soy tempeh] is equal to that of *katjang kedele* (soy-beans)." Address: 1. Dr.; 2. Dr. Both: Medical Lab., Weltevreden.

58. Jansen, B.C.P.; Donath, W.F. 1924. The A-vitamin-content of different Indian foodstuffs, and the value of the proteins of these latter, as a supplement to the proteins of rice. *Mededeelingen van den Burgerlijken Geneeskundigen Dienst in Nederlandsch-Indie* p. 46-98. See p. 78-80. Summarized in Experiment Station Record 52:64-65. [7 soy ref. Eng]
• ***Summary:*** In section 7, titled "Meat," a graph (p. 64) shows the growth curves of young rats fed on a diet containing 90 parts rice (not unpolished) and 10 parts dried *tempe kedele* [soybean tempe].

Section 17, titled "Soy-beans" (p. 79-80) states that in Malay, the soy-bean is called *katjang kedele.* However it is usually eaten as *tempe kedele* [soybean tempe] (see below), "which is a very important ingredient in the native dietary. We made experiments as well with *katjang kedele* itself as with *tempe kedele.* Of the soy-beans there exist differently coloured varieties; we experimented with the yellow variety, of which also the *tempe kedele* is made." Soybeans were found to contain a small amount of vitamin A.

Section 18 titled *"tempe kedele"* (p. 80-81) begins: "Usually the soy-beans are not eaten as such, but from the boiled beans a product is prepared by fermentation: the *tempe kedele."* Various experiments showed that "the proteins of *tempe kedele* appear indeed to be as efficient a compliment to the rice-proteins as those of soy-beans. Also with regard to the A-vitamin-content we could not ascertain any difference between soy-beans and *tempe kedele."* Rice "with *tempe* has to be regarded also as the most important ingredient of the basis-food of a large part of the native population..."

The vitamin A content of the following foods is also discussed: Peanut-presscake (*Arachis hypogaea,* L.) (p. 61-62). *Ontjom or tempe bungkil* (p. 62-63; made of peanut-presscake); in the Sunda-lands (and in Batavia as well) it is called *ontjom.* "Of this *ontjom* there exist two varieties: a white one and a yellowish red one. Whereas often (not always) a yellow or yellowish-red colour happens to coincide with a high content of vitamin A, we thought it interesting to examine the red *ontjom* as to its A-vitamin content." Conclusion: *Ontjom* "is not very rich in A-vitamin; yet the content seems to be higher than that of the presscake." Address: 1. Head of the Chemical Dep., Medical Lab., Batavia (Jakarta), Indonesia; 2. Chemist at the Lab.

59. Ochse, J.J. 1925. Tropische groenten. Geteelde en in 't wild groeiende gewassen, die door de Indische bevolking worden gegeten [Tropical vegetables: Cultivated and wild plants eaten by the Indonesian people]. Weltevreden: Uitgave en Druk Volkslectuur. 215 p. July. See p. 92-95. Illust. Also listed as series #686. [Dut]
• ***Summary:*** This is the original Dutch-language edition, which was revised in 1931 as *Indische Groenten* and translated into English in 1931 as *Vegetables of the Dutch East Indies.* Ochse lived 1891-1970. After describing the plant, the author notes that there are two varieties of soybeans: one is yellowish brown and the other is black. The first is used to make tempeh and tofu; the second to make kétjap. Very popular soy products in the Indonesian market are tofu and firm tofu (*tahoe* and *takoäh*). Also discusses *tao tjo* (Indonesian-style miso; has a consistency like paste or porridge), tao dji (soy nuggets), témpé, and ontjom. The process for making each of these soyfoods is described.

Illustrations show: (1) A young soybean plant with leaves and pods (half size).

(2) A bamboo scaffolding or curing frame, in tripod form with 3 horizontal supports, used for drying bunches of soybeans.

Note: This is the earliest document seen (April 2001) that contains the word *takoäh.* Address: Buitenzorg [Bogor], Java.

60. Shear, C.L.; Dodge, B.O. 1927. Life histories and heterothalism of the red bread-mold fungi of the *Monilia sitophila* group. *J. of Agricultural Research* 34(11):1019-1042. June 1. [53* ref]
• ***Summary:*** This article contains the original description of the genus Monilia–the "conidial masses varying from pale salmon to orange color." Plate 2, B, shows the conidial stage of *Monilia sitophila.* "The red bread mold has long been known as a bakery pest and has caused much loss to bakers as well as to housewives." Address: 1. Senior Pathologist in

Charge, Mycology and Disease Survey; 2. Pathologist, Fruit Diseases, Bureau of Plant Industry, USDA.

61. Heyne, K. 1927. De nuttige planten van Nederlandsch Indië [The useful plants of the Netherlands Indies. 3 vols.]. The Hague, Netherlands: W. van Hoeve. 1662 + CCXLI p. See vol. 2, p. 789-90, 814-20. Index. 28 cm. See also 3rd ed. 1950. [14 ref. Dut]
• ***Summary:*** Contents: Ontjom. Dagé. The soybean (Sojaboon, Kedele). Cultivation. Seeds. Utilization: Témpé [tempeh], tao hoe [tofu], tao koan [pressed tofu; doufu-gan], tao tjo [Indonesian-style miso], soja (kètjap).

Note: One other edition of this work (same author and title) was published in 1927: 2nd improved and expanded edition, 3 vols, published in the Dutch East Indies (Buitenzorg) by Departement van Landbouw, Nijverheid en Handel. Printed by Ruygrok & Co. (Batavia) (1662 + ccxli p.). OCLC Accession No.: 756-9335 and 588-3707. Owned by 30 + 24 = 54 libraries worldwide. Address: Hoofd van het Museum voor Economische Botanie te Buitenzorg (Bogor).

62. Nakazawa, Ryoji. 1928. Nanyô-san ontjom, tempeh o tsukuru shijôkin ni tsuite [On the filamentous fungi used to make ontjom and tempeh in the South Pacific (Java and Sumatra)]. *Nihon Nogei Kagakkai Shi* (*J. of the Agricultural Chemical Society of Japan*) 4(4):252-63. April. See also Zentralblatt fuer Bakteriologie. II. 80:114 (1930) and Biological Abstracts 4:25213 (1930). [13 ref. Jap]
• ***Summary:*** Discusses *Mucor, Aspergillus, Rhizopus,* and *Penicillium* molds.

Onchom is made from peanuts and tempeh from soybeans. The authors note that Prinsen Geerligs (1896) had reported that these foods were fermented using *Rhizopus oryzae,* whereas Went (1901) had said they were fermented using *Monilia sitophila.*

In 1912 Nakazawa had asked a person from Southeast Asia to bring him samples of tempeh and ontjom (made from peanut presscake). He analyzed their microorganisms and repeatedly found *Penicillium,* a grayish-brown mold, to be the predominant genus.

In 1924 Yoshito Takeda, Nakazawa's co-worker, obtained more samples of these foods from Southeast Asia, and again found *Penicillium* to be predominant. *Monilia* (which in 1901 Went had said was the predominant microorganism) was not found; Takeda assumed it had died during transport.

In April and May of 1926 (Taisho 15) Nakazawa took a research trip to Java and Sumatra and carefully collected (in sterile containers) 59 samples of soy tempeh and onchom from various markets and small manufacturers. Tempeh was collected from Medan, Semarang, and Soerabaya, while ontjom was collected from only Buitenzorg and Medan. Nakazawa and Takeda analyzed the microorganisms in these fermented foods and in this document reported that they found the onchom microorganisms to be almost exclusively *Penicillium* and the tempeh microorganisms to be mostly *Penicillium,* but with substantial amounts of *Mucor, Rhizopus* (all light grayish-brown) and *Aspergillus* (dark green) as well. No *Monilia* was found and no species names were reported. Dr. Grounewege at the Buitenzorg Agricultural Research Laboratory confirmed that these were the predominant species.

Note 1. This is the 2nd earliest document seen (Sept. 2011) worldwide which uses the spelling "tempeh" to refer to this fermented Indonesian soybean food. This word, written in roman letters, appears throughout the publication and by the 1960s had become the standard spelling in English and most other European languages.

Note 2. This is the earliest Japanese-language document seen (Sept. 2011) (one of two documents) that mentions tempeh.

Note 3. Today most tempeh is made with *Rhizopus* species and most ontjom with *Monilia* species.

Note 4. Dr. Nakazawa never made tempeh, probably for lack of a suitable inoculum. Address: Taiwan Sotokufu Chuo Kenkyujo, Kogyo-bu Hokoku.

63. Nakazawa, Ryoji; Takeda, Yoshito. 1928. Nanyô-san ontjom, tempeh o tsukuru shijôkin ni tsuite [On the filamentous fungi used to make onchom and tempeh in the South Pacific (Java and Sumatra)]. *Taiwan Sotokufu Chuo Kenkyujo, Kogyobu Hokoku* (*Report of the Industrial Section, Central Research Institute, Taiwan Governor-General's Office*) 4(4):252-63. April. See also Zentralblatt fuer Bakteriologie. II. 80:114 (1930) and Biological Abstracts 4:25213 (1930). [13 ref. Jap]
Address: Taiwan Sôtokufu Chûô Kenkyûjo, Kôgyô-bu.

64. Nakazawa, R.; Takeda, Y. 1928. Ueber die Schimmelpilze welche sich bei der Herstellung des Leckerbissens "Ontjom" und "Tempeh" (Java und Sumatra) mitwirken [Molds that assist the production and fermentation of the delicacies "ontjom" and "tempeh" in Java and Sumatra]. *Bulletin of the Agricultural Chemical Society of Japan* 4(4/6):86. April/June. [2 ref. Ger]
• ***Summary:*** "Ontjom" and "Tempeh" are the names of foodstuffs which the indigenous people of the aforementioned islands make. According to a communication from Prinsen Geerligs, *Rhizopus Oryzae* is used for making Ontjom from peanuts and for making Tempeh from soybeans. Went observes, however, that both these foods are made from *Monilia sitophila.* Address: [Japan].

65. Dorsett, P.H.; Morse, W.J. 1928. Agricultural explorations in Japan, Chosen (Korea), Northeastern China, Taiwan (Formosa), Singapore, Java, Sumatra and Ceylon (Log–unpublished). Washington, DC: USDA Bureau of Plant Industry. Foreign Plant Introduction and Forage Crop

Investigations. 8,818 p. Unpublished typescript log. Illust. Partially indexed. 28 cm.

• ***Summary:*** Also called the "Log of the Dorsett Morse Expedition to East Asia" and (by the National Archives) "Dorsett-Morse Expedition to the Far East, 1929-31," this is one of the most important documents ever produced on soybeans and soyfoods. Covering the period from late 1928 until 1932, it consists of 17 volumes of typewritten unpublished manuscript plus handwritten notebooks.

The two explorers, who were gone on the expedition for a little more than two years, initially planned to be gone for about three years. They took 3,369 photos of which 95% appear in the report; the original prints are pasted on the pages, each with a number and a caption. The first negative number is #43196 (p. 238) and the last is #46514. The last numbered page of the report is #8818, but most of the index pages are not numbered and some special reports at the end of the main report each start with page 1.

The first quarter of the pages (to about page 2,500) are indexed, using 4 separate indexes. The only original and 2 microfilm copies were at the American Soybean Assoc. (St. Louis, Missouri), however as of Aug. 2011 they are on permanent loan to Rare and Special Collections at the National Agricultural Library (Beltsville, Maryland)–which also has 7 photograph albums that accompany the 7 log books. A list of the missing pages has been compiled. One photocopy of a microfilm copy is at the Soyinfo Center (Lafayette, California). One microfilm copy is at the National Archives in Washington, DC, in Records of the Bureau of Plant Industry, Soils, and Agricultural Engineering, Record Group 54. See: "National Archives Microfilm Publication No. M840. Expedition Reports of the Office of Foreign Seed and Plant Introduction of the Department of Agriculture, 1900–1938." Rolls 16-20, volumes 56-73. These microfilm rolls may also be available for viewing or duplication at one of the various regional branches of the National Archives (e.g. San Bruno, California).

A brief itinerary of the trip is as follows: 1929 Feb. 18–The party of 5 people leaves Washington, DC, for Los Angeles by train. It consists of Morse, his wife Edna, their daughter Margaret (age 7), Dorsett, and his daughter-in-law Ruth (Bobbie; the widow of Dorsett's son, she served as Dorsett's secretary and general helper).

March 1–They sail from San Francisco to Yokohama on the S.S. *President Grant* of the Dollar Steamship Lines. March 29–Arrive in Yokohama, proceed directly to Tokyo, establish headquarters with rooms at the Imperial Hotel, and hire an interpreter, Mr. Suyetake, who works with them for the next 2 years. May 21–The Morses go to Hokkaido, the Dorsetts to Kyoto, by sleeper train. Morse returns to Tokyo.

Aug. 17–The entire party arrives in Hokkaido and establishes headquarters in Sapporo to study soybeans. Oct. 8–Leave Hokkaido for the Northeast Provinces, then arrive in Tokyo on Oct. 15. Oct. 22–Arrive in Keijo (Seoul), Korea, then take many side trips. Note: 1929 Oct. 29–Great Depression begins in USA with stock market crash. Dec. 8–Return to Japan via Kyushu, then to Tokyo to study soyfoods. They buy and photograph many!

1930 April 1–Travel by steamer to Dairen, Manchuria, where they set up headquarters. Dorsett very sick from April 11 to June 11; taken to a Japanese hospital in Dairen, he almost dies of double pneumonia. Morse does the work of both men and does not inform USDA of Dorsett's critical condition. June 24–Morse takes a quick trip to northern Korea, via Mukden and Antung (Tan-Tung), to look for Zoysia grass.

July 1–Returns to Manchuria via Mukden. July 21. Dorsetts leave for Peking by train; Morses and Mr. Suyetake stay in Dairen. Aug. 21–Morse party travels to northern Korea, staying in Heijo (Pyongyang / P'yongyang); takes a 4-day side trip to Seoul. Sept. 28–Morse returns to Dairen, Manchuria.

Oct. 19–Morse party leaves Dairen, arriving in Peking the next day. Nov. 9–Morse party returns to Dairen. Nov. 30–Morse arrives in Harbin, north Manchuria, then passing through Mukden, returns to Dairen. Dec. 18–Morses leave Dairen for Japan, passing through Kobe on Dec. 21 and arrive in Tokyo on Dec. 23.

1931 Jan. 12–Travel to Kyoto, Himeiji, and Tatsuno Shoyu. Jan. 16–Visit Okazaki and Hatcho miso. Jan. 17–Return to Tokyo. Feb. 17–Morse party leaves Tokyo by boat for the USA, arriving in San Francisco on March 4. March 15–Dorsett party leaves Peking for Tientsin, Shanghai, and Hankow. March 27. Dorsetts sail from Shanghai to San Francisco.

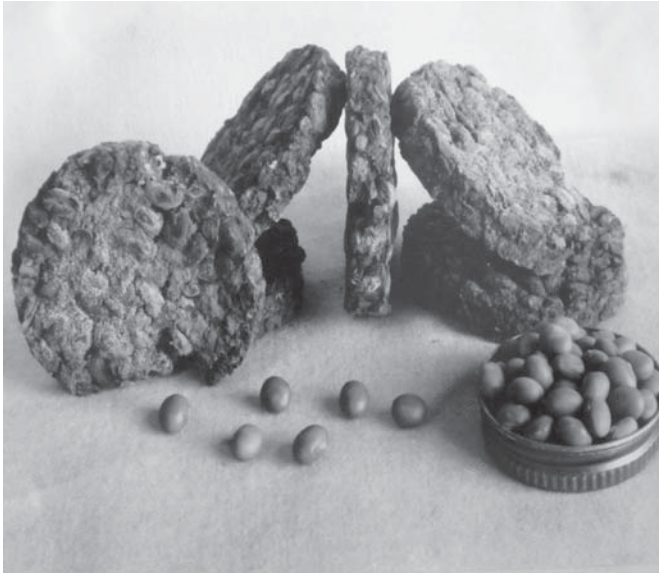
Note 1. The title of this report is puzzling since the expedition never went to Taiwan, Singapore, Java, Sumatra, or Ceylon. It was proposed several times that they visit these places, but the plans did not work out.

Note 2. This is the earliest log (unpublished) seen (Oct. 2001) that mentions soy. Address: Agricultural Explorers, USDA, Washington, DC.

66. Dorsett, P.H.; Morse, W.J. 1930. A close relative of tempeh in China (Document part). In: P.H. Dorsett and W.J. Morse. 1928-1932. Agricultural Explorations in Japan, Chosen (Korea), Northeastern China, Taiwan (Formosa), Singapore, Java, Sumatra and Ceylon. Washington, DC: USDA Bureau of Plant Industry, Foreign Plant Introduction and Forage Crop Investigations. 8,818 p. See p. 6264, 6273. Unpublished log.

• ***Summary:*** Page 6264. On 24 Oct. 1930, the authors photographed a tempeh-like product on Hsi Tan Pailou Street in northwestern Peiping [today's Beijing], China.

Page 6273. A good photo with the following description: "Soybean Cake. Peiping, China. A life-sized picture. Chinese name *'Tou chiah ping'* [soybean fried cake]. Small cakes made from boiled soybeans. The beans are pressed into small



round cakes which are allowed to develop a mold–taking about 7 days. These cakes are broken into small pieces and fried in sesame oil." There are no known references to this Chinese food product in any language.

Note: In 1983 William Shurtleff, while traveling in China, asked at least ten Chinese connected with soyfoods if they had ever heard of or seen *tou chiah ping* and showed them the characters with which the name was written. None had ever heard of or seen it. Address: Agricultural Explorers, USDA, Washington, DC.

67. Nakazawa, R; Takeda, Y. 1930. Ueber die Schimmelpilze welche bei der Herstellung des Leckerbissens "Ontjom" und "Tempeh" (Java und Sumatra) mitwirken [Molds that assist the production and fermentation of the delicacies "ontjom" and "tempeh"] (Abstract). *Biological Abstracts* 4(10):2379 (Abst. #25213). Oct. [1 ref. Ger]
• ***Summary:*** Tempeh and ontjom are the names of foods produced by the natives of Java and Sumatra. Tempeh is made from soybean and ontjom from groundnuts (peanuts). Geerligs reported that *Rhizopus oryzae* is the mold used to produce both these foods, but Went reported it was *Monilia sitophila.* However Nakazawa and Takeda identified *Penicillium brevicaule* as the main mold involved, together with small quantities of *Rhizopus, Aspergillus,* and *Mucor.*

68. Yamazaki, Momiji. 1931. Shina-san hakkô kinrui no hakkô kagaku-teki seishitsu no kogai [Studies on fermentation of the fermentable fungi of China]. *Jozogaku Zasshi* (*J. of Brewing, Osaka*) 9:12-25, 84-103, 174-93, 258-70. [Jap]
• ***Summary:*** Mentions the mold genera *Rhizopus, Mucor, Aspergillus,* and *Monilia.* Address: Nôgaku Hakase, Japan.

69. Ochse, J.J. 1931. Vegetables of the Dutch East Indies. Buitenzorg (Bogor), Java: Archipel Drukkerij. xxxvi + 1005 p. See p. 366, 389-93, 398, 407-08, 732, 943-71. An entirely revised and greatly enlarged second edition of his Tropische Groenten (1925). Translated by Mr. C.A. Backer. Illust. 25 cm. Index. [10 ref. Eng]
• ***Summary:*** This translation (by Mr. C.A. Backer, the reputed ex-Botanist for the flora of Java) of Ochse's classic "may be taken as an entirely revised and much enlarged second edition of *'Tropische Groenten'* (Tropical Vegetables), which booklet was published in July 1925." The author, a Dutchman who confined his research to Java and Madoera, described the tempeh-making process in detail, saying that the mold used was *Aspergillus oryzae* and that it was obtained from a former batch of tempeh.

Page 366 discusses ontjom (témpé boongkil in Javanese), tetèmpè, and dagè, all made from peanuts. Page 372 notes that the pigeon pea (*Cajanus cajan*) can be used to make témpé bosok.

Pages 389-93 discuss the soya bean, which has various names in local languages. Malay: Katjang djepoon or Kedele. Javanese: Dekeman or Dekenan, Dele, Demekan, Gadele, Kedele, Kedoongsool, or Dangsool. Sundanese: Kadele, Katjang booloo, Katjang djepoon, Katjang kadele. Madura: Kadhele, Kadhellee, or Kedeleh. A description of the plant is given.

Illustrations show: (1) A young soybean plant with leaves and pods (half size). (2) A bamboo scaffolding or curing frame, in tripod form with 3 horizontal supports, used for drying bunches of soybeans.

Soybeans come in two main forms: Light yellowish-brown seeds, and black seeds. The latter are used to make *ketjap* (Indonesian soy sauce). "Of the ripe seeds *pélas* (Jav.) is made, by mixing them with grated young coco-nut [coconut], salt, and other ingredients. The mixture is wrapped in a banana leaf and steamed.

"The seeds can also be roasted and afterwards pounded. The *boobook* [*bubuk,* roasted soy flour], *boobook* or *boobookan* (Jav.) is eaten in the shape of powder, usually with the addition of lombok and other ingredients.

"The seeds are mixed with a porridge of rice-meal and water and afterwards fried in coco-nut oil. This dish is called *rempeyek* (Jav.). It consists of brown slices in which the black *kedele*-seeds are scattered. *Rempeyek* is eaten either as a delicacy or with the rice table. "Témpé [tempeh, p. 391] is a much used product. In East- and Central-Java it takes the same place as the ontjom in West-Java. It is prepared in much the same way as *ontjom,* and the reaction is brought about by the same fungus, *Rhizopus Oryzae,* Went et Prinsen Geerligs, which is transmitted by *ragi.* The seeds are cooked and, after they have cooled, put in a basket. By stirring, rubbing and even by treading, coupled with repeated washing with fresh water, one tries to remove the testa from the seeds. When this has been done, the seeds are put on hurdles (*sasak*) covered with banana- or waroo-leaves. Now the so-called *beeang,* i.e. rests of the fungus used for a former

batch, is sprinkled over them and the mass is turned over on other sasaks. The *témpé*-cakes treated in this way are kept indoors and after two or three days the fungus has spread sufficiently for giving a light grey colour to the cakes, which then are soft and dry and ready for use. They are sold on the markets either cut into small pieces or divided at pleasure, according to the amount of money the buyer wishes to spend. *Témpé* is used, fried, in the *sayor* or prepared with all sorts of ingredients.

"Other products for the native market are *tahoo* [tofu] and *takoäh* [pressed tofu; Chinese: doufugan]. Both are eaten either boiled or cut into small slices, fried and added to *gado-gado* or, lombok rawit being added, as a side dish.

"For the preparation of *tahoo* or *takoäh* the seeds are soaked, ground fine, boiled and pressed through a cloth. The juice which is pressed out is mixed with salt, vinegar, coconut milk or with unburned gypsum (so-called *batoo tao*), imported from China. By this treatment a white gelatinous mass is formed, which, after cooling, can be cut into pieces."

"Wet *tahoo* does not keep well for a long time. For this reason it is soon made into *takoäh.* For this purpose the *tahoo* is cut into pieces, folded in pieces of cloth, pressed in order to remove part of the water and next boiled in a decoction of koonir [turmeric]. The product obtained in this way has an intense yellow color and is a much relished delicacy, especially with lombok rawit [fiery dwarf chilies]."

Taotjo [Indonesian-style miso] is a porridge made of soybeans and rice meal. The soybeans are soaked, dehulled (the testa removed), cooked, and left to cool. Then they are mixed with the meal of rice (regular or glutinous), which has been previously roasted. "The porridge obtained in this way is poured on winnows (*tampah* [winnowing trays]) covered with waroo-leaves, sprinkled with *ragi* or *beeang,* probably of *Aspergillus Wentii,* Wehmer, and covered with leaves. The filled tampahs are piled on each other and left alone till the cakes are very mouldy. Then they are dried in the sun, soaked in brine and mixed with sirup of *arèn* [sugar palm] and with *tapè* [*tapai;* a sweet fermented cake] of rice or glutinous rice. Next the porridge is placed out of doors. After the seeds have become soft by this treatment, which takes three or four weeks, the *taotjo* is ready for use.

"Taotjo must be boiled, otherwise the smell is to strong. It is eaten with cooked or raw vegetables. It is used for dressing some dishes of meat or fish, whilst it is also a material of which diverse side dishes are made."

Note 1. This is the earliest English-language document seen (March 2009) that uses the word "taotjo" to refer to Indonesian-style miso.

"According to De Bie (1901), *tao djee* [*tao dji; doushi, douchi*] is *taotjo* alternating with layers of cooked whole *kadelè*-seeds. This stuff is put into a pot or basin with some salt and boiled arèn-sugar. The mass is left to itself during a few days till the *taotjo* has become pervaded by the salt and the sugar and has assumed a uniformly brown colour. Note 2. *Tao djee* [*doushi*] is soy nuggets, which are not the same as *Taotjo* [Indonesian-style miso]. De Bie (1901) seems to have made a mistake.

"Of the black *kadelè*-seeds *soya* [soy sauce] is made, exclusively by the Chinese and the natives. First the seeds are cooked in a strong solution of salt. After diverse manipulations the cooked seeds are mixed with arèn-sugar and so-called soya-condiments and the mixture is concentrated till the salt begins to crystallize. By diluting this product with more or less water one obtains the diverse qualities of *kètjap* or *soya* found in commerce."

The "Pemimpin Pengoesaha tanah" of 15 Jan. 1915 lists various ingredients that can be used with black soybeans in making ketjap. "Young seedlings, obtained, like *taogè* [*taugé,* soy / bean sprouts], by fermenting, are called *ketjambah kedele;* they are cooked and eaten as *petjel* (Jav.) with the rice (*ganteng,* Jav.)"

"Finally young leaves of *Kadele* can be eaten, raw or steamed, as *lalab.*

Page 398 describes *dagè* and *témpé bengook* made from these seeds of the velvet bean (*Mucuna pruriens*). Roasted tempeh are also discussed.

Pages 407-08 states that the seeds of the *Katjang oji* (rice bean) can be used for the preparation of tempeh.

Pages 414-15 state that, when they have no soybeans, the Chinese use mung beans (*Katjang eedjo*) to make tofu and takoah, but they are most widely used to make mung bean sprouts (*taogè*). Page 634 mentions témpé bosok (overripe tempeh) made with the foul-smelling bruised leaves of the plant *Paederia foetida.* Page 732 also mentions overripe tempeh.

Note 2. This is the earliest English-language document seen (Dec. 1998) which contains detailed information about tempeh, or which refers to tempeh as "témpé."

Note 3. This is the earliest English-language document seen (Feb. 2004) that uses the word "tahoo" or the word "takoäh" to refer to tofu. Address: Buitenzorg (Bogor), Java, Indonesia.

70. Ochse, J.J. 1931. Indische Groenten [Vegetables of the Dutch East Indies]. Buitenzorg (Bogor), Java: Department Landbouw. 1005 p. See p. 388-92. Index. Illust. 27 cm. [10 ref. Dut]

• ***Summary:*** For details, see the English-language translation, also published in 1931.

Under soybean utilization, the following food products are discussed in detail on pages 390-92: Tempeh (*tèmpè*), tofu (*tahoe*) and firm tofu (*takoä*), Indonesian-style miso (*taotjo*), soy nuggets (*tao dji*), and Indonesian-style soy sauce (*kètjap*). "Témpé is a much used product. In East- and Central-Java it takes the same place as the ontjom in West-Java. It is prepared in much the same way as *ontjom,* the reaction is brought about by the same fungus, *Rhizopus Oryzae,* Went et Prinsen Geerligs, which is transmitted by

ragi."

On pages 943-970 is an alphabetical "List of Vernacular Names of Objects, Properties or Actions." For example: Kedele oongaran (p. 390, Jav.) is a soybean plantation on a sawah, immediately following the paddy [rice] harvest. Kedele apeetan (p. 390, Jav.) is the second harvest of the year or the second plantation in the same year of Kedele (soybeans; Glycine Soja). Address: Buitenzorg (Bogor), Java.

71. Blokhuis, D.F.; von Liebenstein, E.R. 1932. Over de beteekenis van de sojaboon als handelsproduct [On the commercial significance of the soybean as a commodity]. *Landbouw* (*Buitenzorg, Java*) 7(9):571-96. March. English-language summary, p. 743-74. Also in: Dutch East Indies Dept. of Agriculture..., ed. 1932. Kedelee. Buitenzorg, Java: Departement van Landbouw, Nijverheid en Handel. Afdeeling Landbouw. p. 5-30, 177-78. [1 ref. Dut; eng]

• ***Summary:*** "Annually Java requires considerable quantities of the soybean, about one half of which is imported... On Java the soybean is used principally for the preparation of soy sauce (*soja of ketjap*), tahoe, tempe, and taotjo (various dietary preparations). Our investigations have proven that the Java-grown soybean can be used for making ketjap, tahoe and tempe just as effectively as the imported soybean. In western Java the manufacturers of soy prefer the imported article, those in central and eastern Java prefer the home-grown bean. This preference, which must be attributed chiefly to habit and conservatism, is also partially to be ascribed to the fact that in western Java but little of this article is grown, whilst in central and eastern Java the production is much more considerable, which causes the former region to be more dependent upon the imported article than the latter districts. For the preparation of tahoe a certain preference is indeed shown for the imported bean, in view of the greater keeping properties of the article prepared therefrom; nevertheless, the soybean grown on Java is also widely used for that purpose. The same holds good for the preparation of tempe, where the imported article is preferred chiefly on account of its larger size. Generally speaking, the imported kinds of soybean are preferred for the preparation of tahoe and tempe because they satisfy to a greater extent the demands of the manufacturers, and also because they are readily obtainable. Taotjo, however, is practically exclusively prepared from the imported bean.

"The general conclusion is that the imported soybean can be replaced, if not entirely, at a rate to a very great extent by the soybean grown on Java, thus indicating that the furtherance of its cultivation in this country can only be of advantage...

"The principal import harbours are Semarang [Central Java], Sourabaia [Surabaya], Tandjong Priok, Tjilatjap, and Cheribon." Address: 1. fd. Hoofd van Afdeeling Handel te Buitenzorg; 2. Vakkundig Ambtenaar bij de Afdeeling Handel, Java.

72. Donath, W.F. 1932. De voedingswaarde der sojaboon en enkele daaruit bereide specifiek Indische voedingsmiddelen [The nutritive value of soybeans and some specifically East Indian foods prepared from them]. *Landbouw* (*Buitenzorg, Java*) 7(9):705-40. March. English-language summary, p. 759-61. Also in: Dutch East Indies Dept. of Agriculture..., ed. 1932. Kedelee. Buitenzorg, Java: Departement van Landbouw, Nijverheid en Handel. Afdeeling Landbouw. p. 139-74, 193-95. [48 ref. Dut; eng]

• ***Summary:*** Discusses the composition of the soybean. "In contrast with Manchuria, where it is a common article of diet, the soybean is rarely used as such in these parts; but by means of various operations, among which is the action of certain fungi, several products are prepared from it.

"These products, such as *tempe kedele, taotjo, tahoe, taokoan* and *ketjap* are important items in the native diet. Except for the last mentioned, the preparation of these products is such that the albumins are preserved practically intact, so that, especially in tempe, as we were able to point out, the biological albumin value is very high...

"Soymeal, which is prepared by removing the husks and then pounding what is left, has the drawback that it tastes somewhat bitter and, in consequence of the high percentage of fat, soon becomes rancid... Berczeller, however, seems to have succeeded in obtaining an improved soy meal...

"Finally, in discussing the importance for the native diet of these beans and the products prepared from them, the author arrives at the conclusion that it is especially the albumins that are important, the people being practically vegetarian and these foods being, in addition, rich in carbohydrates.

"Thus the author expresses his approval of the fact that of late years the *Department of Agriculture, Industry and Commerce* has advocated the growing of the soybean and the consumption of the products prepared therefrom."

Note 1. This is the earliest English-language document seen (the summary) (Sept. 2005) that contains the word "soymeal," which apparently refers to whole (full-fat) soybean flour.

Note 2. This is the earliest document seen (April 2001) that contains the word *taokoan.* Address: Hoofd van het Analyselaboratorium te Buitenzorg, Java.

73. van Veen, A.G. 1932. Over het B-2 vitamine gehalte van verschillende Indische voedingsmiddelen [On the vitamin B-2 content of various Indonesian foods]. *Geneeskundig Tijdschrift voor Nederlandsch Indie* 72(20):1377-99. [25 ref. Dut]

• ***Summary:*** The vitamin content of soybeans (sojaboonen, katjang kedelee) and soy tempeh (tempe kedelee) is given. Address: Chem. Afd., Centraal Geneeskundig Laboratorium, Batvia.

74. Mertens, W.K.; van Veen, A.G. 1933. De bongkrek-vergiftigingen in Banjoemas. I. [Bongkrek poisonings in Banyumas. I.]. *Geneeskundig Tijdschrift voor Nederlandsch Indie* 73(20):1223-54. Sept. 26. [17 ref. Dut]
Address: Geneeskundig Laboratorium, Batvia.

75. van Veen, A.G.; Mertens, W.K. 1933. De bongkrek vergiftigingen in Banjoemas. II. [Bongkrek poisonings in Banyumas. II.]. *Geneeskundig Tijdschrift voor Nederlandsch Indie* 73(21):1309-34. Oct. 10. [3 ref. Dut]
• ***Summary:*** Discusses isolation of the toxins in bongkrek. Address: Geneeskundig Laboratorium, Batvia-C.

76. van Veen, A.G.; Mertens, W.K. 1933. On the isolation of a toxic bacterial pigment (Provisional communication). *Proceedings of the Koninklijke Akademie van Wetenschappen te Amsterdam* (*Proceedings of the Academy of Science, Amsterdam*) 36(6):666-70. [2 ref. Eng]
• ***Summary:*** "In the province of Banjumas [Banyumas, or Dutch Banjoemas] (Central Java, Netherlands Indies), which has a population of ± 5,000,000 souls, there have since time immemorial occurred repeatedly wholesale poisonings, caused by the consumption of different products, made, sometimes by means of fungi, from coconuts. As a rule these products are harmless. but if they are poisonous the consuming of very little of the matter (5-20 g by estimate) is already sufficient to make the poisoning fatal... The most dangerous foodstuffs are, as we found: *Bongkrek,* a product prepared by means of fungi (Rhizopus species) from coconut-presscakes made by the population themselves, and *Semaji,* prepared from grated coconut, after the oil has been pressed out."

The authors isolated certain bacteria which produce the deadly poison; their colonies are generally yellowish, and the isolate consists of yellow needle-shaped crystals. Address: Central Medical Lab., Batavia, Netherlands Indies.

77. van Veen, A.G.; Mertens, W.K. 1934. Die Giftstoffe der sogenannten Bongkrek-Vergiftungen auf Java [The poison in the so-called bongkrek poisoning on Java]. *Recueil des Travaux Chimiques des Pays-Bas* 53(2):257-66. Feb. 15. (Chem. Abst. 28:2426). [32 ref. Ger]
Address: Batavia-Centrum, Chemische Afdeeling van het Geneeskundig Laboratorium.

78. van Veen, A.G.; Mertens, W.K. 1934. Das Toxoflavin, der gelbe Giftstoff der Bongkrek [Toxoflavin, the yellow poison in bongkrek]. *Recueil des Travaux Chimiques des Pays-Bas* 53(3):398-404. March 15. Series 4. (Chem. Abst. 28:4420). [9 ref. Ger]
• ***Summary:*** Of the two toxic principles of bongkrek, toxoflavin is the intensely yellow one. Gives a detailed discussion and composition of toxoflavin. Address: Batavia (Centrum), Geneeskundig Laboratorium.

79. Amar, Darwis; Grevenstuk, A. 1935. Bijdrage tot de kennis der bongkrekvergiftigingen [Contribution to the knowledge of bongkrek poisonings]. *Geneeskundig Tijdschrift voor Nederlandsch Indie* 75(2):104-16, 366-82. Jan. 22. [2 ref. Dut]
• ***Summary:*** Tempeh is not mentioned. Address: Pharmacologisch Laboratorium der Geneeskundige Hoogeschool te Batavia.

80. Otomo, Sajiro. 1935. Daizu kasu no kabi ni tsuite [The molds on soybean cake (Aspergillus, Penicillium, Monilia)]. *Nihon Nogei Kagakkai Shi* (*J. of the Agricultural Chemical Society of Japan*) 11(2):124-46. Feb. [11 ref. Jap]
Address: Tokyo Daigaku Nôgaku-bu, Nogei Kagaku Kyoshitsu, Tokyo, Japan (Agricultural Chemical Lab., Imperial Univ. of Tokyo).

81. Yamazaki, Momoji. 1935. Manshû koku-san kôryan-shu yô kôji-rui no kenkyû. I. Kôji-rui oyobi sono sho-gan-kinrui [Research on types of koji used in making Manchurian kaoliang wine. I. Types of koji and the microorganisms associated with each]. *Jozogaku Zasshi* (*J. of Brewing, Osaka*) 13(2):99-116. Feb.; 13(3):225-36. March; 13(4):321-35. April; 13(5):397-411. May; 13(6):566-81. June. Also in Nippon Nogei Kagaku Kaishi 11:83, 117, 176. 1935. [14 ref. Jap]
• ***Summary:*** Mentions the mold *Rhizopus.*

82. van Veen, A.G.; Mertens, W.K. 1935. Die Bongkreksaeure, ein blutzucker-senkender Stoff [Bongkrek acid, a substance that lowers blood sugar]. *Recueil des Travaux Chimiques des Pays-Bas* 54(4):373-80. April 15. (Chem. Abst. 29:4094-95). [3 ref. Ger]
• ***Summary:*** The second of the toxic principles found in spoiled bongkrek, bongkrekic acid caused rapid glycogenolysis in the liver when fed orally, and a fatal hyperglycemia. It has the probable formula $C_{11}H_{16}O_3$. Address: Batavia (Bogor), Geneeskundig Laboratorium, Chemische Abteilung.

83. Tai, F.L. 1935. Two new species of Neurospora. *Mycologia* 27(3):328-30. May/June.
• ***Summary:*** One of the two new species is *Neurospora intermedia.* The author notes that the conidia are saffron colored on dextrose agar culture media. Address: The New York Botanical Garden.

84. Takeda, Yoshito. 1935. Rhizopus-zoku shijô-kin no kenkyû. III. Nanyô-san Rhizopus-zoku mo bunri gakuteki kenkyû oyobi saidai tôka-ryoku kin no kensaku [A study on filamentous molds of the genus *Rhizopus:* III. Research on classification of *Rhizopus* species from tropical regions and

investigation of the microorganisms possessing maximum saccharification capability]. *Nihon Nogei Kagakkai Shi* (*J. of the Agricultural Chemical Society of Japan*) 11(10):845-920. Oct. [26 ref. Jap]

• ***Summary:*** Contains extensive information on tempeh and onchom. In April and May 1926, samples of tempeh were gathered at Semarang and Medan, shoyu koji and ketjap koji were gathered at Buitenzorg, and ragi was gathered at many places in Indonesia. The tempeh, shoyu koji, and ketjap koji were all found to have *Rhizopus* as the dominant microorganism. But a shoyu koji collected at Semarang was found to have *Aspergillus* as the main microorganism. Address: Taiwan Sôtoku-fu Chûô Kenkyû-jo Hakkô Kôgyô-ka (Central Research Inst., Taiwan Governor General's Office).

85. van Veen, A.G.; Mertens, W.K. 1935. Over het *Bacterium cocovenenans* en zijn verspreiding [On the *Bacterium cocovenenans* and its propagation]. Publ. Geneeskundige Laboratorium Dienst Volksgezondheid Nederlandsch Indie. [Dut]*

86. Burkill, I.H. 1935. A dictionary of the economic products of the Malay Peninsula. 2 vols. Published for the Malay Government by Crown Agents, London. 2,400 p. See p. 1080-86.

• ***Summary:*** These two densely-written volumes might be described as updates to the works of Sir George Watt. In the Malay peninsula, the soy bean is generally known as *Kachang bulu rimau* or *Kachang jepun* [the Japan bean]. In Java it is called *Kachang kedele, Dele, Gadele, Dekeman,* or *Dekenan;* in Sundanese, *Kachang bulu, Kachang jepun,* or *Kedele;* in Sumatra, *Kachang rimau* or *Kachang ramang;* and in Siam, *Tua luang* or *Tua praluang* [accents are included by Burkill].

"The word 'soy' came from a Japanese name for this plant, through the Dutch, who made it [the word 'soy'] known to Europeans. The first account was a result of the residence of their embassy surgeon, Kaempfer, in Japan, in 1691 and 1692; the second of the long service of their merchant, his contemporary, Rumpf, in Amboina."

The soy bean "is frequently cultivated in Siam, and seems to be a familiar plant in Kelantan [a state of Malaysia bounded on the north by Thailand]. Repeated experiments have been made with it elsewhere in Malaya; the Chinese, indeed, continually make them, usually without success, their failure being conspicuous when any available seed is used, instead of seed of races known to stand more or less tropical conditions. In 1918 advantage was taken of experiments in the Philippine Islands, to try, in Singapore, races which succeeded there and grew well. Races from the warmer parts of the United States were on trial in Selangor [Malaysia] in 1922. In 1924 a Chinese race was successfully grown by settlers in villages in the southern parts of Pahang [a state of Malaysia, bounded on the north by Kelantan and Trengganu].

"The soy bean has long been cultivated in Java, and in recent times this cultivation has become almost universal except at the western end of the island, where the climate is most uniformly humid. Probably it came to Java from India, for the name by which it is most known is Tamil and the seed is flattened as are North Indian races, while the Manchurian races have round seeds."

Note: Roxburgh (1832), in discussing the earliest known date for cultivation of soybeans in India states: "Reared in the Honourable Company's Botanic garden [across the Hooghly / Hugli River from Calcutta] from seeds received from the Moluccas [in today's Indonesia] in 1798.

"In Java a soy crop immediately follows rice, and this was the rotation apparently which Spring found the Chinese to use in Pahang."

The seed of the soy bean is rich source of nutrients. It "replaces meat very largely among the Chinese; and as rations for Japanese troops has played a large part." Because the ripe seed contains little or no starch, it is widely used in diabetic diets. "A kind of artificial milk can be made from the seed, and is in common use in Japan and China... This milk has only three-quarters of the full food-value of cow's milk." Soy-bean coffee, made from roasted soy beans, "is sold regularly in Japan, and into the coffee can be put soy-bean milk. The Chinese germinate the beans and eat the seedlings.

Legumin, or vegetable casein is best made commercially from defatted soy beans. The casein is precipitated from the milky fluid [soymilk] by calcium sulphate. "The liquor is strained through muslin, and the precipitate treated with soda lye, which dissolves the casein; filtering gets rid of the impurities and acetic acid precipitates the casein from the filtrate in a more or less pure state. This casein is fit for use in all the industrial processes for which casein from cow's milk is used."

Soy beans can also be fermented to make témpé or "flavourings used in small quantities to make uninteresting dishes appetizing... Témpé is a food product made in Java from soy beans. It occupies a very important place in the diets of those who live in central and east Java." Detailed descriptions are given of two methods of preparation. (1) Initially, the seeds are parboiled then left soaking in water for 2-3 days. The "mush" [sic, cooked beans] is spread upon frames in flat cakes and inoculated with the fungus *Aspergillus oryzae* by the addition of some of the previous preparation. The cakes are wrapped in banana leaves; (2) This method requires greater care and time. "Meanwhile, a preparation of the fungus has been made in a somewhat elaborate manner, as follows: a portion of an older preparation is wrapped in a rather young teak leaf freely punctured with holes; this preparation is allowed to dry for two days, during which the fungus spreads to the teak leaf. Next, the soy-kernel mush [sic, the cooked soybeans] being ready, the teak leaf is emptied of its contents and sprinkled

over the mush in order to convey the fungus. The mush is now put up in packets in banana leaves, heaped together, and covered up for twenty-four hours, after which it is exposed again to the air and cooled; the packets are then ready for sale." Note: This is the second English-language work to contain information about tempeh.

"The Chinese, throughout their own country and those domiciled in Malaysia, make a yet greater variety of preparations. Chief among these is teou-fu [tofu, usually precipitated with imported calcium sulphate]. "The 'teo-fu' does not keep well in a moist state, but can be treated for preservation. First, the cakes are colored yellow by a solution of turmeric or Gardenia flowers, then they are wrapped in cotton cloth and submitted to pressure. Thus made drier, they keep better. The use of this preparation is spreading."

The Chinese also make tao-cho and soy kechap (each fermented with an *Aspergillus* mould). K. Heyne describes how kechap is made in Java using black soy beans, hibiscus leaves, and *Aspergillus oryzae* mold. Finally the sauce is boiled with Arenga sugar, star anise, and other flavourings until the solution is so thick that the salt begins to crystallize.

Large amounts of soy-bean oil ("kachang oil" [perhaps soy sauce]) are imported to Malaya. "In the East [East Asia] it is used chiefly as food, but has other uses such as lubricating, varnish-making, making printer's inks, waterproof goods (Chinese umbrellas and lamps) and also for illumination. A process was patented 20 years ago for making artificial rubber, starting with soy oil. Note: Burkill was a British authority on the flora of southern and southeastern Asia.

"Criminal use: The hairs on the pods seem to be capable of causing a certain amount of irritation within the digestive tract. Gimlette (Malay Poisons, ed. of 1929 p. 169) records a case of administration of them with food in a criminal attempt to poison. He calls them a substitute for bamboo hairs in such circumstances.

"Joss-sticks: Ash of the stem, mixed with resin of *Canarium,* is said to make joss-sticks in Indo-China (Crevost and Lemarié, Cat. Prod. Indochine, 1917 p. 106)."

87. van Veen, A.G. 1935. Het B-1 gehalte van voedingsmiddelen [The vitamin B-1 content of foods]. *Geneeskundig Tijdschrift voor Nederlandsch Indie* 75(25):2050-64. [25 ref. Dut; eng]
• ***Summary:*** The vitamin B-1 (anti beri-beri) content in International Units of soybeans (*sojaboonen* or *katjang kedelee;* high), soy tempeh (*tempe kedelee* "prepared by means of fungi from soy-beans;" moderate), and tofu (*tahoe;* low) is given. Address: Geneeskundig Laboratorium, Batavia (Jakarta, Indonesia).

88. van Veen, A.G.; Mertens, W.K. 1935. De invloed van het bongkrekzuur op de koolhydraatstofwisseling [The influence of bongkrek acid on carbohydrate metabolism]. *Geneeskundig Tijdschrift voor Nederlandsch Indie* 75(13):1059-71; 75(14):1116-27. [24 ref. Dut]
• ***Summary:*** About the causes of bongkrek poisoning in Java. Address: Uit het Centraal Geneeskundig Laboratorium te Batavia-C.

89. van Veen, A.G.; Mertens, W.K. 1936. Der Einfluss der Bongkreksaeure auf den Kohlehydratstoffwechsel [The influence of bongkrek acid on carbohydrate metabolism]. *Archives Neerlandaises de Physiologie de l'Homme et des Animaux* 21(1):73-103. March. [34 ref. Ger]
• ***Summary:*** In Central Java, bongkrek poisoning is greatly feared. The authors recently demonstrated that a bacterium they discovered (*Bacterium cocovenenans*) produces the toxic principles in two normally-edible foods–Bongkrek and Semaji–prepared from coconut press-cake or grated fresh coconut. The two toxic principles are toxoflavin and bongkrek acid (*Bongkreksaeure*).

90. Lockwood, L.B.; Ward, G.E.; May, O.E. 1936. The physiology of *Rhizopus oligosporus. J. of Agricultural Research* 53(11):849-57. Dec. 1. [8 ref]
• ***Summary:*** Gives a detailed discussion of the physiology of *Rhizopus oryzae* Went and Geerligs 395 in connection with the production of dextro-lactic acid and fumaric acid. Neither soybeans nor tempeh are mentioned. Address: 1. Asst. mycologist; 2. Asst. Chemist; 3. Chemist. All: USDA, Bureau of Chemistry and Soils, Industrial Farm Products Research Div.

91. Institut International d'Agriculture (International Institute of Agriculture). 1936. Le soja dans le monde [The soybean in various countries of the world]. Rome, Italy: Imprimerie de la Chambre des Deputes, Charles Colombo. viii + 282 p. Bibliography, p. 276-82. No index. 25 cm. [90 ref. Fre]
• ***Summary:*** A superb early work, containing extensive original information, looking at developments with soybeans and soyfoods country by country, worldwide. Contents. Preface (p. 1). A. Culture of soy (*soja;* p. 4): 1. Botanical description, selection, classification of the varieties. 2. Culture properly said. 3. Enemies and illnesses.

4. Culture in the various countries: 4a. The Americas (p. 38): Antigua, Argentina, Bermuda, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, USA (gives details on all varieties grown, and describes production, history, varieties, and cultural practices in North Carolina, Illinois, Indiana, Iowa, Maryland, Massachusetts, Mississippi, Missouri, New York, Ohio, West Virginia, Wisconsin, Conclusion), Guadeloupe, Guatemala, British Guiana, Dutch Guiana, British Honduras [Belize], Jamaica, Barbados, Martinique, Mexico, Montserrat, Peru, Puerto Rico, El Salvador, Trinidad and Tobago, Uruguay.

4b. Europe (p. 101): Germany, the Danubian countries, Austria, Spain, France, Great Britain, Hungary, Italy,

Netherlands, Poland, Romania, Switzerland, Czechoslovakia, Turkey, USSR.

4c. Asia (p. 128): Ceylon, China and Manchuria, Cyprus, Federated States of Malaysia, British India (incl. Punjab, Bihar and Orissa, Burma, Berar, Madras Presidency, Bombay Presidency, Bengal (incl. Nepal, Bhutan, Sikkim, and the district of Darjeeling), Assam, North-West Frontier Province, United Provinces), Netherlands Indies, Indochina (incl. Tonkin, Annam, Laos, Cambodia, and Cochinchine), Japan, Palestine, Siam.

4d. Africa (p. 146): French West Africa, Algeria, Belgian Congo, Cyrenaica, Egypt, Eritrea, Madagascar, Morocco, Mauritius (Ile Maurice), Reunion (Réunion), Rhodesia, Anglo-Egyptian Sudan, Tripolitania, Tunisia, Union of South Africa.

4e. Oceania (p. 153): Australia, Fiji Islands, Hawaii, New Caledonia, New Zealand, Philippines.

B. Utilization of soya (p. 158): 1. The soybean in human nutrition and in industry: Whole soybeans, chart of the uses of whole soybeans, use of soya in the green state (green vegetable soybeans), soy sauce (*dau-tuong* of the Annamites, or *toyo,* named shoyu by the Japanese, or *chau-yau* or *chiang yoo* by the Chinese), condiments and sauces based on soya in the Netherlands Indies (*tempe, ontjom, tempemori* and *tempe kedele* [various types of tempeh and onchom, p. 168-70]), *tao tjo* [Indonesian-style miso], *tao dji* [soy nuggets], *ketjap, ketiap benteng* [Indonesian-style soy sauce], soymilk (*le lait de soja*), yuba (*crème de lait de soja*), tofu (*le fromage de soja*) and fermented tofu (*des fromages fermentés,* made by Li Yu-ying near Paris), soymilk casein (*caséine du lait de soja,* for industrial use, including vegetable albumin, or galalithe [galalith]" [isolated soy protein], and artificial wool), soy lecithin (*lécithine de soja*), soy flour (*la farine de soja,* incl. soy bread, soy pastries, and soy cocoa).

Note 1. This is the earliest document seen (Sept. 2010) that uses the term *benteng ketiap benteng* to refer to an Indonesian-style soy sauce.

2. Soy oil (p. 194): Food uses, industrial uses (including soaps, products resembling petroleum, paints, varnishes, linoleum, and artificial rubber), extraction, directory of U.S. manufacturers of materials and equipment for soybean processing, directory of U.S. and Canadian manufacturers of food products based on soya (*produits alimentaires à base de soja,* p. 205-06), directory of U.S. manufacturers of industrial soy products (p. 206-07).

3. Soybean in the feeding of domestic animals (p. 207): Forage, hay, silage, pasture, soybean seeds, the minerals in soybeans, soya as a feed for dairy cows, cattle, buffaloes, sheep, hogs, horses and mules, poultry.

4. Use of soya as fertilizer (p. 257). C. The trade of soya and of its by-products (p. 363): Production of soybeans in the principal countries, economic importance of soybean culture in the USA, soybean trade/commerce including tables of the major importers and exporters, and amounts traded annually in 1931-1934, price of soybeans, cost of production.

List by region and country of people and organizations that responded to a questionnaire sent by IIA (p. 273-76). Bibliography of main publications consulted, listed by region and country of publication.

Reunion (*Ile de la Réunion*): "The soybean (Le Soja) is only cultivated as an experimental crop, on a few square meters at the agronomic station" (p. 148).

Fiji (*Iles Fidji*): Soybean cultivation is not yet practiced in this colony; however soybean seeds are currently being imported in order to conduct a trial.

New Caledonia: In 1928 soybean cultivation was introduced to New Caledonia.

Note 2. This is the earliest document seen (Dec. 2007) concerning soybeans in Bhutan, Costa Rica, Dominican Republic, El Salvador, Guatemala, Israel, Jamaica, Madagascar, Morocco, New Caledonia, Palestine, Peru, or Réunion, or the cultivation of soybeans in Bhutan, Costa Rica, Dominican Republic, El Salvador, Guatemala, Israel, Jamaica, Madagascar, Mexico, the Middle East. Morocco, New Caledonia, Palestine, Peru, or Réunion. It is also the earliest document seen (Dec. 2007) concerning soybeans in connection with (but not yet in) Cyprus; it is stated that soybeans are not grown on the island of Cyprus. Soybean culture is not practiced in the Italian colonies of Eritrea (Erythrée, now part of Ethiopia) or Cyrenaica (Cyrénaïque, now part of Libya).

Note 3. This document contains the earliest date seen (June 2007) for soybeans in Bhutan, New Caledonia, or Réunion, or the cultivation of soybeans in New Caledonia (1928), or Bhutan or Réunion (1936) (One of two documents).

Note 4. This is the earliest French-language document seen (Sept. 2011) that mentions tempeh, which it calls "tempe" (p. 168). It notes that, in general, the indigenous people of the Netherlands Indies use soybeans mainly to make *tempe,* a product which, throughout central and eastern Java, takes the place reserved for *ontjom* in western Java. Tempeh is found in two forms: either in large flat cakes which are cut at the time of sale into small square morsels, or wrapped in folded banana leaves. A detailed description of the preparation of each of these two types of tempeh is given as well as another type of tempe, called *tempemori,* which is made with soybeans and coconut presscake.

Soybean culture is not known to be practiced in the following countries or colonies: Antigua, Barbados, British Honduras (renamed Belize in about 1975), Trinidad and Tobago. Address: Rome, Italy.

92. Shih, You-Kuang. 1937. Study on the molds concerned in the fermentation of wheat gluten in China. *Lingnan Science Journal* 16(1):27-38. Jan. 13. [21 ref. Eng; chi]

• ***Summary:*** The author begins by discussing the research of others on *fu-yu,* which he calls "preserved soy bean curd."

He notes that P.W. Liu, in his unpublished work, "isolated a species of *Mucor* from Mei-Tou-Cha [meitauza; Chinese characters are given], or naturally fermented dregs of soy bean curd [i.e., naturally fermented okara], which is a common foodstuff in Wuchang and Hankow." It is prepared by frying in vegetable oil or animal fat.

"No mention of the so-called Minchin [W.-G. *mien chin,* pinyin *mianjin*] fermentation has been made as yet in literature. Minchin is, chemically speaking, the gluten of wheat." Rich in protein, it has a delicious taste. In some districts it is commonly eaten as a substitute for meat by Buddhists who do not eat meat. It is also occasionally used as a palatable dish at banquets. "Although we do not know definitely when it came to be used as an article of diet, it probably was at least hundreds or even thousands of years ago. Recently it has become a canning industry in large cities, San-Loh Wusih Minchin of Kiangsu province being a well-known example."

The author then gives a detailed description of how raw wheat gluten is made in China. To the high-protein wheat flour, about 0.5% to 1% by weight of table salt is added before any water is added in a large earthen jar. The dough is allowed to stand for 1-2 hours under water before the starch is removed in a strainer. A high grade of minchin is one that is almost free of starch content, pale in color, and very sticky and flexible.

Raw wheat gluten is typically made into one of four end products: (1) Fresh minchin: The raw minchin is kneaded into desirable shapes then boiled and seasoned for eating. When prepared for sale at a market in hot weather, it is usually preserved in water to prevent rapid spoilage by bacteria; (2) Roasted minchin is prepared by roasting raw minchin in a flat pan over a fire. A small mass of raw minchin will bubble up into a large globose shape with a very loose and porous texture. It is usually used to prepare soups, or cooked with other foods, and can be purchased even in small grocery stores in some localities; (3) Fried minchin is prepared by frying raw minchin with vegetable oil and seasoning. Recently the preparation of this kind of minchin has become a canning industry, as noted above. It has an excellent taste and is especially appropriate for travelers; (4) Fermented minchin (fermented wheat gluten) is made by putting fresh minchin into a suitable container, usually an earthen jar, and covering it tightly. After 2-3 weeks at room temperature, it will be overgrown with molds and bacteria. Then an excess amount of table salt (sodium chloride), more than 10% by weight of the molded minchin is added. After thoroughly mixing the salt into the minchin, it is allowed to stand for 2 more weeks to age. It is then commonly cut into thin strips and used as a condiment with other foods. Usually the fermentation is carried on during the winter because in hot weather it spoils rapidly due to bacteria.

Minchin is most commonly eaten by the people in northern China, however fermented minchin is rarely heard of except in Wuchang, Hankow and Hanyang of Hupeh Province so far as the author knows. According to the "Investigation of diet nutrition of Chinese in Manchuria" by Lu (1934), the average amount of Minchin consumed a day by one person of different classes, and its nutritive value are as follows (Table 1): Physicians 14.4 gm of minchin, 3.2 gm of protein; Members of the bank 13.8 gm, 3.1 gm of protein; Officials 11.2 gm, 2.5 gm of protein; School teachers 3.7 gm, 0.8 gm of protein; Middle class families 1.8 gm, 0.4 gm of protein.

Minchin appears to contain a mixture of molds including *Paecilomyces varioti, Aspergillus flavipes, Cladosporium elegans, Fusarium orthoceras, Syncephalastrum racemosum, Trichothecium roseum,* and *Penicillium* species.

Note 1. This is the earliest English-language document seen (Feb. 2007) that uses the term "fu-yu" to refer to fermented tofu.

Note 2. This is the earliest document seen (Sept. 2011) concerning okara tempeh (which it calls Mei-Tou-Cha), and the earliest English-language document seen (Sept. 2011) that uses the term "Mei-Tou-Cha" to refer to okara tempe. Address: Lab. of Applied Mycology, College of Agriculture, Hokkaido Imperial Univ., Sapporo, Japan.

93. Shih, You Kuang. 1937. Untersuchungen ueber eine neue *Mucor*-Art auf "Meitauza" aus China [Investigations on a new type of *Mucor* mold on meitauza from China]. *Transactions of the Sapporo Natural History Society* 15(1):13-23. July. [51 ref. Ger]

• ***Summary:*** Contents: Introduction. 1. On the material to be investigated and its preparation. 2. Morphological. 3. Physiological: Properties of the culture, influence of temperature, influence of hydrogen ion concentration [pH], influence of the carbon source, influence of the nitrogen source, investigation of the fermentation of sugars, formation of alcohol and acids, saccharification of starches. 4. Diagnosis (conclusion).

Meitauza is okara, fermented with a *Mucor* mold. The product is traditionally made in many places in China such as Wuchang, Hankow, and Hanyang, preferably in winter, as follows: Form okara into round cakes 4½ to 5 inches in diameter, 1 inch thick at the center and 3/8 to ½ inch thick at the edges. Place the cakes in a vessel of the same size and allow to ferment in a room with moderate aeration until, after 10-15 days they are covered with a white mycelium of *Mucor meitauza* Shih. It is said that the best meitauza cannot be prepared in hot weather; it is usually prepared in winter. At higher temperatures bacteria can grow faster than the desired mold, and thus spoil the fermentation. Dry the cakes in the sun for several hours, then sell. Meitauza is served either fried (*gebraten*) in vegetable oil or cooked with vegetables then seasoned; it is widely considered to be tasty and nutritious.

"I received the research material [cakes] by post from Wuchang. It was still covered with a thick mycelium, which was downy and grayish white. Its form and size were about the same as described above. Through the usual culture methods, I isolated a type of *Mucor.* I then investigated its morphological and physiological characteristics."

Shih (working in the laboratory of Professor Dr. Jun Hanzawa in Hokkaido, Japan–with assistants Y. Tamura and S. Yoshimura) described the *Mucor* mold he isolated as a new species. He tried growing it on tofu (*Soja-Bohnenkäse*) but found that it grew best on moist rice and okara. The optimal temperature is 27-32ºC, and pH 5-6.

A full page of illustrations shows at least 9 views of *Mucor meitauza,* including the sporangiospores, columella, branching of the spore-carrying parts, and chlamydospores.

Note 1. Hesseltine (1965, p. 190) noted that from the fresh product, Shih isolated a *Mucor* which he carefully studied and described as a new species, *M. meitauza.* However a comparison of his species illustration and his observations indicate it is a synonym of *Actinomucor elegans,* already noted as one of the principal fungi involved in the preparation of fermented tofu.

Note 2. This is the earliest document seen (Sept. 2011) that contains the word "meitauza" (spelled like this, without hyphens).

Note 3. Meitauza is apparently a type of (or close relative of) okara tempeh. Address: Laboratory for Applied Mycology, Agricultural Institute, Hokkaido Imperial Univ., Sapporo, Japan.

94. van Veen, A.G.; Baars, J.K. 1938. Ueber das Toxoflavin, ein Isomeres von I-methyl-xanthin [On toxoflavin, an isomer of I-methyl-xanthin]. *Recueil des Travaux Chimiques des Pays-Bas* 57(3):248-64. March 15. [15 ref. Ger]
• ***Summary:*** Discusses Bongkrek- and Semaji- poisoning, and the yellow poison named Toxoflavin, produced by *Bacterium cocovenenans*. Address: Batavia, Chem. Abt. des "Geneeskundig Laboratorium" (Chemical Div. of the Medical Lab.).

95. Kurano, K.; Itai, J.; Nonomura, S. 1939. Rizopusu kin ôyô shôyu jôzô shiken (Die Anwendung des Rhizopus anstatt des Aspergillus fuer das Syoyu brauen) [Application of *Rhizopus* instead of *Aspergillus* for brewing shoyu]. *Jozo Shikensho Hokoku* (*Report of the Brewing Experiment Station*) No. 128. p. 289-95. [Jap]

96. Soetisna, Mas. 1939. Kedelé mas Toegoemoeljo [The yellow soybean of Toegoemoeljo]. *Kolonisatie Bulletin* 6:9-11. [Ind]
• ***Summary:*** In the author's name, the term "Mas" may be a Javanese title, of lower rank than Raden. "Toegoemoeljo" (presently spelled Tugumulyo) is a place name but it can also be translated as "Column/Pillar of Glory," in Javanese culture refers to the manifestation of the highest level of happiness. The document tells about yellow soybeans from this place. Address: Adjunct-landbouwconsultent di Loeboek Linggau.

97. Beadle, George W.; Tatum, E.L. 1941. Genetic control of biochemical reactions in Neurospora. *Proceedings of the National Academy of Sciences, USA* 27(11):499-506. Nov. [11 ref]
• ***Summary:*** This epochal paper, which reported the first mutants (*Neurospora*) with biochemically defined nutritional requirements (their inability to carry out specific biochemical processes), started the revolution in molecular biology. Address: Biological Dep., Stanford Univ., California.

98. van Veen, A.G. 1941. [The protein supply in infertile districts of Java]. *Natuurwetenschappelijk Tijdschrift voor Nederlandsch Indië* 101:321-23. [Dut]*

99. Beadle, George W. 1945. Genetics and metabolism in *Neurospora. Physiological Reviews* 25(4):643-63. [67 ref]
• ***Summary:*** "Near the close of the last century the well-known Dutch botanist, F.A.F.C. Went, was stationed in Java. He was interested in fungi used for technical purposes and his attention was called to *Monilia sitophila,* now known as *Neurospora sitophila,* which was used by the Javanese in making a kind of delicacy known as 'ontjom.'"

"Prof. F.A.F.C. Went undertook to study the 'ontjom fungus' from a physiological standpoint. He encountered serious difficulty, however. At the high humidities of the tropics the fungus has the discouraging habit of growing rapidly through the cotton stoppers of the containers in which it is cultured. The investigations were deferred until his return to Holland."

"In a discussion of the results of experiments in which raffinose was added to media containing other sugars, Went came close to discovering that some accessory factor (biotin) was necessary for the growth of *Neurospora.*"

"The year 1927 marks the birth of the genus *Neurospora* (literally 'nerved spores') and the beginning of its use in genetic studies. In this year Shear and Dodge published their account of the life histories of members of the genus, including the sexual stages. They proposed the generic name and described the heterothallic species, *sitophila* and *crassa,* and the homothallic species, *tetrasperma.* Dodge immediately recognized the advantages of *Neurospora* for genetic studies and undertook a series of investigations which have been continued without interruption since."

Note: The author won the Nobel Prize in Physiology/Medicine in 1958 for his work with Neurospora. Address: School of Biological Sciences, Stanford Univ., Stanford, California.

100. Swingle, Walter T. 1945. Our agricultural debt to Asia.

In: Arthur E. Christy, ed. 1945. The Asian Legacy and American Life. New York: The John Day Co. x + 276 p. See p. 84-114. Index. 21 cm. Also published by The Asia Press, 1942. [2 ref]

• ***Summary:*** "The beginning and foundation of the Library of Congress Orientalia Collection was the great Chinese encyclopedia, the *Ssu k'u ch'uan shu,* a gift of the Empress Dowager of China.

"About 1914, Dr. Swingle, then head of the Office of Crop physiology and Breeding, Bureau of Plant Industry, U.S. Dept. of Agriculture, was able to secure the services of a Cornell graduate, Dr. Hing Kwai Fung, to make abstracts and/or translations of information in the *Ssu k'u ch'uan shu* regarding economic plants. Dr. Swingle interested Dr. Herbert Putnam, Librarian of Congress in increasing the holdings of Chinese books, especially gazeteers [sic, gazetteers] which contain local information. When Dr. Fung returned to China, he was given a modest sum for purchasing books. Dr. Fung was able to persuade the Commercial Press (the largest publishing firm in China, located in Shanghai) to act as receiving agent for books for the Library of Congress, and to ship them to Washington [DC]. Soon after, Dr. Swingle was sent to the Orient–in March 1918–by the Dept. of Agriculture." There he made arrangements for collecting books in Tokyo and Shanghai.

"As American merchants and missionaries gradually penetrated into China, they sent home more and more plants and trees. The Arnold Arboretum, organized and directed by the great tree expert, C.S. Sargent, financed extensive trips to the Orient to obtain botanical specimens and seeds of ornamental trees and shrubs as well as photographs of them as they grew in their native habitat. These trees and shrubs revolutionized the garden and park plantings of the northern parts of the United States. The illustrated popular books of E.H. Wilson, who made many trips to the Orient for the Arnold Arboretum, helped to arouse interest in the very rich arboreal flora of China...

"The Plant Introduction Service of the U.S. Department of Agriculture was organized by David Fairchild in 1897; he did very extensive exploring for foreign economic and ornamental plants from 1898 on, and directed the Plant Introduction Service from 1909 to 1928. I was fortunate enough to be one of the first 'agricultural explorers.'" Of these men Frank N. Meyer and P.H. Dorsett were outstanding, not only for the number and value of the plants they secured, but also for the detailed and accurate descriptions of every plant they sent to Washington.

"P.H. Dorsett some years later, during the twenties, traveled widely in North China taking many fine photographs of Chinese crop plants and writing descriptions of the culture, harvesting and curing of each. On these trips he collected many varieties of soy beans largely through the utilization of a new and potent method of securing the willing cooperation of all educated Chinese people. A complete translation, prepared by Michael J. Hagerty under my direction in 1917 of the chapter on soy beans contained in a standard Chinese work on economic plants (the *Chih Wu Ming T'u K'ao* by Wu Ch'i-chun) had been furnished the plant explorers looking for soy bean varieties. This translation, covering eighty-two pages, discussed several hundred varieties, telling where they were largely grown. In all cases the name of the variety and the name of the locality where it was grown were not only spelled out in English but also written carefully in Chinese characters. An index made it easy to turn to any variety under discussion and see what was said about its culture.

"This was a turning point in field explorations in China. Such indexed translations in the hands of foreign plant explorers insured the attention of all educated Chinese, who gladly directed the explorer to the nearest source of the various named varieties. I had learned this at first hand in 1915 when studying varieties of Citrus in southern China. Surprise and skepticism about the foreigners knowledge of Chinese books gave way to astonishment and warm approbation."

"The soy bean is a striking example of the introduction of a new crop... Soy beans were sent from China to France as early as 1740 and from 1779 were grown in the famous Botanic Garden of Paris. Benjamin Franklin, who had been a member of the French Academy of Sciences since 1772, sent seeds back to the United States and urged that they be given a trial. But in spite of his plea, the soy bean remained merely a curiosity in this country for more than a century.

"In the late eighties [sic, 1890] Prof. C.C. Georgeson brought soy bean seeds from Japan, where he had been teaching at the Agricultural College at Komaba, and planted them in a field on the campus of the Kansas State Agricultural College. I could see the stunted soy bean plants from the windows of the botanical laboratory where I was a teen-age research assistant. This variety, adapted to the perpetual spring climate of Komaba near Tokyo, did not do well on the bare Kansas hills, often swept by hot dry winds. And nothing happened. Soy beans did not arouse interest among Kansas farmers until many years after this failure.

"In the third decade of the twentieth century Dorsett sent to Washington more than 800 named soy bean varieties from China, Manchuria and Japan. These together with shipments secured by Dr. David Fairchild from his numerous correspondents in the Old World, especially in Asia, amounted by 1928 to a total of more than 2800 packages of soy beans, almost all named varieties but many of them duplicated, some of them many times. Meantime tests made by W.J. Morse, in charge of soy bean culture for the Bureau of Plant Industry, showed that many varieties had a narrow range of adaptability. Accordingly, from 1929 to 1931, Morse joined Dorsett in the Orient and these two experts, with trained Chinese helpers, brought to this country the largest single collection of soy bean varieties ever assembled. As

soon as Morse returned from studying soy beans in Asia and attacked the problem of finding which Asiatic varieties adapted to the different regions and selecting and breeding to make them fit various American soils and climates, a remarkable change occurred in soy bean culture. Yields went up and plantings increased year by year...

"One of the best-known industrial uses for soy bean proteins is for making water-resistant glue. No less than 30,000 tons of soy bean glue were made in 1942 by a single firm and its licenses annually, most of it being used in the rapidly growing plywood industry. Soy bean proteins have been enthusiastically used by Henry Ford in his automobiles, being mixed with the more expensive phenolic resins, thereby reducing costs and also yielding a more plastic, freer-flowing mixture which takes dyes better...

"As long ago as 1917-1918 Dr. Yamei Kin set up under my general supervision for the U.S. Department of Agriculture a soy bean mill in New York City in the hope of supplying tofu to increase the bulk and food value of meat dishes served to soldiers in training at near-by camps. Dr. Kin succeeded in making excellent tofu. She even served to a group of army officers a meal composed entirely of soy bean dishes! However, it proved impossible to test tofu on a large scale at that time, since we could not get priority for transportation of soy beans from North Carolina, then the nearest region where they were grown on any considerable scale.

"A splendid example of a double fermentation is the soy bean cheese called *nam yüe* by the Cantonese and *sufu* in North China. It is preferred even to the best Roquefort as a salad dressing constituent by those who have had the opportunity to try it. It is made by Chinese masters of the cheesemaker's art who believe that its fermentation is an insoluble mystery.

"Shih Chi-yien, then working in the American University of Soochow, published in 1918 the first English account of the most important fermented bean foods. He traced the making of *tofu* from soy beans back to the Han dynasty (A.D. 22). Ten years later Wai Ngan-shou [Nganshou], one of the first scientifically-trained Chinese microbiologists and fermentation experts, was able to isolate and identify as a new species of Mucor the mold that makes possible the *nam yüe* fermentation. It is a curious fungus, *Mucor sufu,* distantly related to the miraculous *Penicillium notatum* whose marvelous curative action has only recently been discovered. A third fermentation expert, Shih You-kuang, studied another soy bean fermentation product, *meitauza,* made by another species of Mucor, and published an illustrated account of it in German in 1937. In his review of the literature of Mucor fermentations, Shih You-kuang cites no fewer than thirty articles by eighteen authors all based on Chinese fermentations...

"Miss Elizabeth Groff, under my direction in 1918, made a thorough study of the fermentation of soy sauce in the famous factories of Canton, China, and published the first detailed account of the process in the *Philippine Journal of Science* for 1919."

"It has been my privilege to assist in building up a great Chinese library in the Library of Congress, under the enlightened policy of Dr. Herbert Putnam, beginning in 1912. The Orientalia Division, headed by Dr. Arthur Hummel, is now the largest Chinese library outside of Asia and is probably larger than all the European libraries of Chinese books combined. It now contains, Dr. Hummel estimates, about 230,000 Chinese volumes (*Chüan*) and some 20,000 more will soon be added in the form of bibliofilm copies of very rare works from the Chinese National Library, sent to Washington for safekeeping."

Note 1. This is the earliest secondary document seen that mentions the early introduction of soybeans to America by Benjamin Franklin.

Note 2. This is the earliest English-language document seen (Feb. 2007) that uses the word *nam yüe* to refer to Chinese-style fermented tofu. It is 2nd earliest English-language document seen (Feb. 2007) uses the word "sufu" to refer to Chinese-style fermented tofu, and the first such document written by a Westerner. Photos show Dr. Walter Tennyson Swingle, and his wife Maude K. Address: Collaborator, Bureau of Plant Industry, USDA; Consultant on Tropical Botany, Univ. of Miami, Florida.

101. **Product Name:** [Tempeh].
Foreign Name: Tenpe.
Manufacturer's Name: ENTI (Eerste Nederlandse Tempe Industrie).
Manufacturer's Address: Zevenhuizen, Netherlands.
Date of Introduction: 1946. April.
New Product–Documentation: Form filled out by from Firma Lembekker. 1982. Says ENTI was started in April 1946, then sold to Mrs. Duson in Zevenhuizen; Letter from Sjon Welters. 1982. Sept. 27. "The company was founded around 1954." Mrs. Duson, who is now the producer, took over about 10 years ago from the foundress.

Letter from Sjon Welters. 1983. March 2. The official name of this company is Firma Enti. It was founded by a woman named Wedding. Her man was an Indonesian. Mrs. Duson, the woman who owns it now, could not remember if Mrs. Wedding was Dutch or Indonesian.

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 28. This was Europe's first commercial tempeh company, founded in April 1946 by a Dutch couple whose last name was Wedding. They had learned to make tempeh while living in Indonesia. In the early 1970s the company sold to Mrs. Duson in Zevenhuizen. It was then making 2,000 lb of tempeh a day. Interview with Sjon Welters. 1984. Oct. 25. ENTI went out of business in January 1984 and the original Indonesian culture, now over 135 years old, was deliberately destroyed.

Note: This is the earliest document seen (Sept. 2011) that gives tempeh production statistics for a particular manufacturing company.

102. Roelofsen, P.A. 1946. Tempeh-bereiding in Krijgsgevangenschap [Tempeh-making in prisoner-of-war camps]. *Vakblad voor Biologen* 26(10):114-16. Oct. [Dut]
• ***Summary:*** Throughout this article, and in the title, the Dutch and Malay word previously spelled tempé or tempe is spelled "tempeh." Note: This is the earliest Dutch-language publication seen that uses the word tempeh. Several years later, that spelling would become the standard English-language spelling. Address: Director, Deli Proefstation, Medan (Sumatra, Indonesia).

103. Stahel, Gerold. 1946. Foods from fermented soybeans as prepared in the Netherlands Indies. I. Taohoo, a cheese-like substance, and some other products. *J. of the New York Botanical Garden* 47(563):261-67. Nov.
• ***Summary:*** Contents: Introduction. Sprouts and milk from soybeans. Cheese-like products. How taohoo is made. Condiments made with Aspergillus.

In East Asia–as in Surinam–people have developed "means for overcoming the rather bitter taste of soybeans and their failure to cook soft. They have learned to ferment the soybeans with quick-growing fungi, thus making several palatable and wholesome foods.

"Most important of these foods are *taohoo* and *tempe;* also *taokoan,* a cheese made from *taohoo; taotjo,* a fermented paste-like condiment, and *ketjap,* which is soy sauce. Soybean milk is also made, but without a fungus, and sprouted soybeans are widely used by orientals."

"In the Netherlands East Indies [later Indonesia] sprouted soybeans are called *tokolán* or *taogé.* They are one of the ingredients of every 'rijst-tafel' (rice table, or combination of dishes) and therefore are never lacking in the 'passar' (market). Even in our Paramaribo market *tokolán* is displayed every day."

In China, soy milk is used in the same manner as cow's milk. It is also consumed in the United States, though on a very limited scale. In the Netherlands East Indies, soy milk "is only slightly known as food, but it is produced in large quantities for the manufacturing of soy cheese, called *taohoo* or *tahoo."*

The curd [tofu] "is either eaten fresh or baked in oil or lard. In China it is sometimes processed further into a kind of real cheese by impregnating the curd with turmeric and reducing the water content by heavier pressing. This cheese, called *taokoan* [Chinese: doufugan], has a yellow color and can be shipped abroad."

"After tempe [made with *Rhizopus Oryzae*], taohoo is the most common form of soybean product eaten in the Netherlands East Indies. In China, it is the most important soy product. Taohoo is manufactured here in Surinam only on a very limited scale, by a single Chinese store-keeper close to the Paramaribo market-halls along the Surinam river. Twice daily, between 2 and 4 o'clock in the morning and again in the afternoon, he manufactures 11½ kilograms of taohoo, to be sold after 6 o'clock the next morning." A detailed eyewitness description of the tofu-making process is then given.

Describes briefly how to make taotjo (a kind of paste) and ketjap (soy sauce) with *Aspergillus oryzae,* another fungus. Taotjo is not made in Surinam, but ketjap is. "To make taotjo, boiled soybeans are mixed with roasted meal of wheat or glutinous rice. The mass is wrapped in hibiscus leaves, which commonly harbor the *Aspergillus* fungus." After 2-3 days the moldy mass is immersed in brine, where it is kept for several weeks. "Palm sugar is added at intervals. Taotjo must be made in the dry season, because every day it has to be brought outside into the sun and air for hours." This dish is eaten in East Asia with the 'rijst-tafel.'"

To make ketjap, soybean are boiled, cooled, then wrapped in hibiscus leaves–but without mixing in roasted meal. After fermenting for 2-3 days, the mass is immersed in brine, as with taotjo. Each day, for one to several months, it is exposed to the sun. A little palm sugar is added at intervals. Then the fluid is filtered off and the solid residue is cooked several times with fresh water to extract all the soluble material. "The fluid is then concentrated by slow boiling. Spices and other piquant materials are added, according to the *specialité de la maison.* These may include galangal, ginger, cloves, Jew's ear fungus, and dried and ground fish and chicken meat."

Photos show: (1) Chinese kitchen [shop] equipped with implements for tahoo manufacture, with hand-turned millstones, soybean mash flowing into cheesecloth bag hanging in wooden barrel, press, earthenware pot filled with brine for the "coagulation of the curd." (2) Four pieces of fresh taohoo, four-fifths natural size. (2) Four pieces of freshly baked taohoo, four-fifths natural size.

Note: This is the earliest English-language document seen (Feb. 2004) that uses the word "taohoo" or "taokoan" to refer to tofu. Address: Agric. Exp. Station, Paramaribo, Surinam.

104. van Veen, A.G. 1946. De voeding in de Japansche interneerings-kampen in Nederlandsch Indie [The food in Japanese prisoner of war camps in the Netherlands Indies]. *Voeding* 7(5):173-86. Dec. 15. [Dut; eng; fre]
• ***Summary:*** Among the foods consumed in these camps were soybeans (*soojaboonen*), tempeh (*tempe,* see p. 175, 183-84), and ontjom, starting in November 1944. "The food was very insufficient, calorically as well as regards further composition and taste. So numerous cases of nutritional oedema and other deficiency phenomena occurred. The construction of kitchens, bakeries and such was done by the inhabitants of the camps themselves with the most primitive

materials. Food yeast, baker's yeast, maize malt, vitamin B extracts and other useful products were also made by the inhabitants themselves mostly out of waste products. For the patients very simple diets were composed." Address: Geneeskundig Laboratorium, Hoogschool, Batavia (Jakarta, Indonesia).

105. Stahel, Gerold. 1946. Foods from fermented soybeans as prepared in the Netherlands Indies. II. Tempe, a tropical staple. *J. of the New York Botanical Garden* 47(564):285-96. Dec. [6 ref]

• ***Summary:*** Contents: Summary. Introduction. Experimenting with tempe. Native method of manufacture (used by a Javanese peasant woman named Sinem, living near Lelydorp. "Every day she makes about 80 tempes for sale"). Packaging the tempes (in large leaves). Rapid deterioration (after the tempe is 2½ days old). Quantities measured (losses during preparation and fermentation). Large tempes for festive occasions (containing 1 kg of soybeans in a layer 1 to 1½ cm thick fermented between leaves in a bamboo tray about 1 foot in diameter). Directions for making tempe.

During World War II, "soybeans were sent to New Guinea [probably Western New Guinea, called Netherlands New Guinea in 1946] by the United States Government to feed the Europeans and Indonesians living there. For two years the people had had none of this to them important food. What the shippers did not realize, however, was that plain soybeans would be unpalatable to people of Indonesian eating habits. A specific fungus was needed to ferment the soybeans into *tempe,* a food that would be relished. Since the Papuans, the aboriginals of New Guinea, do not use soybeans in any form, all cultures of the fungus were lost when connections were broken with other Indonesian islands.

"The author then was asked to send the tempe fungus from Surinam, where it was known to be in use by Javanese people living there. The pure cultures and quickly dried tempe cakes arrived in New Guinea by plane in a little more than a week. The people then were able to use the ample stores of American soybeans by making their familiar and well liked tempe cakes."

The author isolated the tempe fungus and used it to make tempe in a laboratory. He describes several local Surinam methods of making and packaging tempe. In Surinam the inoculated soybeans are wrapped in large monocotyledonous leaves, e.g., of the family Musaceae (such as the genera *Musa* and *Heliconia*), and also of the family Marantaceae, such as *Ischnosiphon.* 30 to 40 grams of inoculated beans are folded into each leaf. Then the packet is tied with rice straw or with raffia.

Photos show: (1) A young lady in the Paramaribo market, Surinam, holding a round bamboo tray loaded with leaf-wrapped packets of tempe. (2) Two close-up

shots (four-fifths natural size) of cakes of tempe as sold in the Paramaribo market; on the upper cake is a luxuriant growth of *Rhizopus Oryzae,* whereas on the lower cake the growth of the fungus is more scanty due to insufficient oxygen supply. (3) Longitudinal and cross-sectional views of "tempes" from the Paramaribo market; the lower ones are still wrapped in banana leaves. (4) Ten cakes of tempe made in a laboratory. All were wrapped with an Ischnosiphon leaf before incubation. Two cakes are shown still wrapped with the leaf, tied around the middle with a string. (5) "A large tempe, one foot in diameter, cultured between Ischnosiphon leaves on a flat bamboo basket called a 'tampa.'" (6) A lady "Making a tempe package with Ischnosiphon leaves."

Note 1. This is the earliest article seen about tempe [tempeh] published in the United States.

Note: This is the earliest English-language document seen (Sept. 2011) with the word "tempe" in the title. This new Address: Director, Agric. Exp. Station, Paramaribo, Surinam.

106. *Soybean Digest.*1947. Soy foods in New Guinea. Nov. p. 14-15.

• ***Summary:*** This is a summary of two articles by Gerold Stahel (of Paramaribo, Surinam) on tempe [tempeh] and

taohoo [tofu] published in late 1946 in the *Journal of the New York Botanical Garden.* Three photos show tempe and two show taohoo.

Note: This is the earliest document seen (Sept. 2011) with the term "Soy foods" in the title.

107. Bruyn, G.F. de; Dulst, J. van; van Veen, A.G. 1947. Biochemie in een Interneringskamp [Biochemistry in an internment camp]. *Voeding* 8(2/3):81-96. [Dut]*

108. Eek, Th. van. 1948. Re: *Rhizopus nigricans* culture and tempeh. Letter to Northern Regional Research Lab., Peoria, Illinois, May 18. 1 p. Typed, without signature.
• ***Summary:*** "We have sent you a culture of Rhizopus nigricans, generally used in the Netherlands East Indies to ferment soya beans for making 'Tempe' or 'Tempeh.' We isolated the culture from decayed pettels [sic, petals] of Hebiscus" [sic, Hibiscus].

In short the production is as follows: 1. Soak the soya beans in water for 12-24 hours to loosen the husks from the beans. 2. By stirring and agitating, the husks are easily taken off from the beans and because they are lighter they can be skimmed off. 3. In java the beans are laid in layers about half an inch thick between banana leaves after thorough mixing with about 1/20–1/10th of its volume with inoculum, taken from the previous batch. 4. After 24-36 hours the fungus has completely grown through the bean layer tightening them together; the layer can now be cut in pieces of 1½–2 inches. 5. These pieces are salted and fried in oil or fat.

"The beans in the fermenting layer may not be damaged, because in that case other microorganismen [sic, microorganisms] will spoil the fermentation of Rhizopus. Address: N.V. Centrale Suiker Matschappij, Research-Afdeling, van Noordtkade 20, Amsterdam, Netherlands.

109. Koens, A.J. 1948. Peulgewassen [Leguminous crops]. In: C.J.J. van Hall and C. van de Koppel, eds. 1948. De Landbouw in de Indische Archipel [Agriculture in the Indonesian Archipelago]. 'S-Gravenhage: N.V. Uitgeverij W. van Hoeve. Vol. IIA. 905 p. See p. 241-42, 258-274, 473. In collaboration with G.G. Bolhuis. [79 ref. Dut]
• ***Summary:*** Contents: The plant. Varieties. Selection. Soil and climate. Methods of cultivation. Insects and diseases. Economics. Planting. Utilization. Value as a food (source of nutrients) for the people of Indonesia (*Indonesië*). Trade and commerce (*Handel*). Contains an excellent bibliography.

The section on "Utilization" mentions (and describes briefly how each is made): green vegetable soybeans (*de halfrijpe planten*), whole dry soybeans, roasted soybeans, ketjap (or soja or shoyu or taoyoe), tofu (*tao-hoe, bonenkaas*), baked tofu, firm tofu (*tao koan;* also simmered with *Curcuma longa*), sprouts (*taogè*), Indonesian-style miso (*tao-tjiong*), soy nuggets (*tao-dji*), tempeh (*tempe*), MSG (*Vetsin*), soybean meal (*sojameel*).

110. Nakano, Masahiro; Ohta, T. 1949. Noirosupora shitofuira kin no hakkô shokuhin e no riyô ni tsuite. Dai ippô. Gyofun peesuto no riyô [The application of the mold *Neurospora sitophila* to fermented foods. I. Use with fish paste]. *Shokuryo Kenkyujo Kenkyu Hokoku* (*Report of the Food Research Institute*) No. 2. p. 105-12. Aug. [15 ref. Jap; eng]
• ***Summary:*** Ontjom (ontyom) and fish paste were produced. Address: Food Research Inst., Shiohama 1-4-12, Koto-ku, Tokyo, Japan (Hakko Shokuhin-bu, Sogo Shokuryo Kenkyujo).

111. Tammes, P.M.L. 1950. De bereiding van témpé [The preparation of tempeh]. *Landbouw* (*Bogor, Java*) 22(5/6):267-70. June. [1 ref. Dut]
• ***Summary:*** Includes a detailed discussion and photo of "ragi" (starter culture) and how ragi is used to make témpé (tempeh). Address: Dr., Hoofd van de Afdeling Makassar van het Algemeen Proefstation voor de Landbouw.

112. van Veen, A.G. 1950. Bongkrek acid, a new antibiotic. *Documenta Neerlandica et Indonesica de Morbis Tropicis* 2(2):185-88. June. [6 ref. Eng]
• ***Summary:*** "Bongkrek acid, which causes severe, usually fatal food poisoning in man because of its glycogen-mobilizing and hypoglycaemic action, possesses a strong antibiotic action on various fungi and yeasts, in which it probably influences glycogen metabolism." Address: Biochemical Lab., Delft Inst. of Technology, Delft, Netherlands.

113. van Veen, A.G.; Schaefer, G. 1950. The influence of the tempeh fungus on the soya bean. *Documenta Neerlandica et Indonesica de Morbis Tropicis* 2(3):270-81. Sept. [18 ref. Eng]
• ***Summary:*** Contents: Introduction. Methods: Preparation of tempeh, methods of analysis. Results: Analysis of the composition of soya beans before and after treatment with the fungus (dry weight, ash, soluble carbohydrates, hemicellulose, crude fibre {cellulose}, fat {ether extract}, nitrogen compounds {quantitative, and qualitative}), extractability of tempeh with water and enzyme solutions. Conclusions.

The article begins: "Soya beans and their derivatives constitute not only one of the most valuable, but also one of the most interesting foodstuffs. The high protein and fat content is well known." During fermentation the soluble carbohydrates mainly disappear and the protein is broken down into water soluble products. This explains the tolerance for tempeh of most patients with intestinal disorders. "The unpopularity of the soya bean is probably due for the greater part to the fact that it does not soften well during cooking

and is difficult to digest."

""In the following pages we draw attention to an interesting and easily digested soybean product which is little known outside Indonesia, *i.e., tempeh kedelee* (kedelee = soya bean)."

"Soya beans are a very popular food on the island of Java, and are nearly exclusively consumed as *tempeh kedelee,* a product prepared by means of a fungus (*Rhizopus oryzae*)... It is possible in this way to change products which are normally difficult to cook and digest into easily digested, comparatively easily prepared and cheap foodstuffs. Moreover, these have the advantage that little firewood is needed for cooking.

"In World War II the soya beans (which were well-nigh indigestible for the undernourished prisoners of war) were made into tempeh in many P.O.W. camps in Java and on other islands; even patients with dysentery and nutritional oedema were able to assimilate it (van Veen, 1946)."

Note: This is the earliest document seen (Sept. 2011), in English or any other language, with the word "tempeh" in the title. This new spelling quickly caught on, and since the early 1960s the word has consistently been spelled this way in English and most other European languages–except in a few Dutch and English-language publications written by Indonesians–the final "h" being added to prevent the word from being pronounced "temp." Address: Lab. of Biochemistry, Inst. of Technology, Delft, The Netherlands.

114. Nakazawa, Ryoji. ed. 1950-1964. Hakkô oyobi seibutsu kagaku bunken-shû [Bibliography of fermentation and biological chemistry]. Tokyo: Nihon Gakujitsu Shinkokai/ Hirokawa Publishing Co. 11 volumes. In European languages and Romanized Japanese. [500 soy ref. Eng; Jap]
• ***Summary:*** Contains extensive, excellent bibliographies on the following soy-related subjects (listed here alphabetically): Amazake (p. 139, only 2 references). Kôzi (Koji) (p. 398-410). Mirin (p. 464-65). Miso (p. 465-68). Natto (p. 8-9). Natto bacteria (p. 9-10). Penicillium (p. 210-63; see p. 240 for tempeh and ontjom). Rhizopus (p. 81-97). Soybean and soybean cake (p. 271-77). Syôyu [Shoyu] (p. 436-49). Tôhu (p. 498, only 3 references, all for nonfermented tofu). Each bibliography lists the documents in approximately chronological sequence. An unnumbered page near the beginning titled (in Japanese characters only) *Shuyô Inyo Bunken* [Main Periodicals Cited] lists 51 such periodicals, of which 12 are in Japanese. Of these twelve, all have the title written in Chinese characters, with an English translation, and a Chinese plus a romanized abbreviation of the Japanese title. Two examples: No. 2. *Nippon Nogei Kagaku Kaishi.* J. Agr. Chem. Soc. Japan [J. of the Agricultural Chemical Society of Japan]. *Nô-ka.* No. 4. *Nihon Jozo Kyokai Zasshi.* J. Fermentation Association Soc. Japan. *Zyô-Kyô.* Note that much of the romanization throughout these 11 volumes is based on a system that is no longer used. Nakazawa was born in 1878. Address: Japan.

115. Heyne, K. 1950. De nuttige planten van Indonesië. 2 v. [The useful plants of Indonesia. 2 vols.]. The Hague, Netherlands: W. van Hoeve. 1660 + ccxli p. Tables. 25 cm. [Dut]*
• ***Summary:*** Contents: Ontjom. Dagé. The soybean (Sojaboon, Kedele). Cultivation. Seeds. Use: Témpé, tao hoe, tao koan, tao tjo, soja (ketjap).

Note: This book by K. Heyne was formerly published under the title *De Nuttige Planten van Nederlandsch Indië.* This is not a new edition; only the title has been changed. Address: Hoofd van het Museum voor Economische Botanie te Buitenzorg (Bogor).

116. Mahyudin, R. 1950. Chasiat kedele dan tomat: Sebagi makanan rakjat [The use of soybeans and tomatoes as foods]. Jakarta: Pustaka Rajkat. 42 p. [Ind]
Address: Indonesia.

117. Nicholls, Lucius. 1951. Tropical nutrition and dietetics. 3rd ed. London: Baillière, Tindall and Cox. ix + 476 p. Feb. Illust. 24 cm. [40+* ref]
• ***Summary:*** Table XI (p. 22), "Chemical and biological evaluation of proteins for growing rats," contains 6 columns: Foodstuff, digestibility, Biological Value, Net Utilisation [NPU], Protein efficiency ratio, chemical score, and limiting amino-acid. "There is agreement in all methods of the high value of milk, eggs, and other foods of animal origin, and among those of vegetable origin, the proteins of soya bean flour hold a high place." Values for soya bean curd [tofu] are also included. The next section is on supplementing proteins.

The long section titled "Pulses (legumes)" (p. 219-35) has this contents: Introduction. Dhals (Dals; peas which have been shelled, split and polished). Peanut. Bambara earth pea (*Voandzeia subterranea*). Soya bean: Importance in Asia, used in may forms: Nearly-ripe seeds [edamamé or green vegetable soybeans], dry seeds, soya bean emulsion ('Milk'–contains a detailed description of how soya milk [Vitasoy] is made in Hong Kong, including exact amounts of all ingredients for 800 oz and the nutritional composition (%)), soya bean curd (may be smoked or dried), fermented curds [fermented tofu], fermented beans (témpé), soya bean sauce, sprouted soya beans, soya bean flours, mixtures of soya beans and cereals, milk substitutes (for infant feeding in China). The genus Phaseolus may be divided into two types: Those of Asian origin and those of New World origin (Americas). Cow pea (*Vigna sinensis, V. unguiculata, V. sesquipedalis*). Egyptian kidney bean (Dolichos lablab). Horse gram. Chick pea. Cluster bean (*Cyamopsis psoralioides*). Four-angled bean or Goa bean (*Psophocarpus tetragonolobus*). Locust bean (*Ceratonia siliqua*). African locust bean (*Parkia biglobosa, P. filicoidea*). Sword bean (*Canavalia gladiata*). Jack bean (*Canavalia ensiformis*).

Velvet bean (*Mucuna* spp.). Honey locust (*Prosopis juliflora*). Garden pea (*Pisum sativum*). Broad bean (*Vicia faba*–not a tropical plant). Yam bean (*Pachyrrhizus erosus*). West Indian locust (*Hymenæa courbaril*). Madras thorn (*Pithecellobium dulce*).

Phaseolus–Asian: *Phaseolus aureus:* green gram [mung bean]. *Phaseolus mungo:* black gram. *Phaseolus calcaratus:* rice bean. *Phaseolus actinifolius:* moth bean. *Phaseolus angularis:* adzuki bean. New World: *Phaseolus lunatus:* lima bean. *Phaseolus vulgaris:* kidney bean. *Phaseolus multiflorus:* scarlet runner. The subsection titled "Substitutes for milk" (p. 231-35) discusses soya milk. Goitrogenicity of [raw] soya beans (p. 376). Saponins in foodstuffs (incl. soya bean; p. 385). Table 62 (p. 404-05) gives the botanical name and composition of pulses, incl. soya bean, soya bean curd, soya bean milk, carob bean, Goa bean, tepary bean. Table 66 (p. 410-11) does the same for fresh legumes, incl. broad bean, French beans, pea, pea nuts, and sprouted soya. Table 67 does the same for nuts, oil seeds, and miscellaneous seeds, incl. almonds, coconut, coconut "water," coconut "milk," linseed, pumpkin seed, sesame (gingelly), sunflower seed, and sunflower seed (kernel).

Note 1. This is the earliest English-language document seen (Feb. 2007) that uses the term "fermented curds" to refer to fermented tofu.

Note 2. The title C.M.G. (Companion of St. Michael and St. George) is an honor conferred upon those for distinguished service in the British colonies or commonwealth.

Also discusses: Marmite (autolysed yeast, p. 158, 302). Fluorine in teeth and fluorosis (p. 170, 38). The many species of millet and sorghum (p. 216-18). Coconut, coconut milk, palm oil, red palm oil benniseed of Nigeria, gingelly oil, sesame, sim-sim, til (p. 254-60). Yeast (dried; Torula utilis, Brewers' yeast, Bakers' yeast, Marmite) (p. 302-03).

Lucius Nicholls was born in 1884. Address: C.M.G., M.D., B.C., B.A. (Cantab.). Late Director of Bacteriological and Pasteur Institutes, and Director of Div. of Nutrition, Ceylon; Lecturer in Nutrition, Ceylon Univ.; Late Lecturer on Tropical Medicine, Ceylon Medical College; Nutrition Adviser to Commissioner General, South East Asia. Presently at Cookham Dean [just west of London, England].

118. *Soybean Digest.*1951. Tempeh was a boon to World War II prisoners. Feb. p. 34.

• ***Summary:*** A summary of van Veen and Schaefer 1950.

Note: This is the earliest document seen (Sept. 2011), published in the USA, that contains the word "tempeh" in the title.

119. Sie-Boen-Lian, S. 1951. Serous central chorioretinitis in Djakarta. *Documenta Neerlandica et Indonesica de Morbis Tropicis* 3(3):235-44. See p. 244. [17 ref. Eng]

• ***Summary:*** *"Ontjom* is a moulding product of the soya bean and it has repeatedly caused severe intoxication in Java [sic], sometimes with fatal issue. Another moulding product of the soya bean which is consumed in great quantities by the Javanese is *tempeh,* which is not known to be poisonous."

Note 1. Only *ontjom* made from coconut (not from soya beans) is toxic / poisonous.

Note 2. Chorioretinitis is an inflammation of the choroid (thin pigmented vascular coat of the eye) and retina of the eye. It is also known as choroid retinitis, and as uveitis. Source: Wikipedia. Address: [Dr. [ophthalmologist], 187 Djalan Gadjah Mada, Djakarta].

120. Smith, Dean A.; Woodruff, M.F.A. 1951. Deficiency diseases in Japanese prison camps. *Medical Research Council* (*London*)*, Special Report Series* No. 274. p. 192. (HMSO Privy Council, G.B.).

• ***Summary:*** This comprehensive report discusses the effects of an inadequate, unbalanced, and unaccustomed diet, maintained over a period of years, on thousands of men, women and children, prisoners in the hands of the Japanese in Hong Kong and Singapore.

One section is titled "Preparation of Tempe." British and Dutch prisoners of war in Changi, a Japanese prisoner of war camp in Singapore, survived on tempeh. "Soya beans first appeared in Changi in May, 1943, as a purchase by the Camp Messing Fund; from December of that year onwards, they were occasionally issued to the camp by the Japanese in place of a certain amount of rice... The beans were first simply boiled, but in this form they were rather unpalatable and exceedingly indigestible, and many men passed unaltered beans in their stools. Some Dutch prisoners of war suggested that this difficulty could be overcome by converting the beans into a substance known in the Netherlands East Indies as *tempe,* a product which... occupies a very important place in the diets of those who live in central and east Java." A description of the tempeh-making process is given. "The original culture of fungus was obtained from the withered petals of the *Hibiscus* plant... At Changi, *tempe* was made part of the general issue when available and was used to treat protein and vitamin deficiencies, and was given to diabetics for whom the ordinary rice diet was unsuitable."

Note: According to *The Defining Years of the Dutch East Indies, 1942-1949,* by Jan A. Krancher (McFarland & Co. 1995), upon their invasion of Java in 1942, the Japanese began a process of Japanization of the archipelago. Over the next 3 years, more than 100,000 Dutch citizens were shipped to Japanese internment camps, and more than 4 million *romoeshas,* forced Indonesian laborers, were enlisted in the Japanese war effort. The Japanese occupation stimulated the development of Indonesian independence movements. Headed by Sukarno, nationalist forces declared their independence on August 17, 1945. For Dutch citizens, Dutch-Indonesians or "Indos," and pro-Dutch Indonesians,

Sukarno's declaration marked the beginning of a new wave of terror.

121. Grant, M.W. 1952. Deficiency diseases in Japanese prison camps. *Nature* (*London*) 169(4290):91-92. Jan. 19. [1 ref]
• ***Summary:*** "... many attempts were made to make soya beans palatable and digestible, the only satisfactory method proving to be one common in Indonesia, involving inoculation with a fungus [to make tempeh]. Otherwise, these beans were liable to give rise to much digestive disturbance when used in any quantity, even if first reduced to a fine meal."

122. Delvaux, Edgar. 1953. Les protéines de coton et de soya dans l'alimentation humaine au Congo Belge et au Ruanda Urundi: Relation d'une enquête aux E.U. [The proteins of cottonseed and soya in human foods in the Belgian Congo and in Ruanda Urundi: Report of an investigation in the USA]. Louvain: U.S. Foreign Operations Administration. Operations Mission to Belgium and Luxembourg. 26 p. No. TA 32-101. Aug/Sept. 53. [68* ref. Fre]
• ***Summary:*** Contents: 1. Current state of food and nutrition of the indigenous people of the Belgian Congo and of Ruanda Urundi–Results of an investigation by FAO, OMS, and UNICEF. 2. Vegetable protein and animal protein in human nutrition. 3. Vegetable material rich in protein and available in the Belgian Congo–Cotton and soya. 4. Acceptability of a food. Conclusions.

Substituting vegetable protein for animal protein could help alleviate the shortage of animal protein that exists for certain categories of infants and adults, and that can lead to kwashiorkor. Cassava, the main food of these countries, is rich in carbohydrates but low in protein. The use of soy flour or cottonseed flour could add valuable protein to the diet. The soy flour could be used, as it has been elsewhere, to make soymilk for infants, tempeh, tofu, breads (add 35), or Multi-Purpose Food (Meals for Millions). Address: U.S. Foreign Operations Administration. Operations Mission to Belgium and Lexembourg.

123. Autret, Marcel; Behar, Moisé. 1954. Síndrome policarencial infantil (kwashiorkor) and its prevention in Central America. *FAO Nutritional Studies* No. 13. 81 p. Oct. Also published as "Le Syndrome de Polycarence de l'Enfance en Amérique Centrale (Kwashiorkor)" in Bulletin de l'Organisation Mondiale de la Sante No. 11, p. 891-966. [108 ref. Eng]
• ***Summary:*** This was one of the surveys made by United Nations agencies in the late 1940s and early 1950s which showed the prevalence of protein-calorie malnutrition. Pages 61-63 discuss the soybean as a rich source of protein that may be prepared in a variety of ways. A brief review is given of work with soy in Uganda, Mexico City, India, El Salvador, and Guatemala.

"Acceptability tests with soybean milk were carried out successfully in 1951 in schools and community dining rooms in Mexico City, under the supervision of the Institute of Nutrition (according to a 1951 personal communication from J. Calvo de la Torre and J. Diaz Barriga). The milk was prepared from non-bitter varieties of soybeans developed by the Agricultural Research Department of the Ministry of Agriculture, with the assistance of the Rockefeller Foundation, and cultivated in Mexico under the direction of the Maize Commission, which plans to grow soybeans in rotation with maize" (p. 62)

"The Government of Indonesia, with the financial aid of UNICEF and the technical assistance of FAO, plans to construct a plant for the preparation of an infant food made from dried soybean milk. Other countries, such as Thailand and the Philippines, are now considering similar projects" (p. 62).

The fortification of tortillas with soybeans or soy flour looks very promising. "In an attempt to modernize tortilla making, the Industrial Research Department of the Bank of Mexico has set up a pilot plant to make powdered dried *nixtamal* from suitably treated maize. When this powder is reconstituted with water, it gives the *masa* or dough which can then be rolled out into cakes and baked at home. In addition to several economic and hygienic advantages, the new technique makes it possible to incorporate either whole or partly fat-free soy flour in the *nixtamal* powder. Experiments carried out on this product have been seen by one of the authors; the *tortilla* with 10% soy flour added was still excellent.

"In towns, where *tortillas* are the staple food, there will be no difficulty in introducing soybean once the preparation of *nixtamal* is concentrated in a few large industrial plants instead of scattered among thousands of mills. However, if the Government were to make soybean-maize mixture obligatory now, control would be difficult. In the rural areas the preparation of *tortillas* is a family operation, and it will be necessary to teach the women to add soybeans to the maize grains in the preparation of the *tortillas* by giving practical demonstrations. This will be a long-term and exacting task, but it must be undertaken because mature soybeans cannot be used in the same way as other beans, as they require prolonged cooking.

"The use of the classic fresh soybean curds [tofu] calls for long education of the public, as does that of certain special preparations such as *tempeh* (fungus-fermented soybean cheese), the preparation and nutritive value of which have been studied by Van Veen" (p. 63).

"This Study is being published in French in the Bulletin of the World Health Organization for November/December 1954, and in Spanish in the Bulletin of the Pan-American Sanitary Bureau."

Note: This is the earliest document seen (Nov. 2002)

concerning world protein shortages. Address: 1. D.Pharm., Senior Nutrition Officer, Nutrition Div., FAO, Rome, Italy; 2. M.D., Assoc. Member of INCAP.

124. Baker Jones, E. 1954. Preparation of fermented soya bean curd (Tempe)* [in Southern Rhodesia]. In: Malnutrition in African Mothers, Infants and Young Children: Report of the Second Inter-African Conference on Nutrition. London: Her Majesty's Stationery Office. 398 p. See p. 278-79. Held 19-27 Nov. 1952 at Fajara, Gambia, under the auspices of the Commission for Technical Cooperation in Africa South of the Sahara (CCTA). [2 ref]
• ***Summary:*** The soya bean "can be grown in Southern Rhodesia where, however, no serious attempt has yet been made to process the soya bean so as to make it a popular human food.

Experiments in processing have been made in Southern Rhodesia in collaboration with an immigrant from Indonesia who is well acquainted with a product of processed soya bean, *tempé,* which was used in Changi [Singapore] Prisoner of War camp" [during World War II]. A method for preparing tempe is described, based on many trials plus helpful information supplied by Professor van Veen of the Food and Agriculture Organization (FAO).

Footnote 1 (p. 278), referring to the title of this article, states: *"A note by Dr. Baker Jones on the preparation of soya bean curd which was available to members of the Conference has now been revised in the light of information received from Mr. W. R. Carr, Food Technologist, Southern Rhodesia."

Footnote 2. "A letter dated June 1953 from Dr. Baker Jones says, 'The pilot plant for tempé production, constructed by our local Farmers' Co-op, is expected to come into operation in a week or two.'"

Note: The term "soybean curd" usually refers to tofu, so "fermented soybean curd" is a poor term for tempeh. Address: Dr., Secretary, Nutrition Council, Causeway, Salisbury, Southern Rhodesia.

125. Baker Jones, E. 1954. Foods from Southern Rhodesia. In: Malnutrition in African Mothers, Infants and Young Children: Report of the Second Inter-African Conference on Nutrition. London: Her Majesty's Stationery Office. 398 p. See p. 269-71. Held 19-27 Nov. 1952 at Fajara, Gambia, under the auspices of the Commission for Technical Cooperation in Africa South of the Sahara (CCTA). [2 ref]
• ***Summary:*** "White maize [corn] is the staple food of Southern Rhodesia; it is supplemented by bulrush millet (*Pennisetum typhoideum*), finger millet (*Elusine coracana*), sorghum and upland rice." A sauce made from cooked, pounded groundnuts is widely served over cooked vegetables. Animal products include meat (average consumption of beef is less than 21 gm = 3/4 oz per day), termites and caterpillars (the latter two fried in their own fat). "Native beer is brewed from maize and finger millet. Small, almost negligible, amounts of cow's and goats milk are consumed. Infants are fed from an early age with cereal pap and as a rule they are weaned late... The bulk of the legume crops is sold for cash. Oil and margarine are produced from most of the groundnuts grown and the residue is used for cattle cake."

"Attempts to improve the diet of the African in Southern Rhodesia are being made by the introduction of two new dishes, one a maize tortilla traditional in Mexico, and *tempé* as produced in Indonesia. Difficulties have arisen in the preparation of *tempé* as the air temperature and humidity in Southern Rhodesia are not favourable for the fermentation processes, and plant and equipment will have to be designed for this purpose.

"The method used for preparation of *tempé* is given on page 278. It is of interest that farmers of Southern Rhodesia have been attracted by *tempé* as a feed for cattle and it is as such that it may first appear on the market. It is thought that the artificial heat and humidity of the tobacco curing sheds of Southern Rhodesia might be adapted to the manufacture of *tempé* and it seems that the production of soya bean, the advantages of which have been so advocated by Southern Rhodesian agriculturalists, may be stimulated by a demand for *tempé,* in the first instance for feeding cattle." Address: Dr., Secretary, Nutrition Council, Causeway, Salisbury, Southern Rhodesia.

126. Dupont, A. 1954. Essential amino acids in some Indonesian food constituents. Thesis, Fakultas Ilmu Pasti dan Ilmu Alam (FIPIA), Bandung, Indonesia. *
Address: FIPIA, Bandung, Indonesia.

127. Malnutrition in African Mothers, Infants and Young Children: Report of the Second Inter-African Conference on Nutrition. Held under the auspices of the Commission for Technical Co-operation in Africa South of the Sahara (C.C.T.A.). 1954. London: Her Majesty's Stationery Office. 398 p. Held 19-27 Nov. 1952 at Fajara, Gambia. Illust. Index. 25 cm.
• ***Summary:*** Contains 5 papers about food uses of soya in Africa, each cited separately. Address: Gambia and London.

128. Trowell, H.C.; Davies, J.N.P.; Dean, R.F.A. 1954. Kwashiorkor. London: Edward Arnold. xii + 308 p. Illust. 22 cm. [625* ref]
• ***Summary:*** This is the classic book on kwashiorkor, which is severe malnutrition, especially in infants and children, that is caused by a diet high in carbohydrate and low in protein. Contents: 1. Reports of kwashiorkor in children and a discussion of terminology (p. 1-11). 2. The history of kwashiorkor (p. 12-46). 3. Kwashiorkor in children. 4. Protein malnutrition in adults. 5. Implications of kwashiorkor in children and of protein malnutrition in adults.

In the chapter on "Kwashiorkor in Children," in the section titled "The Treatment of Kwashiorkor," there is lengthy discussion of the treatment with plant protein diets, including those containing soybeans. At Kampala, Uganda, rats and then children with kwashiorkor were fed a diet of sweet bananas and a paste of cooked whole soybeans, sucrose, and vitamins. "A day's food for a child weighing 6 to 8 kg. might consist of 300 to 400 gr. of the mashed banana, 300 gr. of the soya preparation, 25 gr. sugar (sucrose) and 2.0 gr. of the vitamin mixture. This diet provided a little more than 500 gr. protein, and about 1000 calories. It also provided nearly 25 gr. fat, but apprehensions of the danger of giving so much fat, based on some unfortunate experiences with full-cream milk that had shown only too clearly the fat intolerance of severe kwashiorkor, proved to be largely unjustified: the soya fat, possibly because its fatty acid composition was very different from that of milk fat, seemed to be easily absorbed and did not cause any gastro-intestinal upsets, even in moderately severe cases." The banana-soya diet was low in cost and results were satisfactory. Address: 1. O.B.E., M.D. (London), F.R.C.P., Physician, Mulago Hospital, Uganda Medical Dep., and Dep. of Medicine, Makerere College Medical School, Kampala, Uganda; 2. M.D., Prof. of Pathology, Makerere College Medical School, Kampala; 3. Ph.D. (Cambridge), M.R.C.P., Medical Research Council, Group for Research in Infantile Malnutrition, Kampala, Uganda.

129. Autret, M.; van Veen, A.G. 1955. Possible sources of protein for child feeding in underdeveloped countries. *American J. of Clinical Nutrition* 3(3):234-43. May/June. [7 ref]

• ***Summary:*** Soybeans can help fill protein needs but must be processed in well-controlled processing plants. FAO has long been associated with the "saridele" "soy milk" project in Indonesia. After the "saridele" project had been extensively discussed in the National Nutrition Council of Indonesia, the Indonesian government asked UNICEF and FAO to assist in establishing a "saridele" plant for the manufacture of this product for "mother and child welfare centers and hospitals." Why did the Government choose centralized manufacture rather than local manufacture in villages and households? "The reply is that whereas in many villages 'soy milk' is not unknown, 'saridele' from soybean and groundnut certainly is. Introducing a new, hardly known food or food mixture in a country like Indonesia is a difficult and slow process; demonstration through feeding schemes is one of the best ways. Processing on a village scale or locally for hospitals, etc. would certainly lead to numerous difficulties, such as unhygienic manufacture and distribution, lack of suitable containers, and adulteration of the product with water, etc.

"The total capital investment of the Government and UNICEF (who will supply the plant) is about 6 or 7 million Rupiahs (about &700,000); the plant will produce at least 300 tons of the dry product a year" (p. 235-36). Note: This is the earliest document seen (Sept. 2000) that mentions "saridele."

"Another well-known soybean product from Indonesia, *tempeh,* prepared by treating the cooked soybeans with a certain fungus, has drawn the attention of workers in Southern Rhodesia where soybeans are cultivated, but the local population is not much interested in consuming them. Tempeh has a high nutritive value and is highly digestible, but the manufacture is somewhat difficult to control when the product is manufactured under simple conditions. This and other considerations were the basis in Indonesia of the conclusion that soy milk would be preferred to tempeh in the manufacture of a soy product for infants, and children.

"FAO has been giving technical advice on the manufacture of tempeh in Southern Rhodesia, and it seems that the results of the large-scale experiments are very promising. It is to be hoped that these will be published, not only in connection with acceptability, but also concerning the technical problems, data on production costs, and so on." Address: 1. Pharm. D.; 2. PhD.

130. Kardinah, N. 1955. Tempe benguk dan tempe koro [Velvet bean tempeh and jack bean tempeh]. *Pewarta Balai Teknologi Makanan* 1(2):4-5. [Ind]*

• ***Summary:*** Note: This is the earliest document seen (Sept. 2011) that discusses non-soy tempeh (jack-bean tempeh, *tempe koro*).

131. Jelliffe, D.B. 1955. Infant nutrition in the subtropics and tropics. *World Health Organization Monograph Series* (*Geneva*) No. 29. 237 p. [313 ref]

• ***Summary:*** Contents: Introduction. 1. Evolution of infant feeding in the Western world. 2. Present infant-feeding practices in the subtropics and tropics. 3. Present status of nutritional disease among infants in the subtropics and tropics. 4. Methods of improving infant feeding in the subtropics and tropics. 5. Prevention of kwashiorkor. Acknowledgements. Annexes: 1. Summary of suggested methods of infant feeding in the subtropics and tropics. 2. Questionnaire for use in investigating methods of infant feeding. Illustrations. References. Index.

Soya-bean products are mentioned on pages 47 (tempeh and "tahu" [tofu]) and 49 (soya curd [tofu] and tempeh).

In the chapter titled "Prevention of kwashiorkor," pages 160-62 review and discuss the use of the soya bean to prevent protein deficiency in infant nutrition: (1) Soya-bean emulsion is "also known as soya 'milk.'" Work in the USA, Philippines, Hong Kong, Thailand, and Indonesia is discussed. (2) Soya-bean curd, "also known as soya 'cheese'" [tofu], is rich in calcium but is lacking in the vitamin-B complex. "Nevertheless, it can be an extremely valuable food, and, according to Platt (personal communication) is far superior to other soya products in

infant feeding." (3) Fungus-digested soya beans or tempeh from Indonesia contains vitamin B-12 and is not expensive. It is very digestible and can be ground up and added to steamed rice for feeding older infants. (4) "Miscellaneous. Various other prepared soya products are of great nutritional value, but are probably unsuitable for infants." These include miso and soy sauce. "A simple method of preparation which requires further investigation is that of grinding the roasted beans into a flour, which can be added to gruels or soups. The roasted bean is certainly palatable but its digestibility for children is unknown, as is the effect of roasting on the trypsin inhibitor and on the amino-acid composition." Address: WHO Visiting Prof. of Paediatrics, All-India Inst. of Hygiene and Public Health, Calcutta. Formerly, Senior Lecturer in Pediatrics, University College of the West Indies, Jamaica. Nutrition Consultant, World Health Organization.

132. Platt, B.S. 1956. The soya bean in human nutrition. *Chemistry and Industry* (*London*) No. 32. p. 834-37. Aug. 18. [25 ref]

• ***Summary:*** The author worked in China during the period in 1933-37, and there had "some experience of preparations made from the soya bean in infant feeding; also rarely a day passed in that period when I did not eat something of one or more of the Chinese soya bean food products–sauce, oil, bean curd or sprouts."

The author gives figures to refute the common misconception that "millions of Chinese have lived for centuries on a diet of rice and soya beans. For example (according to Buck 1938) in northeast China (Manchuria) where soya beans were used most, "very little rice was eaten, 25% of the calories in the diet came from wheat, and 5% from the soya bean... Only 2% of the calories in the Chinese farm diet were derived from vegetable oils which included oils from groundnuts, rape seed, sesame, and soya bean; the first three together occupy rather more than the acreage under soya bean crops. Learmonth (1956, p. 360) has stated that the soya bean has only been grown as an oil-bearing crop since the 19th century. There is, however, a Chinese work dated A.D. 1637 called 'The exploitation of the works of nature,' the second volume of which is devoted to oils and fats. From this work it may be deduced (according to information supplied by Dr. G.D. Lu) that the soya bean was grown for its oil as early as the third century A.D. According to Buck's data on most frequent yields, broad beans and field peas yield on average 18 bushels per acre compared with 14 bu/acre for soya beans. Peanuts or groundnuts give 64 bu/acre but it is not clear whether they are shelled or not.

"Anyone who, at a Buddhist feast, has eaten the delectable dishes made from the soya bean cannot but agree that, gastronomically, the merits of a wide range of soya bean products are outstanding. The 'vegetable' varieties of soya bean are, in fact, often simply immature ones. They are green and look like young lima beans but they have a richer and a distinctive and more delicious flavour... Soya bean curd (tou fu) is used in a variety of dishes. It is prepared from the mature beans, not usually in the home, but by the village 'specialist.'... With appropriate culinary treatment, it can be made to imitate a variety of meat dishes; traditionally it is given to young Chinese children."

The author also discusses soy sauce, tempeh, soy oil, and soya "milk".

"I recently had a visit from a professor of pediatrics at a hospital in Djakarta [Jakarta], Indonesia, who reported that about 50 infants put on a soya milk preparation, *all,* after two months, had some gastro-intestinal disturbances; none of them was thriving. In my view, it is still too early to replace human milk for infants and certainly not by a vegetable substitute for animal milk...

"In my own experience soya bean curd is a suitable product for feeding young children and I suggest that its superiority over soya milk may be the separation in the 'whey' of substances that have been shown to be toxic for animals.

The contents of this paper were first presented as a contribution to the discussion on "Soya in the Field of Nutrition" by E.M. Learmonth, published in *Chemistry and Industry* on 12 May 1956. The author mentions an ad for "Sun Spot" soya milk.

The article begins with a poem written by "a medical nutritionist and his wife": "'Little Soybean who are you / From far off China where you grew?' / I am wheels to steer your cars, / I make cups that hold cigars. / I make doggies nice and fat / And glue the feathers on your hat. / I am very good to eat, / I am cheese and milk and meat. / I am soap to wash your dishes, / I am oil to fry your fishes, / I am paint to trim your houses, / I am buttons on your blouses. / You can eat me from the pod, / I put pep back in the sod. / If by chance you're diabetic / The things I do are just prophetic. / I'm most everything you've seen / And still I'm just a little bean.'"

Note: This poem, written by Dr. and Mrs. J.W. Hayward, was first published in the *Proceedings of the American Soybean Assoc.* 1940. Aug. p. 6. Address: C.M.G., Ph.D., M.B., Ch.B., Human Nutrition Research Unit, Medical Research Council Laboratories, Holly Hill, London, N.W. 3.

133. Moreau-Froment, Mireille. 1956. Les Neurospora [The Neurospora]. *Bulletin de la Societe Botanique de France* 103(9-10):678-738. Dec. [498+* ref. Fre]

• ***Summary:*** An excellent review of the genus, based on her dissertation. The lengthy bibliography runs from p. 722-738.

134. **Product Name:** Dried Tempeh.
Manufacturer's Name: Industrial Caterer's Ltd.
Manufacturer's Address: Salisbury, Rhodesia.
Date of Introduction: 1956.
Wt/Vol., Packaging, Price: 2 shillings per pound.

How Stored: Shelf stable.
New Product–Documentation: Van Veen. 1962. "Proceedings of Conference on Soybean Products for Protein in Human Foods." p. 212. "After the war, as Dr. Gyorgy knows, one of my former coworkers came to South Rhodesia, and saw a lot of soybeans exported, and not eaten by the population. He went to a local food technology institute, where the staff became interested. For some time the interested scientists made 'tempeh' for the hospitals, but the population having no experience with fungus products at all (as the people in Southeast Asia have) just did not want to embark on tempeh manufacture and at the moment tempeh has disappeared from Rhodesia."

Orr and Adair. 1967. Tropical Products Institute Report G-31. "The production of protein foods and concentrates from oilseeds." p. 67. "Tempeh was produced in Africa on an industrial scale for a limited period about ten years ago. The firm concerned was Industrial Caterers Ltd., of Salisbury, Rhodesia, which produced dried tempeh for sale at 2 shillings per lb. However our information [based on a personal communication from Dr. S. Graham, Office of the Provincial Medical Officer of Health, (Northern) Rhodesia] is that the product... was not readily accepted by the African, nor was the European interested in it. It would have required a very extensive propaganda campaign to establish it and money for this was not forthcoming."

Note: This is the earliest known commercial soy product made in Southern Rhodesia (later renamed Zimbabwe).

135. Nugteren, D.H. 1956. Over de structuur van bongkrekzuur [On the structure of bongkrek acid]. PhD thesis, Technische Hogeschool, Delft, Netherlands. [Dut]* Address: Netherlands.

136. Soetan, Sanif. 1956. Kedelai [Soybeans]. Jakarta: Dinas Penerbitan Pustaka. 23 p. [Ind]
• ***Summary:*** Contains descriptions of the preparation of tempeh, tautjo (Indonesian-style miso), ketjap (soy sauce), and tahu (takoa; tofu).

Note: This is the earliest English-language document seen (Feb. 2009) that uses the word "tautjo" to refer to Indonesian-style miso. Address: Indonesia.

137. Nugteren, D.H.; Berends, W. 1957. Investigations on bongkrek acid, the toxine from *Pseudomonas cocovenenans. Recueil des Travaux Chimiques des Pays-Bas* 76(1):13-27. Jan. [25 ref. Eng]
• ***Summary:*** Reliable methods for the preparation, isolation and determination of bongkrekic acid, the antibiotic from *Pseudomonas cocovenenans,* are described. Note: This is the earliest document seen (Sept. 2003) that correctly gives *Pseudomonas cocovenenans* as the name of the bacterium that produces the bongkrek toxin. Address: Biochemical Lab., Technological Univ. of Delft, Netherlands.

138. Benjamin, Chester R.; Hesseltine, C.W. 1957. The genus *Actinomucor. Mycologia* 49(2):240-49. March/April. [13 ref]
• ***Summary:*** *"Actinomucor,* one of several monotypic genera of the family Mucoraceae, was originally described by Schostakowitsch in 1898 from 'Taubenmist' from Siberia. Schostakowitsch stated that the genus was closely related to *Mucor,* but differed in having branched stolons which gave rise to rhizoids and sporangiophores. He also stated that the genus was distinct from *Rhizopus* and *Absidia,* two other stoloniferous genera, because of the limited growth of its stolons and the different formation of its columellae and sporangiophores.

Fermented tofu is not mentioned, but the species used to make it, *Actinomucor elegans,* is described and its taxonomic history is given. It has had twelve different scientific names between 1871 and 1946, including *Mucor corymbosus* (1871), *Rhizopus elegans* (1884), *Mucor harzii* (1888), *Actinomucor repens* (1898), *Glomerula repens* (1903), *Mucor glomerula* (1908),... and *Actinomucor corymbosus* (1939, 1946).

Note 1. Letter from Dr. Clifford W. Hesseltine. 1990. "Our own observations are in accord with the findings of Schostakowitsch... Actinomucor is the mold used in making Chinese Cheese, and its nature is not well known, even to mycologists."

Note 2. This is the earliest document seen (April 2003) that mentions *Actinomucor elegans.* Address: NRRL, Peoria, Illinois.

139. Boedijn, K.B. 1958. Notes on the Mucorales of Indonesia. *Sydowia* (*Annales Mycologici*) 12(1/6):321-62. March 25. Series II. [101* ref]
• ***Summary:*** Gives details with illustrations on many Rhizopus species of molds including *Rhizopus oligosporus* Saito (which in Bogor can always be isolated from tempeh, and can also be isolated from "Bungkil" (cattle cakes) and fermenting tobacco), *Rhizopus stolonifer, Rhizopus chlamydosporus,* etc. Address: s'Gravenhage, Netherlands.

140. Subrahmanyan, V.; Bhagavan, R.K.; Swaminathan, M. 1958. The place of processed foods in the treatment and prevention of protein malnutrition in children. *Indian J. of Pediatrics* 25(123):216-27. May. [57 ref]
• ***Summary:*** Contents: Introduction. Treatment of kwashiorkor: Vitamin therapy, the use of dried stomach preparations (e.g., hog's stomach), the use of protein hydrolysate, human serum, plasma and blood, treatment with skim milk powder and proprietary casein foods, treatment with plant protein diets, soybean-banana mixture (Dean 1952), Bengal gram and banana diet mixture, low-fat groundnut flour–Bengal gram–skim milk diet mixture, possible sources of processed protein rich foods for the

prevention of protein malnutrition, better utilization of soya and groundnut products, soya and groundnut milks (7 studies are summarized briefly), low-fat oilseed flours, balanced malt food containing soya flour and groundnut flour, Multipurpose food based on low-fat soya flour and groundnut flour, predigested foods, fish flour. Conclusion.

"Introduction: It is now well recognized that protein malnutrition is widely prevalent among children in many tropical and subtropical countries (Trowell et al. 1954) (p. 216).

"The foods that have been most extensively used in the treatment of kwashiorkor, are skimmed milk powder and calcium caseinate" (p. 217).

"Treatment with plant protein diets: Of late it is being increasingly recognised that skim milk powder, though the cheapest protein food available so far for the treatment of protein malnutrition, cannot provide the basis for a large scale solution of the problem in underdeveloped countries, where skim milk powder is not available in sufficient quantities and has to be imported" (p. 218).

"Better utilization of soya and groundnut products:... Both these foods are by themselves highly concentrated and difficult to be cooked properly. Consequently children may experience difficulty in digesting cooked [whole] soyabean or roasted groundnut (Aykroyd and Krishnan 1937). Recent investigations carried out in India and other countries have shown that both soyabean and groundnut could be suitably processed into milk which is highly nutritious and can be readily digested by young children (Dean 1953; Indian Council of Medical Research 1955). Low-fat flours obtained from soyabean and groundnut are also highly nutritious and can be incorporated in various ways in the diet of children (Autret and Van Veen 1955).

"Predigested foods" [fermented]: Mentions soy sauce, and tempeh in Southern Rhodesia.

"Conclusion: It is evident from the foregoing account that besides cereals and pulses which form important sources of protein in the diet of the low income groups in tropical countries, oilseeds and oilseed meals represent an abundant and a most important source of proteins which have not been fully utilised so far for supplementing human diet." Address: Central Food Technological Research Inst. (CFTRI), Mysore, India.

141. Hardjohutomo, Harsono. 1958. *Oxalis corniculata* bagi pembikinan bongkrek [*Oxalis corniculata* in the preparation of bongkrek]. In: 1958. Kongres Ilmu Pengetahuan Nasional 1. (Report at the First National Science Congress, Malang, Indonesia). Vol. C. See p. 117-35. [12 ref. Ind]

• ***Summary:*** The author, a co-worker of A.G. van Veen, conducted an interested practical experiment aimed at preventing bongkrek poisoning. When the coconut-containing material before inoculation with the fungus is slightly acidified (e.g., about pH 5.5), the *Pseudomonas* scarcely grows, but the fungus does. He proposed that the material be mixed with the acid-containing leaves of an *Oxalis* species that grows everywhere as a weed in Banjumas. He was able to show in laboratory experiments that in this way, after inoculation with both *P. cocovenenans* and *Rhizopus,* the material does not become toxic. However, *Oxalis* leaves are an unusual ingredient for the population; moreover they seem to give the material an unusual dark color that may explain why the population has, as far as known, not made use of this simple safety measure. Address: Indonesia.

142. Dean, R.F.A. 1958. Use of processed plant proteins as human food. In: A.M. Altschul, ed. 1958. Processed Plant Protein Foodstuffs. New York: Academic Press. xv + 955 p. See p. 205-47. Chap. 9. [99* ref]

• ***Summary:*** Contents: General considerations: Early sources of protein for human food, competition for food between man and his domestic animals, vegetarianism and vitamin B-12, protein requirements (of children, of adults). Plant proteins now in use: Foods that can be prepared in the home (cereals, legumes {incl. groundnuts, soybean}, sunflower seed, sesame), plant foods used after factory processing (cereals, legumes, sunflower seed meal, cottonseed meal). Other forms of plant food: Plankton, algae, food yeast, leaf proteins (p. 237-38). Future extensions of the use of plant proteins: The theoretical basis of selection, assessment of the value of foods intended for human consumption, practical measures for the future.

In 1957 some 160,000 tons of soybeans were used to make tofu in Japan. "Magnesium or calcium salts are the precipitants of the curd from the soybean milk; the product is eaten by nearly every family in Japan with its breakfast miso-soup."

During World War II, the attempt was made to introduce soya as a food crop to Uganda. But "no instruction was given in the necessary details of preparation, with the result that the crop was very reasonably declared inedible by the Africans. They retain a violent prejudice against it and are suspicious that it has been added to any food, such as yellow corn meal, that they find distasteful.

"One of the most interesting methods for making soya edible has evolved in Indonesia and was described in full by Van Veen and Schaeffer (1950). It takes advantage of the ability of the mold *Rhizopus oryzae* to grow on the bean and alter its constituents... The product made from soya is called *tempeh kedelee* (kedelee = soybean)." Details of the production process are given. A description of natto and its composition is also given (p. 218).

The section on algae gives detailed information on chlorella, a type photosynthetic single-cell protein. As early as 1954, Morimura and Tamiya in Japan were experimenting with the use of powdered *Chlorella ellipsoidea* in foods. Note: This is the earliest document seen (Aug. 1997–one

of two documents) that mentions the use of algae or other photosynthetic single-cell protein as food.

The section on leaf proteins (p. 237-39) begins: "Protein synthesis is one of the chief activities of the leaf, and proteins are comparable to animal proteins in their amino acid composition (Lugg 1949). The young leaf is especially rich in protein..." Pirie (1953) has suggested a process for recovering the leaf protein from the fibrous residue left after mechanical separation; the protein is usually very difficult to free. Pirie (1953) has also described the likely structure of an efficient plant. "There are also obvious possibilities in such abundant and little-used material as the leaves of sugarcane, cassava, and bananas" (p. 238-39).

The section titled "Sesame" (p. 219-20) states that the Zande people of southwestern Sudan steep the seeds in water for a few minutes, then pound them lightly to loosen the outer coat. They then dry the seeds and the outer coat is sieved or winnowed away. The seeds are then roasted and ground to a paste, which is sometimes used to make a sauce (Culwick 1950). "The use of sesame as a sweetmeat or condiment is fairly widespread in the Near East. A sweetmeat called *tahinya* or *tahina* is made in the Gezira [Sudan] by cooking the roasted seeds in sugar; sometimes the seeds are crushed before the cooking, and sometimes not" (Culwick 1951). Describes how to make the condiment. Address: Medical Research Council, Mulago Hospital, Kampala, Uganda.

143. Stokes, J.L. 1958. Microbial proteins. In: A.M. Altschul, ed. 1958. Processed Plant Protein Foodstuffs. New York: Academic Press. xv + 955 p. See p. 789-804. Chap. 29. [56 ref]

• ***Summary:*** Contents: Introduction. Yeasts: Composition, amino acid composition, feed yeasts, food yeasts. Molds: Composition, amino acid composition, molds as animal food, molds as human food. Bacteria: Composition, amino acid composition, bacteria as food. Summary and conclusions.

Concerning molds as human food (p. 797): "Only a few attempts have been made to supplement human food with mold protein. Most of these experiments took place in Germany during World War II and are described by Robinson (1952). Preparations of *Fusarium* and *Rhizopus* as well as several yeasts were fed to human beings. The general health of the people to whom the molds were fed was better than that of those acting as controls; the *Fusarium* strain, which was grown on whey, was the most satisfactory of the organisms tested. The strains of both *Fusarium* and *Rhizopus* were high in cystine, methionine, and glutathione and were therefore especially suitable for feeding and superior in this respect to the general run of yeast strains."

"Another possibility for use of molds as human food is to grow them on soybeans or oilseed press cakes. A product called *tempeh,* formed in this manner, is described in Chapter 9, page 218." Address: USDA, Albany, California.

144. **Product Name:** [Tempeh].
Foreign Name: Tenpe.
Manufacturer's Name: Firma E.S. Lembekker.
Manufacturer's Address: c.v. Alkemadestraat 61, Amsterdam 1065, Netherlands. Phone: 020-151-480.
Date of Introduction: 1959. January.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Address is now given as 61 Corn V Alkemadestraat, 1065 Amsterdam, Netherlands. Phone: 020-151-480.

Letter from Sjon Welters. 1982. April 16. "We have some big Indonesian tempeh-makers who are producing first class tempeh, sold refrigerated. Fa. Lembekker (c.v. Alkemadestr. 61, Amsterdam), one I know personally, makes the best tempeh I ever ate. It's made with a fast fermentation and it keeps for 10-14 days just by keeping it cool." Form filled out by Fa. Lembekker. 1982. Aug. They started to make tempeh in 1959. They now make an average of 3,000 lb/week of tempeh. The owner believes that ENTI was the first tempeh shop in the Netherlands, started in April 1946; but it has already disappeared–It was sold to Mrs. Duson of Zevenhuizen, Netherlands. The owner believes that Van Dappern is the largest tempeh manufacturer in Europe.

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 28. This was Europe's second earliest commercial tempeh company, founded in January 1959.

145. *FAO Nutrition Meetings Report Series.*1959. Report of the FAO/UNICEF Regional School Feeding Seminar for Asia and the Far East. No. 22. 53 p. Held 10-19 Nov. 1958 at Tokyo, Japan. [5 soy ref]

• ***Summary:*** UNICEF stands for the United Nations International Children's Emergency Fund. Appendix 3 (p. 48-51) titled "Data on some nutritious food products that have been developed in Asia and the Far East," discusses Saridele, groundnut extract curd [tofu made from peanut milk], Indian Multipurpose Food (MPF, developed by CFTRI), miso, natto, and tempeh.

"'Saridele' is the name that has been given to a spray-dried soybean extract combined with an extract of sesame, or peanut, with or without the addition of malt. Vitamins and calcium are added to saridele in order to make its nutritive value similar to that of cow's milk or to enhance its nutritive value. Flavorings such as vanilla or chocolate are also used, which make the product highly acceptable.

"A plant having a capacity of about 800 kg./day has been erected in Indonesia with the financial assistance of UNICEF and the technical assistance of FAO. Saridele is manufactured from a mixture of soybeans and decorticated sesame in the proportion of 4:1. Malt extract from maize may be used to replace 50% of the cane sugar used. Soybean and sesame are soaked for about six hours and then disintegrated finely, together with 7 volumes of hot water.

The slurry is stirred vigorously and then filtered. The filtered liquid is heated under pressure for 10 minutes at 120ºC., then flashcooled and formulated with Vitamin A, in oil solution, and malt, if desired. The formulated liquid is homogenized, concentrated in a vacuum evaporator to about 22% solids, then spray-dried. The powder finally is sifted and blended with finely ground cane sugar, and calcium carbonate, riboflavin, ascorbic acid and Vitamin B_{12} added; the mixture may be flavored with vanilla or chocolate." A table compares the nutritional composition of whole dried cow's milk and Saridele (based on a leaflet from Saridele Ltd., Indonesia). Address: FAO, Rome.

146. Nakano, Masahiro. 1959. FAO Ajia chiiki shokuhin kakô kaigi ni shusseki shite [Attending the FAO Asian food processing conference]. *Nosan Kakko Gijutsu Kenkyu Kaishi* (*J. for the Utilization of Agricultural Products*) 6(6):292-302. Dec. [Jap]
• ***Summary:*** Discusses Korean meju and soy sauce, Indonesian tempeh (tenpe), ontyom (onchom) and pongrek [sic, bongkrek], and Vietnamese nuoc-mam. Address: National Food Research Inst., Shiohama 1-4-12, Koto-ku, Tokyo, Japan.

147. Soedarmo, Poorwo. 1959. Vegetable protein as cow's milk substitute. In: Proceedings of the 15th General Assembly, Japan Medical Congress. See vol. 1, p. 492. *
• ***Summary:*** Orr and Adair (1967) state that the author presented an undated paper by this title at the "Symposium on Problems of Nutrition in Asian Countries." Includes a discussion of Saridele, a spray-dried soy milk made in Indonesia. "The equipments are highly technical, the receiving country is technically not well-developed, and this arouses problems in the selection and the ordering, the transportation, the installation and the exploitation of the equipment."

Tempeh is an Indonesian preparation. It may be eaten on its own, after roasting or frying, or used in soups. It is also used in a dry form. It is said that about 60 million of the 90 million inhabitants of Indonesia include tempeh in their daily menu.

148. Van Damme, P.A.; Johannes, A.G.; Cox, H.C.; Berends, W. 1960. On toxoflavin, the yellow poison of *Pseudomonas cocovenenans. Recueil des Travaux Chimiques des Pays-Bas* 79(3):255-67. March. [15 ref. Eng]
• ***Summary:*** *Pseudomonas cocovenenans* growing on tempeh bongkrek can produce two deadly toxins: yellow-colored toxoflavin and colorless bongkrek acid. The latter, by far the more potent toxin of the two, is responsible for most of the lethal food poisonings. Address: Biochemical Lab., Univ. of Delft, Julianalaan 67, Delft, Netherlands.

149. Yap, Bwee-Hwa. 1960. Nutritional and chemical studies on tempeh, an Indonesian soybean product. MS thesis, Cornell University, Ithaca, New York. 50 p. June. No index. 28 cm. [37 ref]
• ***Summary:*** Contents: Introduction. Review of literature. Experimental: Preparation of tempeh, yield dimensions, determination of pH and temperature changes during the period of fermentation, determination of percentage of moisture, determination of total protein, preparation of a soluble fraction, determination of soluble solids, soluble nitrogen, reducing substances, and percentage transmittancy, comparison of preservation methods. Results. Discussion. Summary. Bibliography. Appendix.

She thanks Dr. Van Veen for his long-standing interest and advice. She did her research at both the Dep. of Food Science and Technology, New York State Agricultural Experiment Station, Geneva, NY, and in the Graduate School of Nutrition, Cornell Univ., Ithaca, New York. At the experiment station a standardized method for the preparation of tempeh was developed and chemical analyses were made to determine changes that took place during tempeh fermentation. At the school of nutrition, the nutritive value of tempeh was studied on rats.

She mentions Saridele. Taucho is a seasoning used in Indonesia. Mung bean sprouts are more popular than soy bean sprouts in Indonesia. Tempeh is thought to have originated on the island of Java, whence it was gradually introduced to the other islands of Indonesia. In Indonesia, tempeh is normally consumed in amounts of 100 to 200 gm per person per meal. De Bruyn did pioneering work on tempeh and its derivatives (such as onchom from peanuts).

Osborne and Mendel (1917) discovered that preheating raw soybean meal increases its nutritive value. Franek (1958) in India reported loss of basic amino acids with increases in autoclaving temperature. So one must find the optimum middle point, as Liener and Fevold did in 1949.

Everson et al. (1943) showed that germination of soybeans improves the nutritive value, equivalent to the addition of cystine or to autoclaving. Note: This does not mean that it is OK to eat soy sprouts raw!

Yap acidified the presoak water with lactic acid. She dehulled the soybeans with an electric vegetable peeler, grew the starter spores on bran, and did tempeh yield determinations at 5 points in a 22-hour fermentation. She also measured pH and many other variables.

Fresh tempeh should smell like fresh bread dough. As soon as ammonia can be detected, the tempeh is beginning to deteriorate–quickly.

She found the PER of tempeh to be 2.5, midway between that of cooked soybeans (2.3) and casein (2.7). But for rats, the nutritive value of tempeh is almost equal to that of casein. The rats ate 1.5 times as much tempeh as cooked soybeans, and they grew better on tempeh than those on plain cooked soybeans, and almost as fast as those on casein.

During soaking, soybeans increased 2.17 fold in weight.

Tempeh yield is 1.95 relative to that of soybeans. She cooked them for 90 minutes in acidified water. Yap gathered all the data used in the Steinkraus (1960) report. She has graphs on changes during fermentation: temperature, soluble solids, soluble nitrogen. Address: Ithaca, New York.

150. Aljat, -. 1960. Food & utilization of food resources (Indonesia). In: Proceedings of the Fourth Pan Indian Ocean Science Congress. Section G. Human Ecology. See p. 65-68. Held 14-24 Nov. 1960 at Karachi, Pakistan.
• ***Summary:*** Gives detailed instructions for making the following soybean products: tempeh (tempe, soya-cake, moulded), tofu (tahu, soya curd, coagulated with gypsum / sakow powder), miso (taotjo), and sweet Indonesian soy sauce (Ketjap [perhaps ketjap manis], made with black soybeans). Also describes how to make onchom (ontjom) from peanuts, plus krupuk, and lempers. Table 1 compares the nutritional composition of powdered Saridele and cow's milk. Table 2 compares the amino acid composition of various mixtures containing soy.

Note 1. This is the earliest English-language document seen (Feb. 2004) that uses the term "soya curd" or the word "tahu" to refer to tofu.

Note 2. This is the earliest English-language document seen (Oct. 2010) that uses the term "sweet Indonesia soy sauce" to refer to what is probably *kecap manis.* Address: Nutritional Inst. Labs., Djakarta, Indonesia.

151. Prawiranegara, Dradjat; Rawi, Ihsan el. 1960. Food & utilization of natural food resources (Indonesia). In: Proceedings of the Fourth Pan Indian Ocean Science Congress. Section G. Human Ecology. See p. 55-63. Held 14-24 Nov. 1960 at Karachi, Pakistan.
• ***Summary:*** This is a relatively early publication by an Indonesian author on soyfoods, especially tempeh. The first author's name is incorrectly listed on the document as simply Dradjat. "Protein rich food. Soya beans: In order to increase the protein consumption of the people more soya bean should be made available, and soya products should be popularized and manufactured on large scale." After praising the nutritional properties of soybeans, the authors continue: "In order to render soya protein utilizable, both destruction of the cell walls and heat treatment are necessary. Crushing the beans such as in the manufacture of soya milk and 'tahu' or the action of fungi which partly digest and break the cell wall such as the case with 'tempeh' are means of improving the nutritional value of soya. All these foods are heat treated both during the manufacture and on preparation for the table, and the enzyme inhibitors are destroyed. Tempeh, tahu [tofu], tautjo [Indonesian-style miso], ontjom, soya milk, etc. [are excellent foods. A meal] which gives the maximum biological value contains soya proteins and rice protein in the ratio of about 2.3. Therefore an adult who receives little or no animal food should get 15 or 20 gm soya protein with his rice. A medium size family should get 75 to 100 gm of soya protein. Unfortunately, soya preparations such as tempeh and tahu are comparatively expensive. For example 100 gm of soya protein in the form of tempeh costs about 5 rupiahs. This is why it is necessary to find a simple way of using unprocessed soya beans. The preparations of 'fried soya' is one such way. Fried soya is simply prepared as follows. Soya is soaked overnight in water with a little salt added, ground to a paste. The stuff is pleasant smelling, and tastes good. It can be used in many different ways, both in adults and in children's food. It costs little, compared to tempeh or tahu, and its nutritional value is high, specially when mixed with rice or corn. It is certain that the introduction of fried soya to the Indonesian family's daily diet will appreciably improve the nutritional status of the people. Three times as much soya protein can be consumed for the price paid for tempeh or tahu. Recent work on tempeh (which is soya bean product subjected to the action of certain fungus) have shown that the product is of a higher nutritional quality than heat-treated soya bean. Apparently the fungus growth on the soya favourably alters the biological value of its protein. More work is needed on the subject in order to find out the reason for such improvement. It was suggested that tempeh should be investigated as infant food. (P. Gyorgy's recent report to W.H.O. Protein Advisory Group).

Note: This is the earliest English-language document seen (March. 2009) uses the word "tautjo" to refer to Indonesian-style miso.

"'Saridele' is an imitation milk of vegetable origin. It is made from soya sesame combination. It is available as spray-dried powder. The composition is similar to cow milk powder. Animal trials have shown that the protein of the product is somewhat inferior to cow milk, but the biological value improves considerably when mixed with rice. Trials with infants showed that Saridele is well tolerated by older infants and it is a valuable addition to the diet after the age of 6 months. In case of emergency, when no cow milk is available, saridele may be used as food for infants over 4 months of age (will be published by Children Dep. Medical School, Univ. Indonesia)." A table lists gives the nutritional composition of soybeans, tempeh, tofu, fish flour, fresh cassava leaf, and dry cassava leaf. Address: 1. M.D., M.P.H., Director, National Nutrition Inst., Dep. of Health, Djakarta; 2. FAO Food Chemist.

152. Steinkraus, K.H.; Yap, B.H.; Van Buren, J.P.; Provvidenti, M.I.; Hand, D.B. 1960. Studies on tempeh: An Indonesian fermented soybean food. *Food Research* 25(6):777-88. Dec. [6 ref]
• ***Summary:*** Also cited as New York State Agric. Exp. Station Journal Paper No. 1176. Contents: Introduction. Materials and methods: Essential steps in tempeh production–Indonesian method (as described by Miss Yap). Analyses: Determination of soluble solids. Results

and discussion: Microorganisms involved in tempeh fermentation, factors influencing mold growth, flavor of tempeh, changes occurring during tempeh fermentation (with graph), results of cytological studies, preservation of tempeh, yields of tempeh at various stages of processing. Summary.

Photos show: (1) Tempeh ingredients and prepared tempeh including: (a) dry soybeans; (b) soaked, peeled, and cooked soybeans; (c) "raw tempeh bean cake sliced;" (d) "deep fat fried sliced tempeh. (3) Hydrated soybeans, x 500 (magnification 500). (4) Hydrated steamed soybeans, x 500. (5) "Several sections of tempeh digested soybeans, x 500" (a) 24 hours; (b) 72 hours. (6) Hydrated soybeans. (7) Soybeans steamed 90 minutes. (8) Tempeh, 200 x. (9) Soybeans cooked 1½ hours (120ºC).

Note: This is the earliest document seen, written by researchers in the USA, that contains the word "tempeh" in the title. Address: Cornell Univ.

153. USDA ARS Northern Utilization Research and Development Division, Peoria, Illinois. 1960. Definitions of foreign foods of current interest (Brochure). Peoria, Illinois. 4 p. 28 cm.
• ***Summary:*** The first section, titled "Japanese foods from soybeans" (p. 1-2) includes: Aburage, frozen tofu, Hamanatto, kinako, koji, kori tofu, miso, monosodium glutamate (a seasoning compound first isolated from soy sauce), nama-age, natto, satsumage, soybean milk or tonyu, soy sauce or shoyu, tofu, yaki-dofu, yuba.

The second section, titled "Indonesian fermented foods" (p. 3-4) includes: Arak, ketjap (soy sauce made with black soybeans), ontjom, ragi, sajur asin, tapé ketan (fermented glutinous rice), tapé katella (fermented arrowroot), tempeh (or témpé or témpé kedelé), tuwak. Address: Peoria, Illinois.

154. Nichibei Daizu Chosa-kai. 1960. Tenpe no seizô-hô [Tempeh production methods (Brochure)]. Tokyo: NDC. No. 130. 4 p. [Jap]
Address: Japanese American Soybean Institute.

155. Rawi, Ihsan el; Oey, K.N. 1960. [Soya-rice baby food]. *Jakarta, Lembaga Makanan Rakjat, Departemen Kesehatan Repubublik Indonesia.* [Ind]*

156. Diser, Gleason M. comp. 1961. Glossary of soybean terms. *Soybean Blue Book.* p. 61-64.
• ***Summary:*** This is the first glossary with this title in the *Soybean Blue Book.* However in the first *Blue Book* (1947, p. 17-19) there was a somewhat similar section titled "Terminology: Definitions and product descriptions for the soybean industry."

The following terms are defined in this glossary: Soybean(s), soybean processor, soybean processing (solvent extraction, mechanical pressing, hydraulic pressing), soybean oil, crude soybean oil, edible crude soybean oil, refined soybean oil, edible refined soybean oil, hydrogenated soybean oil, degummed soybean oil, winterized oil, technical grade refined soybean oil, soybean fatty acids, soybean soapstock, acidulated soybean soapstock, soybean lecithin, break material, sludge.

Soybean products: Ground soybeans, soybean hay meal, soybean flakes, 44% protein soybean oil meal, dehulled soybean flakes, 50% protein solvent extracted soybean oil meal, soybean proteins, soy flour, soy grits, soybean oil meal, defatted soy flour, low-fat soy flour, high-fat soy flour, full-fat soy flour, lecithinated soy flour, protein, isolated protein, toasting. Oriental soy foods: Soy sauce (shoyu), soy milk, miso, frozen tofu, aburaage, kinako, namaage, ganmodoki, tempeh, natto, yuba, moyashi (soybean sprouts). Address: Archer-Daniels-Midland Co., Minneapolis, Minnesota.

157. Scrimshaw, N.S.; Bressani, R. 1961. Vegetable protein mixtures for human consumption. *Federation Proceedings* (*FASEB*) 20:80-88. Part III (March), Supplement 7. Proceedings of the Fifth International Congress on Nutrition. Held 1-7 Sept. 1960 at Washington, DC. [44 ref]
• ***Summary:*** Contents: Introduction. Basic principles involved. Present scope of efforts to develop vegetable protein mixtures. Vegetable ingredients for protein-rich foods (especially legume seeds and oil seeds). Soy-based protein-rich foods (incl. whole soybeans, soy flour, soybean milk, tempeh). Mixtures using chick pea, cow peas, beans, peanut flour or sesame. INCAP Vegetable Mixtures 8 and 9 (based on corn; neither contains soy). Summary. Address: Inst. of Nutrition of Central America and Panama (INCAP), Guatemala City, Guatemala.

158. Shurpalekar, S.R.; Chandrasekhara, M.R.; Swaminathan, M.; Subrahmanyan, V. 1961. Chemical composition and nutritive value of soyabean and soyabean products. *Food Science* (*Mysore, India*) 10(3):52-64. March. Published in 1961 as a 32-page book by the Soybean Council of America in Hamburg, Germany. [178 ref]
• ***Summary:*** Contents: Introduction. Chemical composition and nutritive value. Soyabean oil. Carbohydrate in soyabean. Minerals in soyabean. Vitamins in soyabean. Factors affecting nutritive value: Trypsin and growth inhibitors, heat processing, other factors. Digestibility and biological value: Animal experiments, supplementation with sulphur amino acids, human feeding experiments. Supplementary value to other food proteins. Processed foods from soyabean: Soyabean milk, dried milk substitutes from soyabean, malt foods containing soyabean, soyabean flour, multipurpose food (fortified soyaflour), dehydrated soup mixture, balanced food, soyabean protein isolate. Fermented soyabean products: Soy sauce, tofu or soyabean curd, miso, natto, tempeh. Conclusion.

Note 1. This is the earliest document seen (Jan. 2001) from India that mentions tempeh.

Note 2. This is the earliest English-language document seen (Aug. 2003) that contains the term "soyabean protein" (or "soyabean proteins").

Note 3. This is the earliest English-language document seen (Aug. 2003) that contains the term "soyabean protein isolate" (or "soyabean protein isolates"). Address: Central Food Technological Research Inst. (CFTRI), Mysore, India.

159. Smith, Allan K.; Wolf, Walter J. 1961. Food uses and properties of soybean protein. I. Food uses. *Food Technology* 15(5):4-6, 8, 10. May. [34 ref]

• ***Summary:*** Contents: Summary. Introduction. Commercial soybean protein fractions. Soybean foods: Soybean varieties (garden varieties vs. field varieties, main differences between them, U.S. soybean breeding program). Trends in protein requirements (worldwide protein shortage). Soybeans and fractions used in food: Whole soybeans, defatted soybean meal, isolated proteins, protein concentrate (called "protein concentrate 70" in the summary), Gelsoy.

Whole soybeans may be baked or boiled, or used to make sprouts, fresh or dried tofu, vegetable milk (or "soybean milk"), yuba, and many fermented food products, including "miso or soy paste, natto, hamanatto, shoyu (soy sauce), tempeh, and some less important foods."

"Protein concentrate: Extraction of dehulled and defatted meal with dilute acid (pH 4.5) removes soluble sugars, nonprotein nitrogen, and other low-molecular weight components and a small amount of protein. The flavors are also mostly removed in the extract or in drying. The dried concentrate contains about 70% protein unless soybeans containing above-average protein are used.

"This product, having a manufacturing cost between that of soy flour and isolated protein, has been introduced recently into the food industry. This protein concentrate is a combination of the acid-precipitated protein plus the residue normally obtained in isolating the acid-precipitated protein... A protein concentrate can also be made by extraction of SOM [soybean oil meal] with about 70% ethanol at 50ºC or higher. This type of product is finding its place in the food industry."

Note: This is the earliest English-language document seen (Dec. 2005) that uses the term "protein concentrate 70" or the term "protein concentrate" to refer to a product containing 70% protein on a dry-weight basis. Address: NRRL, Peoria, Illinois.

160. *Soybean Digest.*1961. UNICEF grant steps up research on soy products. May. p. 29. [1 ref]

• ***Summary:*** "Research work on soybean food products is now being accelerated under a grant-in-aid from UNICEF [United Nations International Children's Emergency Fund] by the department of food science and technology at Cornell University...

"The work is being concentrated along two principal lines. The department is conducting pilot-plant experiments on the production of soybean milk with the hope of improving its yield and nutritive value. And the second line of work is the production of tempeh, also on a pilot-plant scale, in order to develop a suitable semi-commercial process."

161. Wagenknecht, A.C.; Mattick, L.R.; Lewin, L.M.; Hand, D.B.; Steinkraus, K.H. 1961. Changes in soybean lipids during tempeh fermentation. *J. of Food Science* 26(4):373-76. July/Aug. [11 ref]

• ***Summary:*** The *Rhizopus oryzae* mold "possesses strong lipase activity and caused the hydrolysis of over one-third of the neutral fat of the soybean during the three-day fermentation... The neutral fat was composed of palmitic, stearic, oleic, linoleic, and linolenic acids, with linoleic acid predominating... Except for the depletion of some 40% of the linolenic acid in the later stages of the fermentation, there apparently was no preferential utilization of any fatty acid."

"Although fatty acids were liberated by the hydrolysis of soybean lipid, there was no subsequent utilization of these fatty acids. It can be concluded, therefore, that *R. oryzae* either does not possess the enzyme systems necessary for metabolizing these fatty acids or that *R. oryzae* is impermeable to these acids under the conditions of tempeh fermentation."

Note: Sorenson and Hesseltine (1966, p. 687) state, based on this research, that "it is likely that lipid materials, and particularly fatty acids, are the primary sources of energy for the tempeh fermentation. The fact that the mold grows well on various vegetable oils further suggests that this conclusion is true." Address: New York State Agric. Exp. Station, Cornell Univ., Geneva, New York.

162. Latuasan, H.E.; Berends, W. 1961. On the origin of the toxicity of toxoflavin. *Biochimica et Biophysica Acta* 52(3):502-08. Sept. 30. [21 ref]

• ***Summary:*** "Toxoflavin, a poison from *Pseudomonas cocovenenans* was isolated by van Veen and Mertens in 1934. This microorganism, which also produces bongkrekic acid, has been found responsible for several fatal food poisonings occurring amongst the natives in the densely populated parts of Mid-Java... It seems probable that the poisonous effect of toxoflavin is always due to the hydrogen peroxide formed." Address: Biochemical and Biophysical Lab., Technological Univ. of Delft, Netherlands.

163. *Soybean Digest.*1961. The Peoria conference on soybean products for protein in human foods. Oct. p. 6-8.

• ***Summary:*** A photo (p. 8) shows F.R. Senti, R. Sabin, J.W. Hayward, and A.K. Smith tasting samples of miso, tempeh, and tofu which were served at the reception and made at the Northern Utilization Laboratory.

164. Dwidjoseputro, Dakimah. 1961. Studies on *Monilia sitophila* from Indonesia. *Bulletin of the Torrey Botanical Club* 88(6):404-11. Nov. [10 ref. Eng]
• ***Summary:*** A fungus found on ontjom-presscake of peanuts and okara onchom (*ontjom tahu*) fermented products in West Java, Indonesia is reported. Biological data suggest it to be *Neurospora sitophila;* it was traditionally called *Monilia sitophila.* Address: Dep. of Biology, Vanderbilt Univ., Nashville, Tennessee.

165. Ko Swan Djien; Hesseltine, C.W. 1961. Indonesian fermented foods: Made from soybeans. *Soybean Digest.* Nov. p. 14-15. [6 ref]
• ***Summary:*** Focuses on tempe (tempeh), ketjap, and studies at the Northern Laboratory. Photos show: (1) Dry soybeans in a Petri dish. (2) Soybeans in a Petri dish after soaking, dehulling, cooking and inoculating, ready to be placed in incubator. (3) Mature tempe [round cake, with wedge-shaped slice removed], prepared with Rhizopus sp. NRRL, removed from the Petri dish. Note growth of mycelium throughout the cake. Address: NRRL, Peoria, Illinois.

166. *Soybean Digest.*1961. A.K. Smith of Peoria Lab on trip to Asia. Nov. p. 7.
• ***Summary:*** Dr. A.K. Smith, head of meal products investigations, oilseed crops laboratory, Northern Regional Research Laboratory (Peoria, Illinois), left Oct. 15 on a 2½ month trip to India, Japan, and Indonesia. "Dr. Smith will survey research laboratories in the countries to determine those that are qualified to do food research and development on soybeans, soybean products, and related agricultural products under the P.L. 480 program." In Japan, he will visit trade associations to encourage the use of U.S. soybeans in Japanese foods.

Research is needed in six areas: Use of soy flour to supplement bread and cereal products. Manufacture of soybean protein. Use of tempeh. Production and nutritional value of soy milk. Production of low-salt miso for feeding babies. Comparison of U.S. soybean varieties in commercial production of tofu. A portrait photo shows Smith.

167. Ter Horst, K. 1961. The selection of pulses in Suriname. III. Soybean, cowpea, blackeye pea, mungbean and miscellaneous pulses. *Euphytica* 10(3):277-82. Nov. [10 ref. Eng; dut]
• ***Summary:*** Summarizes in English four papers originally published in Dutch, dealing mainly with crops suitable for alternating with rice. In the section titled "Selection of pulses for heavy clay soils" are the following subsections: (1) The soybean (p. 278-79). From the USA 59 varieties were imported, from Indonesia 16 and from the Philippines 4. All the American varieties had to be discarded, probably because they were not adapted to the day-length of Suriname. The three varieties chosen for multiplication and release were Laris (selection from Otan from Buitenzorg, Indonesia; used to make tempé), Vada (from Indonesia), and Bilomi I (from Philippines).

(2) *Vigna sinensis* Savi ex Hasskarl, cowpea and blackeye pea.

(3) *Phaseolus radiatus* L., mungbean. "The mungbean was included in the selection programs. This crop is indigenous and offers an extra possibility for cultivation after rice because the growing cycle is very short, 60-70 days. The local varieties *urdi* and *katjang idjoe* were compared" with other varieties. "The world market for mung beans depends largely on the failure of the crop in Oklahoma. There is only trade when the American farmer cannot meet the domestic demand for sprouted beans. Prices and volumes are very erratic. It will be very difficult to base a program for the extension of the mungbean culture on this situation." Sesame is also mentioned (p. 280).

Note 1. This is the earliest English-language document seen (Nov. 2008) with the word "mungbean" (or "mungbeans") in the title.

Note 2. This is the earliest English-language document seen (Oct. 2006) that uses the term "blackeye pea" to refer to the cow pea. Address: Agronomist, Inst. for Soil Fertility, Groningen, The Netherlands.

168. **Product Name:** Joy of Java Tempe.
Manufacturer's Name: Otten's Indonesian Foods.
Manufacturer's Address: Albany, California.
Date of Introduction: 1961.
New Product–Documentation: Shurtleff. 1982. Soyfoods. Winter. p. 21; Soyfoods Center Computerized Mailing List. 1982. July 23. The company is now located at 322 Key Blvd., Richmond, California 94805. Phone: 415-232-9511. It is run by Irene and Mary Otten.

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 39. In 1961 Mary Otten started making tempeh in her basement on Stannage Ave. in Albany. She sold it to her friends and served it at parties that she catered. In 1967 she started Java Restaurant and served many tempeh recipes. In 1974 she and her daughter, Irene, started Otten's Indonesian Foods, America's earliest known tempeh company. By 1981 they were making a full line of tempeh second generation

products.

169. Desrosier, Norman W. 1961. Attack on starvation. Westport, Connecticut: AVI Publishing Co. 312 p. [211* ref]
• ***Summary:*** Soybeans are discussed in the section titled "Ingredients for Protein Enriched Plant Foods" (p. 254-57). Under "Soybean Food Mixtures," tempeh, Saridele, soy milks, and infant feeding are mentioned. Address: Prof. of Food Technology, Purdue Univ., Lafayette, Indiana.

170. György, Paul. 1961. The nutritive value of tempeh. *National Academy of Sciences, National Research Council, Publication* No. 843. p. 281-89. [3 ref]
• ***Summary:*** "The first tempeh preparations and control soybeans used in this study were obtained from Indonesia * (Footnote: *Through the courtesy of Dr. Poorwo Soedarmo, Institute of Nutrition, University of Djakarta, Indonesia) (1954, 1955) and Southern Rhodesia ** (Footnote: **Through the courtesy of the Executive Officer, Nutrition Council, Federal Ministry of Health, Salisbury, S. Rhodesia) (1955). In the following years attempts, largely futile, were made to produce tempeh in our own laboratory. In 1959 a cooperative arrangement has made it possible to produce tempeh and control soybeans on a larger scale in the Department of Food Science and Technology, New York State Agricultural Station, Cornell University, Geneva, N.Y. under the supervision of Drs. D.B. Hand and K.H. Steinkraus. Under this arrangement, animal studies are carried out independently in our laboratory and in the laboratory of the School of Nutrition (Dr. R.H. Barnes), Cornell University, Ithaca, N.Y."

Various rat feeding experiments are described. Hemolysis tests were carried out by Dr. Kiku Murata (Osaka, Japan) in György's laboratory. It was found that "tempeh is stabilized by virtue of an 'antioxidant' produced during the course of the fermentation process. Unfermented soy flour had a high peroxide content and was rancid.

Note: Dr. Paul György was born in Nagyvarad, Hungary, on 7 April 1893. He received his M.D. degree in Budapest in 1915 and later studied at Heidelberg, Germany, where he became a professor of pediatrics. He has made many contributions to the field of nutrition with his studies of vitamin B-6, pellagra, biotin and vitamin H. Since 1944 he has been associated with the Philadelphia General Hospital as a pediatrician and as Professor of Pediatrics at the University of Pennsylvania, a post from which he "retired" in 1960. Address: Chairman, Dep. of Pediatrics, Philadelphia General Hospital, Philadelphia 4, Pennsylvania.

171. Issoegianti, Seraphine. 1961. Qualitative determination of amino acids in *Rhizopus.* Thesis (Skripsi), Bagian Biologi Institut Teknologi Bandung, Bandung, Indonesia. 14 p. PBITB. [Eng]*
Address: Bandung, Indonesia.

172. *National Academy of Sciences, National Research Council, Publication.*1961. Progress in meeting protein needs of infants and preschool children: Proceedings of an international conference held in Washington, D.C., August 21-24, 1960 under the auspices of The Committee on Protein Malnutrition, Food and Nutrition Board, and The Nutrition Study Section, National Institutes of Health. No. 843. 570 p. Reviewed by Soybean Digest, Nov. 1961, p. 23.
• ***Summary:*** The National Academy of Sciences was established in 1863, the National Research Council in 1916, and the Food and Nutrition Board in 1940.

In Aug. 1960, 33 researchers from 18 foreign countries joined with 42 researchers from the USA in a 4-day conference to review the results of a worldwide research program for the development of protein products suitable for infants and children from indigenous resources such as soybeans, cottonseed, peanuts, and similar products in countries where protein deficiency is most prevalent. This research program has been conducted by the Committee on Protein Malnutrition with funds provided by the Rockefeller Foundation in cooperation with UNICEF, FAO, and WHO. The researchers also met to survey the areas of greatest need for further research, and to evaluate the status of knowledge in protein nutrition.

The 45 research reports in this volume constitute a comprehensive summary of the status of protein nutrition around the world and the technological problems involved in the development of economical protein foods. The papers are divided into the following groups: Central and South America (7 papers). Africa and the Middle East (10). India and the Far East (10). Relevant research in the United States (6). Experimental protein malnutrition in animals (4). Basic principles of protein and amino acid evaluation and potential protein resources (10). Protein problems around the world (3). Summary of the conference. Nomenclature guide to plant products cited.

Autret (p. 537) stated "the No. 1 problem for F.A.O. and for national agricultural departments is the production of protein foods of good quality." Address: Washington, DC.

173. Ochse, J.J.; Soule, M.J., Jr.; Dijkman, M.J.; Wehlburg, C. 1961. Tropical and subtropical agriculture. 2 vols. New York, NY: Macmillan Co. Vol. 1, iv + 1-760 p. Vol. 2, xv + 761-1446 p. See vol. II, p. 1067-76. 22 x 14 cm.
• ***Summary:*** This is a truly prodigious work. The chapters in volume 2 deal with individual crops. The section titled "Soybean" (vol. II, p. 1067-76) discusses the following: Vernacular names in various languages. Overview of world production. Botany. Varieties. Breeding and selection. Climatic and soil requirements. Culture. Harvesting. Uses (incl. soy sauce, tempeh, and tofu). Future possibilities. Diseases. Ochse was born in 1891. Address: 1. Consultant, Tropical and Subtropical Agriculture, Research Consultant in

Economic Botany, Univ. of Miami, Coral Gables; 2. Assoc. Prof. of Fruit Crops, Univ. of Florida, Gainesville; 3. Prof. of Applied Tropical Botany and Genetics, Univ. of Miami, Coral Gables; 4. Asst. Plant Pathologist, Univ. of Florida, Everglades Experiment Station, Belle Glade. All: Florida.

174. Steinkraus, Keith H.; Van Buren, J.P.; Hand, D.B. 1961. Studies on tempeh: An Indonesian fermented soybean food. *National Academy of Sciences, National Research Council, Publication* No. 843. p. 275-79. Progress in Meeting Protein Needs of Infants and Preschool Children. [4 ref]
• ***Summary:*** Same as 1960 article published in *Food Research* 25(6):777-78. Address: Cornell Univ.

175. Chambers, John A. 1962. Soya as a foodstuff. *Arkady Review* (*Manchester, England*) 39(3):39-41. Sept.
• ***Summary:*** Discusses briefly soy oil, defatted soya flour, American Multi-Purpose Food (50% protein, 1% fat, 31% carbohydrate), soy sauce, tempeh, and tofu. Address: Research Chemist, British Arkady Co. Ltd., Skerton Rd., Old Trafford, Manchester 16, England.

176. Steinkraus, K.H.; Hand, D.B.; Hackler, L.R.; Van Buren, J.P. 1962. Research on soybean products of improved nutritional value. *Farm Research* (*New York Agricultural Experiment Station*) 28(4):4-5. Dec.
• ***Summary:*** Discusses soymilk and tempeh. As a result of studies at Geneva, the yield of soybean solids for soymilk production has increased from 65 to 90 percent." Photos show: (1) Two men pouring soymilk from a large metal vat into a cooker, in the Cornell "pilot plant process for producing soymilk. (2) Small packets of tempeh wrapped in banana leaves on a round woven bamboo tray in Indonesia. Address: Dep. of Food Science and Technology, Geneva, New York.

177. **Product Name:** Tempe.
Manufacturer's Name: Runnels Foods.
Manufacturer's Address: Los Angeles, California.
Date of Introduction: 1962.
New Product–Documentation: Shurtleff & Aoyagi. 1985. History of Tempeh. p. 39. America's 2nd earliest tempeh shop.

178. Hesseltine, C.W. 1962. Research at Northern Regional Research Laboratory on fermented foods. In: USDA Northern Regional Research Laboratory, ed. 1962. Proceedings of Conference on Soybean Products for Protein in Human Foods. Peoria, IL: USDA NRRL. iii + 242 p. See p. 74-82. [9 ref]
• ***Summary:*** "Three types of fermented foods have been investigated at the Northern Regional Research Laboratory, namely, soya sauce, miso, and tempeh. The first was studied shortly after World War II and the others have been studied within the last 2 or 3 years. The three fermentations have in common a mold fermentation of soybeans, with the soybeans being altered by the enzymes produced microbiologically."

"A third fermentation of soybeans which we have studied most recently is the Indonesian fermented soybean food called tempeh or tempe. We were fortunate in having Mr. Ko Swan Djien from the Laboratory of Microbiology, Institute of Technology, Bandung, spend part of last year with us in the study of this fermentation. Since he was acquainted with this food and we had cultures available, we began with a study of the pure culture fermentation paralleling the actual process carried out in Indonesia. The flowsheet of the process on a laboratory scale shown in Figure 4 is as follows:" Each step is described. The mold culture used is *Rhizopus* sp. NRRL 2710.

Note: This is the earliest document seen (Oct. 2011) that mentions the *Rhizopus* strain "NRRL 2710." Address: Head, ARS Culture Collection Investigations, Fermentation Lab., Northern Utilization R&D Div., Peoria, Illinois.

179. Hilbert, G.E. 1962. Foreign research program of U.S. Department of Agriculture on soybean protein products under Public Law 480. In: USDA Northern Regional Research Laboratory, ed. 1962. Proceedings of Conference on Soybean Products for Protein in Human Foods. Peoria, IL: USDA NRRL. iii + 242 p. See p. 93-98.
• ***Summary:*** "For many years, the Department was financing with dollars a farm research program abroad."

"A considerable expansion of our foreign research program was effected a few years ago under Public Law 480. This program of research is financed with foreign currency accruing to the United States from the sale of surplus agricultural commodities, and, in a sense, trades surpluses for research results. Research in the field of economics, forestry, farm, marketing and utilization is carried out under this program. Projects are selected for financing which are of direct interest to the United States and also of interest to the foreign country.

"At the present time, 195 grants or research agreements have been executed in 20 countries in Europe, Asia, and Latin America. Funds are available to initiate programs in an additional 6 countries. Proposals from most of these countries are being processed at the present time. The annual cost of the grants already executed amounts to about the equivalent of $2-2½ million in foreign currency annually. Substantial funds are available for the expansion of this program.

"The Public Law 480 foreign research program is being administered by the Foreign Research and Technical Programs Division, Agricultural Research Service, U.S. Department of Agriculture, in Washington. A regional office has been established in Rome, Italy, to negotiate the costs of grants and administratively supervise the program in Europe and the Near East. A regional office has been established in

New Delhi, India, also, to carry out the same functions in the Far East.

"The technical phases of the program–that is, the approval of projects on which grants are executed and the review of progress reports–are handled by the various research divisions in the Department. For example, all projects on the utilization of soybeans fall under our Northern Utilization Research and Development Division. All those dealing with the nutritional aspects of soybeans as a food are under the jurisdiction of the Institute of Home Economics.

"Ideas for new research projects may come from within the Department, from research organizations abroad, from our Research and Marketing Advisory Committees, from national commodity organizations, or from the processing industry. We are indebted to The Soybean Council of America for the interest it has taken in developing our research program on soybeans abroad. The Council has stimulated many foreign research groups to submit projects on improving uses for soybeans. It has brought to our attention , also, important problems on soybeans that need attention.

"In developing a program on soybeans we have been faced with the problem that most countries in which we have funds have had practically no knowledge or experience on the uses of soybeans, and have conducted very little research on their utilization. The opportunity has been very limited for financing research on the utilization of soybeans in laboratories with background experience on its products.

"Fortunately, the activities of UNICEF and FAO, on increasing the protein level of the diet in the developing areas of the world, and the powerful market development program of The Soybean Council of America, have stimulated great interest in many countries on the usage of soy products in the diet. These efforts have facilitated the development of our research program on soy products.

"As the primary emphasis of this conference is on soybean products for protein in human foods, the research work we are financing on soybean oil and fatty acids will not be discussed here. My talk will cover only those projects dealing with soybean proteinaceous foods, and with minor components in soy flour or soybean products which may affect their food value. A dozen or more projects of this kind, in half a dozen countries, are underway or will be shortly.

"At the National Institute of Nutrition in Rome, Italy, we have executed a grant with Professor Visco to finance research on the use of soybean protein products as supplements to wheat flour production of pasta, such as spaghetti and macaroni. The southern part of Italy depends to a large extent upon cereal grains as the main staple of the diet. Raising the protein level and quality of the diet in Italy could be done readily by increasing the protein content of pasta with soy protein products. Professor Visco has set as his objective an increase of 10 percent in the soy protein content of pasta. He believes this amount of soy protein in pasta would provide all the essential amino acids necessary for good nutrition. The Institute has produced pasta containing 10 percent by weight of soy protein. Pasta containing the type of commercial soy protein used was unaltered in cooking quality, but had a slight gray cast and slight change in flavor. The effect of lowering the content of soy protein on color and flavor of pasta is now being investigated. The effect of other sources of commercial soy protein on color and flavor will be studied, also. Professor Visco is interested in following up these studies by conducting nutritional investigations on groups of school children, using pasta fortified with soy protein.

"In Japan, we are negotiating a grant with the Food Research Institute, in Tokyo, for research on dried tofu. Fresh tofu is the most important soybean food in Japan. On a dry basis, its protein content ranges from 50 to 60 percent, and fat content from 21 to 50 percent. It has a bland flavor. It is eaten as such usually with soy sauce. Slabs are deep-fat fried [tofu], also, forming an envelope which is stuffed with hot rice. Fresh tofu is made in thousands of small plants, many of them family-run operations. Fresh tofu has a relatively short storage life comparable to that of fresh milk. Dried tofu, which is a spongelike product, has come into production in recent years. It has a shelf life of 6 months or longer. However, the product is inferior to the fresh product in overall eating quality.

"Under the grant to be carried out at the Food Research Institute there will be studied the varietal effect of soybeans, and variation of processing conditions on the physical characteristics and flavor of dried tofu. Fresh and dried tofu have promise in supplementing the diet in the protein deficient areas of the world.

Miso is another important soybean food used in Japan. It is produced by the fermentation of soybeans with *Aspergillus oryzae.* The most popular use of miso in Japan is in soup. Miso soup plays an important part in the standard Japanese breakfast. Because of uneven uptake of water, not all varieties of soybeans can be used, or only with difficulty, in the traditional Japanese process for making miso. Most Japanese and Chinese varieties of soybeans are better than most American varieties. In preliminary experiments conducted at the Northern Utilization Research and Development Division, in cooperation with two Japanese miso experts, it was found that dehulled soybeans or soybean grits absorbed water uniformly and yielded excellent miso. Now we are interested in following up these studies on a pilot-plant scale using different varieties of soybeans, and carrying out the fermentation under various Japanese environmental conditions. A grant on this project is being negotiated with the Central Miso Institute.

"As it is produced at the present time, miso has a relatively high salt content. Salt is used in the process to control the microbiological population. Dr. Gyorgy informs

me that miso with a greatly reduced salt content might make it more suitable for feeding infants and young children. The development of procedures for producing miso containing very little salt might broaden its usefulness." Continued. Address: Director, Foreign Research and Technical Programs Div., USDA, Agricultural Research Service, Washington 25, DC.

180. Hilbert, G.E. 1962. Foreign research program of U.S. Department of Agriculture on soybean protein products under Public Law 480 (Continued–Document part II). In: USDA Northern Regional Research Laboratory, ed. 1962. Proceedings of Conference on Soybean Products for Protein in Human Foods. Peoria, IL: USDA NRRL. iii + 242 p. See p. 93-98.

• ***Summary:*** Continued: A related project on miso is under consideration in Israel. This is based upon producing a miso-type product from controlled amounts of oil ranging from none to that originally present in the bean. Japanese miso contains all the oil present in the bean.

"We are negotiating one other project with the Food Research Institute in Tokyo. This project deals with the development of procedures for producing a yogurt-type product from soy milk, and obtaining information on the changes that occur in the soybean components in the transformation. It is planned to have cooperative investigations on the nutritional value of the fermented soy milk conducted at the Institute of Nutrition Research under Dr. Arimoto. Although soy milk has been used for many years in the Orient as an infant food, the expansion of its use has been very slow, particularly in the underdeveloped areas of the world. At times, difficulties have been encountered in its large-scale production due either to lack of technical knowledge or to inadequate control methods. Soy milk may cause diarrhea or flatulence in some infants.

"It is possible that fermented soy milk may have advantages over soy milk. One potential advantage of fermented soy milk is that the acid may destroy undesirable microorganisms that too often occur under unsanitary conditions in underdeveloped areas of the world. The widespread use of yogurt in the original primitive areas of Northeastern Europe and Northern Asia may well have resulted from the comparatively greater safeness and stability of this product over milk. At the present time, 45 percent of all milk consumed in the USSR is in the form of yogurt, attesting its popularity and the fact that a taste for it can be acquired. Nutritional studies conducted in Europe have shown that yogurt is a highly nutritious product, and that digestibility is increased during the fermentation. Likewise, the fermentation of soy milk may lead to an improvement in its food value. At any rate, our hopes are high on this project.

"Fermented proteinaceous foods are produced and used in Indonesia. Three types are tempeh, ontjom, and ragi. Tempeh was just discussed by Dr. Steinkraus. Onjom is made by fermentation of peanut press cake with molds, probably the genus *Neurospora.* It is a popular food in West Java. Ragi is produced by a yeast-mold fermentation of rice flour and sugar. Little is known about the micro organisms effecting this fermentation. Ragi is not served as food. It is used in recipes for the preparation of other foods.

"More information on the microorganisms used in the fermentations to produce ontjom and ragi, and on the composition of these products, is needed. Similar types of products might be produced using other raw materials abundant in other underdeveloped countries. Knowledge on the quality of protein produced would be helpful in determining the usefulness of such products in upgrading the protein level of the diet.

"A grant is being negotiated with the Bandung Institute of Technology, Indonesia, on the isolation of pure cultures of microorganisms present in tempeh, ontjom, ragi, and other Indonesian fermented foods produced by different manufacturers in different parts of Java, as well as other islands of Indonesia. Variations of species used by different manufacturers and in different regions for the same type of food fermentation will be investigated under this grant also.

"Studies will be made of the chemical changes and physical transformations brought about by the pure cultures. This will involve an investigation of the products produced in the fermentations including the proteins elaborated in all except the tempeh fermentation which already is receiving a great deal of attention. Pure cultures of the isolated microorganisms will be studied further and characterized at the Northern Utilization Research and Development Division.

"A number of grants on soybean protein have been executed or are being negotiated with research institutes in Israel.

"One of these deals with the effect of processing conditions on the yield and quality of isolated protein. This grant is being negotiated with Professor Zimmerman, of the Israel Institute of Technology. A great deal of work has been done in the United States and Japan on the commercialization of soy products. Large quantities are being produced, and some are being used for food purposes. However, there is need for more information on processing and drying of soy proteins, and the effect of processing conditions on flavor and nutritive value. This is the kind of research to be carried out in Dr. Zimmerman's laboratory. Also, he will study the flavor and acceptability of isolated soy protein when used in various Israeli-type foods. The effect of processing on the nutritive value of isolated soy protein will be determined by animal feeding tests.

"Although much information has been obtained by Dr. Allan K. Smith and others in the United States on the physical and chemical properties of soy protein, little is known about the complexes of protein in the bean or in the meal. There has been neglected the problem of protein

complexes in the native state or formed in soybean oil meal processing operations. Whether protein-phytate complexes exist in the bean or result from interaction during processing operations is unknown. No information is available as to whether nucleoproteins, lipoproteins, and mucoproteins exist in soybeans. we have no knowledge, either, as to the interaction with protein of pigments, metal ions, and carbohydrates during processing of the beans.

"However, these changes affect the color, flavor, and (in view of the sensitivity of lysine) the nutritive value of the protein. This problem on the chemical, physical, and biochemical properties of protein complexes in soybeans will be studied under a grant which is being negotiated with Dr. Katchalski at the Weizmann Institute of Science. Dr. Katchalski's team has a worldwide reputation for the fine work they have done on the structure and modification of proteins. It is an ideal group to investigate this difficult and very important problem, the solution of which may lead to the enhancement of the food value of soy flour and soy protein.

"A grant is being negotiated with Dr. Guggenheim, at Hebrew University, on the development and biological evaluation of protein-rich foods from vegetable sources. Various mixtures of cereals with combinations of soya, sesame, sunflower, and chick peas will be studied. The nutritive value of different combinations of proteins will be assessed on growing rats. In vitro methods of measuring the essential amino acids will be made, also, and compared with levels of amino acids present in the blood of the portal veins of rats following a protein meal. Nutritional evaluation of the protein mixtures on humans will be carried out at a later stage.

"There has been a real need for the development of a rapid chemical method for measuring the biological value of proteins. Such a test would be very helpful in measuring change in nutritive value of proteins, including soy protein or flour, during processing and on storage. we are financing two studies on the development of such a method. One line of work is being carried out at the Israel Institute of Technology under Dr. Zimmerman, and the other at the University of Cambridge, England, under Dr. K.J. Carpenter.

"We are financing three basic investigations on certain minor components of soybeans which may affect the nutritive value of soy products. One of these is a comprehensive study of the simple sugar and oligosaccharides in soybeans. This work is being done at the University of Caen, France. Another investigation deals with a detailed study of the polysaccharides of soybeans, and is being carried out at the University of Edinburgh, Scotland, under Professor Hirst. The third deals with the isolation and characterization of saponins in soybeans and various processed soy products. This study also will include the exploration of methods for inactivating saponins in the processing of soybeans. This work is being done by Professor Bondi, Hebrew University, Israel.

"In this discussion I have summarized, briefly, the various lines of activity we are sponsoring abroad under Public Law 480 on soy protein and proteinaceous soy foods, and related investigations affecting the food value of soy products. It is hoped these investigations in countries where no work on soybeans has been done previously will stimulate additional research on soybeans, and lead to an increased recognition of the importance of soy products in the diet. It is believed these investigations will provide information that should be helpful in guiding efforts to upgrade the diet in protein deficient areas of the world." Address: Director, Foreign Research and Technical Programs Div., USDA, Agricultural Research Service, Washington 25, DC.

181. Muljokusumo, E. Sudigdo. 1962. Témpé dan ontjom, benguk, dagé. Tjetakan ke-1 [Tempeh and onchom, benguk, and dagé. First printing]. Bandung, Indonesia: Penerbit Tarate. 44 p. Illust. 21 cm. Kita membuat sendiri, 2 [Series: We make these foods ourselves No. 2]. [Ind]
• ***Summary:*** Tempeh is a fermented food made from soybeans. Ontjom is a fermented food made from peanut presscake. Tempeh benguk is a fermented food made from the seeds of the velvet bean (*Mucuna pruriens*). Dagé is a fermented food made with bacteria rather than molds on a substrate of oilseed cakes, primarily pressed coconut, sesame seeds, or peanuts. Describes how to make each of these foods on a commercial scale. Contains many excellent illustrations (line drawings). On page 10 is an interesting aerial cut-away view of a tempeh shop, with many people actively making tempeh. Address: Science specialist [Indonesia].

182. Steinkraus, K.H.; Hand, D.B.; Van Buren, J.P.; Hackler, L.R. 1962. Pilot plant studies on tempeh. In: USDA Northern Regional Research Laboratory, ed. 1962. Proceedings of Conference on Soybean Products for Protein in Human Foods. Peoria, IL: USDA NRRL. iii + 242 p. See p. 83-92. [8 ref]
• ***Summary:*** Contents: Indonesian method of tempeh production. Changes in soybeans fermented to tempeh: General changes, changes in lipids, changes in carbohydrates, changes in lysine and methionine, changes of nutritive value of protein in tempeh, changes in vitamins and other factors related to nutrition. Advantages of tempeh. Problems in pilot plant production of tempeh. Fermentation by the mold. Summary. Literature cited. Address: New York State Agric. Exp. Station, Cornell Univ., Geneva, NY.

183. Sukardi, -. 1962. Peranan katjang-katjangan dalam makanan sehari-hari penduduk Patjet [The role of legumes in the diet of Patjet inhabitants]. Thesis (Skripsi), Akademi Pendidikan Nutrition, Bogor, Indonesia. 25 p. [Ind]* Address: Bogor, Indonesia.

184. van Veen, A.G. 1962. Panel discussion on problems involved in increasing world-wide use of soybean products as foods: Possible contribution of FAO. In: USDA Northern Regional Research Laboratory, ed. 1962. Proceedings of Conference on Soybean Products for Protein in Human Foods. Peoria, IL: USDA NRRL. iii + 242 p. See p. 210-13.
• ***Summary:*** About "25 years ago, a group of missionaries from Travancore, a poor region in South India, wanted to make 'tempeh' from soybeans (which you had yesterday and enjoyed). For 3 weeks we gave them short courses in how to make tempeh. When the missionaries went back to Travancore they made tempeh and it was fine, but the Indian population did not have any interest in this unknown fermentation product and the experiment failed." Note: This document contains the earliest date seen for tempeh in India–about 1937.

"After the war, as Dr. Gyorgy knows, one of my former coworkers came to South Rhodesia, and saw a lot of soybeans exported, and not eaten by the population. He went to a local food technology institute, where the staff became interested. For some time the interested scientists made 'tempeh' for the hospitals, but the population having no experience with fungus products at all (as the people in Southeast Asia have) just did not want to embark on tempeh manufacture and at the moment tempeh has disappeared from Rhodesia." Address: Chief, Food Science & Technology, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

185. Senti, F.R. 1963. Soybeans–Their future as a food and feed crop. *Soybean Digest.* Jan. p. 16-20.
• ***Summary:*** "A thorough survey of the present and potential markets for both the oil and meal fractions of the soybean." Discusses food uses of soybean oil, fats and oils used in margarine (1946-61; graph), sources of high-protein concentrates or livestock and poultry feeds (1937-61; graph), polyunsaturated fatty acids in the U.S. diet, feed and food uses of soybean meal, growth in oilseed meal consumption, tofu, miso, tempeh, UNICEF's clinical trial with soy beverage for infants in Taiwan, Public Law 480 and soya. To date 12 projects sponsored by the NRRL and funded by P.L. 480 on various food aspects of soybean utilization have been activated in Italy, Spain, Scotland, Finland, Israel, and Poland.

Figure 1, "Fats and oils used in shortening (1946-61)" is a graph showing that in 1945, soybean oil was the main oil used, followed by cottonseed oil, with animal fats a distant third. In 1961 soybean oil is still the leader (47.6% of total fats used), followed by animal fats (33.3%), then cottonseed oil (16.7%).

Figure 2 is a graph showing that per capita consumption of liquid edible oils increased from about 6.2 lb in 1945 to 11.2 lb in 1961.

Figure 3, "Fats and oils used in margarine (1946-1961)" is a graph showing the total increasing from about 450 million lb in 1946 to about 1,350 million lb in 1961. In 1946 soybean oil and cottonseed oil each accounted for about 50% of the total oil. In 1961 soy oil accounted for about 78% of the total, followed by cottonseed oil and corn oil. Address: Director, NRRL, Peoria, Illinois.

186. *Soybean Digest.*1963. Brazilians study soy [at the Northern Utilization Laboratory in Peoria, Illinois]. Jan. p. 24.
• ***Summary:*** The three Brazilian scientists, Dr. Alcides Martinelli, Filho (Junior), Dr. Rudolpho de Camargo, and Dr. Helcio Falanghe, are from the University of Sao Paulo, Piracicaba, Brazil. At the Northern Utilization Laboratory in Peoria, Illinois, Martinelli is investigating the use of plastic fermentation packages in making tempeh. Camargo is studying the activity of enzymes in tempeh fermentation, and a factor that can interfere with the fermentation. Both are working under the supervision of Dr. C.W. Hesseltine. Falanghe is doing chemical research under Dr. J.J. Rackis to isolate this inhibitory factor. The work is supported in part by UNICEF.

187. Smith, A.K.; Rackis, J.J.; Hesseltine, C.W.; Robbins, D.J.; Booth, A.N. 1963. Processing losses and nutritive value of tempeh, a fermented soybean food. *Cereal Science Today* 8(4):129. April.
• ***Summary:*** "Rats fed tempeh showed a small reduction in growth and protein efficiency compared to rats fed autoclaved and dehulled full-fat soybean meal... There was no evidence of pancreatic hypertrophy, indicating that heat treatment in normal tempeh preparation was sufficient to destroy the factors in raw soybeans responsible for poor growth and pancreatic hypertrophy. Methionine supplementation of tempeh significantly increased rate of rat growth and protein efficiency values." Address: NRRL, Peoria, Illinois.

188. Senti, Frederic R. 1963. Current status of soybean utilization research under P.L. 480. *Soybean Digest.* May. p. 28, 30-34.
• ***Summary:*** This is the third in a series of USDA research reports under the P.L. 480 program. Discusses progress on active projects: Soybean oil in Seville, Spain; Chemical changes in sterols during refining of soy oil by Prof. H. Niewiadomski in Gdansk, Poland; Flavor stability of soy oil in by Prof. Y. Toyama at Toyo Univ. in Japan; Improving the frying quality of soybean oil by Prof. G. Varela at Univ. of Granada, Spain; Meal constituents.

Oriental foods: Production of shoyu (soy sauce) using U.S. vs. Japanese soybeans, use of dehulled soybean grits for making miso, miso-type food in Israel, use of U.S. soybeans in making tofu, or soybean curd, by the Japan Tofu Association, Tokyo.

Industrial applications: Polymerization studied in Milan, Italy. Soybean constituents. Oriental foods #2: Dried tofu in Japan, *Saccharomyces rouxii* yeast in shoyu and miso, development of fermented products from soybean milk in Japan, fermented soybean cheese in Taiwan, fermented soyfoods (tempeh, ontjom, ragi) in Indonesia.

Domestic research for increasing imports: Work with soy oil, UNICEF trainees from Brazil studying tempeh, projects saponins, protein complexes, and isolated protein quality in Israel.

A small portrait photo shows F.R. Senti. Address: Director, Northern Utilization Research and Development Div. (also known as the Northern Regional Research Lab.), Agricultural Research Service, USDA, Peoria, Illinois.

189. Smith, Allan K. 1963. Foreign uses of soybean protein foods. *Cereal Science Today* 8(6):196, 198, 200, 210. July. [28 ref]
• ***Summary:*** Contents: Introduction (world food shortages). Technological assistance (by NRRL). Oriental traditional foods: Tofu, shoyu or soy sauce, miso or soy paste, monosodium glutamate, natto and kinako, soy beverage, tempeh (tempe). Recent food developments. Address: NRRL, Peoria, Illinois.

190. Hesseltine, C.W.; Camargo, R. de; Rackis, J.J. 1963. A mould inhibitor in soybeans. *Nature* (*London*) 200(4912):1226-27. Dec. 21. [4 ref]
• ***Summary:*** This factor inhibits the mould growth of *Rhizopus* species, which are used in the "fermentation of soybeans to make the Indonesian food tempeh." The inhibitory factor(s) was found to be heat-stable and water-soluble. One gets the best tempeh when it is dissolved out and rinsed / washed out before the tempeh fermentation. Address: National Utilization Research and Development Div., USDA, Peoria, Illinois; NRRL, Peoria, IL.

191. Lin, Tjen Sin. 1963. Ketahanan spora *Rhizopus oligosporus* dalam berbagai suhu dan kelembaban [Resistance of *Rhizopus oligosporus* spores at various temperatures and humidities]. Bandung: Bagian Laboratorium Mikrobiologi Institut Teknologi Bandung. 31 p. [Ind]*
Address: Bandung, Indonesia.

192. Chaves, Nelson. 1963. Proteínas vegetais e trópicos [Vegetarian and tropical proteins]. Recife, Brazil: Imprensa Universitária. 151 + 5 p. Illust. Series: Coleçao nordestina, 2. [75+* ref. Por]
• ***Summary:*** Soyfoods and their nutritional value are discussed on pages 65-67, incl. soymilk (*leite de soja*), tempeh, miso, tofu, shoyu, and natto.

Note: This is the earliest Portuguese-language document seen (Sept. 2011) that mentions tempeh, which it calls "tempeh." Address: Universidade do Recife, Instituto de Fisiologia e Nutricao.

193. Hesseltine, C.W.; Smith, Mabel; Bradle, Barbara; Ko Swan Djien. 1963. Investigations of tempeh, an Indonesian food. *Developments in Industrial Microbiology* 4:275-87. [8 ref]
• ***Summary:*** "Tempeh is made in Indonesia with mixed cultures that appear to be largely *Rhizopus oligosporus,* of which NRRL 2710 is a typical representative. We prepared tempeh by pure culture fermentation with 39 strains of *Rhizopus* representing 6 species. A satisfactory laboratory-scale fermentation is described based on a 20 to 24-hour fermentation of dehulled beans with *R. oligosporus.* Full-fat grits may be used in place of dehulled whole beans... The tempeh-producing strains were characterized with regard to carbon and nitrogen source required for growth. All strains grew on soybean oil, xylose, glucose, galactose, trehalose, and cellobiose. None grew on i-erythritol, lactose, raffinose, or inulin. The best nitrogen sources appeared to be asparagine and ammonium sulfate."

Contents: Introduction. Isolation of the tempeh mold (21 species and strains were isolated). Small-scale tempeh fermentation (with flow sheet, based on 100 gm of soybeans). Preserving tempeh. Miscellaneous studies. Amylase activity.

Figures show: (1) Flow sheet for tempeh. (2) Pectinase activity of *R. arrhizus* NRRL 1526 and a non-tempeh-forming fungus, *Gilbertella persicaria* NRRL 2700. (3) Pectinase activity of *R. arrhizus* NRRL 1526 at different dilutions of the culture filtrate. (4) Pectinase of representative tempeh molds. Some have low activity and some high.

Tables: (1) Time and temperature required for making good tempeh with 17 different NRRL mold strains and at 4 different temperatures. (2) Utilization of various carbon sources by certain strains of *Rhizopus.* (3) Amylase produced by tempeh producing strains of Rhizopus (26 strains during 3 different times–42, 66, and 138 hours). (4) Liquefaction of gelatin by selected strains of tempeh producing *Rhizopus*.

Note: This is the earliest document seen (Oct. 2011) that describes how to make tempeh in a laboratory or on a laboratory scale. Address: NRRL, Peoria, Illinois.

194. Tjan Giok Lian. 1963. Some factors effecting the growth competition of *Rhizopus Sp.* and *Pseudomonas cocovenenans* in tempe bongkrek, and toxicity of *Pseudomonas cocovenenans* toxin on fishes. Thesis (Skripsi), Bagian Biologi Institut Teknologi Bandung, Bandung, Indonesia. 138 p. PBITB. *
Address: Bandung, Indonesia.

195. Ohta, Teruo; Ebine, H.; Nakano, M. 1964. Tenpe (tempeh) ni kansuru kenkyû. I. Indonesia-san tenpe funmatsu no hinshitsu to seijô ni tsuite [Study on tempeh. I. On the

property of tempeh powder made in Indonesia]. *Shokuryo Kenkyujo Kenkyu Hokoku* (*Report of the Food Research Institute*) No. 18. p. 67-69. March. [4 ref. Jap; eng]
• ***Summary:*** Soybeans were fermented with *Rhizopus oryzae* for 60 hours at 30ºC, then vacuum dried and ground to a powder. The solubility of protein and the rate of amino-nitrogen to total-nitrogen were 20% and 2% respectively, indicating that protein hydrolysis slightly exceeded that of koji-beans, but was far less than that of natto.

Peroxide value of fat and oil in tempeh stored for 3 months at room temperature was only 1.3 M.E./kg, whereas that of cooked and dried soybean powder and that of natto powder stored under the same conditions were 71 M.E./kg and 38 M.E./kg respectively. This fact shows that tempeh has antioxidative property comparable to that of miso. Address: Food Research Inst., Shiohama 1-4-12, Koto-ku, Tokyo, Japan.

196. Hackler, L.R.; Steinkraus, K.H.; Van Buren, J.P.; Hand, D.B. 1964. Studies on the utilization of tempeh protein by weanling rats. *J. of Nutrition* 82(4):452-56. April. [7 ref]
• ***Summary:*** Fermentation of soybeans by the tempeh mold "did not improve protein efficiency nor growth in these studies [on weanling rats] above the protein efficiency ratio for the unfermented soybeans... In all our studies the animals receiving diets containing tempeh have consumed less food than similar animals fed diets containing unfermented full-fat soybean meal. Our experiments do not show an improvement in the nutritional value and digestibility of soybeans fermented by a specific mold of the Rhizopus species, but they do show that properly prepared tempeh contains high quality protein."

Table 1 shows that the apparent digestion coefficient of tempeh by weanling rats changed slightly with the length of fermentation: 86.9% after 0 hours, 88.0% after 12 hours, 86.2% after 24 hours, 85.3% after 36 hours, and 85.4% after 72 hours.

Table 2 shows that the apparent digestion coefficient of tempeh by weanling rats changed slightly with the time that tempeh was deep fried: 86.8% after 0 minutes, 87.4% after 1 minute, 84.4% after 3 minutes, 82.8% after 5 minutes, and 79.0% after 7 minutes. Address: Cornell Univ.

197. Roelofsen, P.A.; Talens, Anneke. 1964. Changes in some B vitamins during molding of soybeans by *Rhizopus oryzae* in the production of tempeh kedelee. *J. of Food Science* 29(2):224-26. March/April. [11 ref]
• ***Summary:*** During tempeh fermentation, riboflavin and niacin increased considerably, whereas thiamin decreased. Of the thiamin present in the cooked soybean cotyledons, about one-third was used up by the tempeh mold–*Rhizopus oryzae.*

During tempeh fermentation, the hyphae of the mold penetrate between the cells in the outermost layer of the cotyledons, and "secrete enzymes that penetrate further. As a result of the enzymatic action on the cell walls, the cells in tempeh separate easily when the cotyledons are either masticated, squeezed, or shaken with water. The digestibility of the cotyledons is greatly increased over that of merely cooked ones."

Note: This is the earliest English-language document seen (Sept. 2006) with the word "kedelee" (Indonesian for "soybean") in the title. Address: Lab. of General and Technical Biology, Technological Univ., Delft, Netherlands.

198. Ko Swan Djien. 1964. Tempe, a fermented food made from soybeans. Paper presented at the International Symposium on Oilseed Protein Foods, May 11-16, Tokyo, Japan. 17 p. [30 ref]
• ***Summary:*** This very interesting paper contains the most complete information seen to date on tempe, and, especially concerning tempe in Indonesia. It discusses tempeh's history, traditional production methods, inoculum, packaging, chemistry and microbiology, contamination, shelf life, basic recipes, and price, plus a review of other research (including the best English-language bibliography of Dutch research to date) and a description of a tempeh pilot plant being developed in Bandung (complete with a mechanical roller-miller dehuller, water flotation hull removal, heated incubator and trays, and improved inocula).

Concerning okara tempeh, page 5 states: "For the purpose of lowering the price, often the dehulled soybeans are mixed with the residue of soybeans material from the process of manufacturing of tofu. This material is in fact the coarse components of crushed soybeans. Usually it is used as feed for pigs and is relatively low in price. Mixed in tempe, it will lower the price of tempe."

Note 1. This is the earliest English-language document seen (Jan. 2005) that refers to the use of okara in making tempeh.

In this document, Ko is the first to signal what he hopes will be the beginning of a new image for tempeh in Indonesia: "But there is no doubt that the time will come when Indonesians will be proud of their tempe, in the same way as the Japanese are proud of their sake, the French people of their wine, Italians of their macaroni, Indians of their curry, Russians of their caviar, the Dutch of their cheese, etc."

"Totally this food is produced in large quantities. Though dependable statistics are not yet available, it is not excessive to say that every day 10 percent of Indonesia's population of more than 100 million people consume at least 10 grams of tempeh per person. Although this huge amount illustrates the importance of tempe in the Indonesian diet, it is recognized as such by only a few experts." Note 2. This is 2.2 million lb/day or 1,000 metric tons per day.

Note 3. This is the earliest document seen (Sept. 2011) that gives industry or market statistics for tempeh, or for tempeh in Indonesia. Address: Lab. for Microbiology,

Bandung Inst. of Technology, Indonesia.

199. Martinelli, Alcides Filho; Hesseltine, C.W. 1964. Tempeh fermentation: Package and tray fermentation. *Food Technology* 18(5):167-71. May. [11 ref]
• ***Summary:*** Describes rapid production in large quantities by pure-culture tempeh fermentations in shallow wooden and metal trays with perforated bottoms and covers. (Also in perforated plastic tubes and bags).

Note: This new idea and "new technology" is soon transferred to tempeh makers in Indonesia, where it becomes widely used. Address: NRRL, Peoria, Illinois.

200. Platt, B.S. 1964. Biological ennoblement: Improvement of the nutritive value of foods and dietary regimens by biological agencies. *Food Technology* 18(5):68-73, 75-76. May. [34 ref]
• ***Summary:*** The most common vitamin deficiency worldwide is probably riboflavin (B-2). The amount of riboflavin is increased in the preparation of various fermented foods. Riboflavin is synthesized by a wide variety of microorganisms, notably by a yeastlike organism, *Eremothecium ashbyii,* which has been grown with a high yield on wheat bran and on the refuse (*tou cha* [*okara*]) from the manufacture of soy bean curd (toufu).

"Riboflavin is also increased in the fermentation of a variety of seeds, notably the seed of the African locust bean (*Parkia filicoidea*)*."* Boil the seeds for 24 hours to soften the seed coats, then remove the coats. Boil the kernels again for about 2 hours, then set them aside, cover with leaves, and allow to ferment for 2-3 days. Pound the fermented mass into a paste, form it into small balls, then dry these in the sun. The resulting product, "which is found widely throughout West Africa, is known as *dawadawa* or *uri,* keeps well if properly dried, and may contain 0.2 to 0.8 mg riboflavin and 37% of protein" (Platt, 1962). Address: Prof. of Human Nutrition, London School of Hygiene & Tropical Medicine, London, W.C. 1, England.

201. Smith, A.K.; Rackis, J.J.; Hesseltine, C.W.; Smith, Mable; Robbins, D.J.; Booth, A.N. 1964. Tempeh: Nutritive value in relation to processing. *Cereal Chemistry* 41(3):173-81. May. [17 ref]
• ***Summary:*** "Rats fed tempeh showed a small reduction in growth and protein efficiency compared with autoclaved and dehulled full-fat soybean meal. This reduction in nutritive value may not be serious when one considers the improved edibility of soybeans for human consumption by fermentation. Loss of solids and protein in dehulling, soaking, washing, and cooking soybeans before fermentation did not reduce the nutritive value of either cotyledons, or full-fat grits (chips), used to make tempeh... Methionine supplementation of tempeh significantly increased rate of rat growth and protein efficiency values." Address: NRRL, Peoria, Illinois; Western Regional Research Lab., California.

202. Steinkraus, Keith H. 1964. Research on tempeh technology in the United States. Paper presented at the International Symposium on Oilseed Protein Foods. 9 p. Held 10-16 May 1964 at Tokyo. [15 ref]
• ***Summary:*** An excellent review of the subject. "The general objectives of tempeh research in the United States have been (1) to develop controlled processing methods which will consistently yield a uniform, reproducible tempeh which can be used for biochemical or nutritional studies, (2) to develop small factory methods of producing tempeh for use in the world-wide feeding programs, (3) to determine the changes that occur in soybeans fermented to tempeh, (4) to characterize the molds capable of converting soybeans to tempeh and to learn their requirements for growth and enzymic activity, and (5) to determine the nutritive value of tempeh."

Table 1 gives an equipment list for a small tempeh factory. Table 2 is a flow sheet for production of tempeh and of tempeh inoculum. Address: Cornell Univ., New York State Agric. Exp. Station, Dep. of Food Science and Technology, Geneva, New York.

203. Wai, Nganshou. 1964. Soybean cheese. *Bulletin of the Institute of Chemistry* (*Taiwan*). *Academia Sinica* No. 9. p. 75-94. July. [5 ref. Eng]
• ***Summary:*** One of the best publications on fermented tofu, this work was supported by a grant (FG-Ta-100) from the USDA Agricultural Research Service. Contents: 1. Introduction. 2. Experimental. Microbiological investigations (using sufu made at 3 factories in Taipei, Taiwan. All three used the same strain of *Rhizopus chinensis*). Many photos (magnification to 70 x to 700 x) show *Rhizopus chinensis* var. *chungyuen, Mucor hiemalis* and *Mucor silvaticus.* Procedures and results. Analyses. 3. Discussion. Mucor is the preferred mold. Summary of newly developed method. History of tofu. The ancient process for making fermented tofu. Table showing five varieties of sufu and their nutritional composition.

"Soybean cheese (sufu) has been produced in China for many centuries." "Which kind of fungus is adaptable for the preparation of sufu is one of the keystone problems in studying this vegetable cheese." The mycelial mat, grown on the cubes of firm tofu, should ideally be white (or slightly yellowish white), and "the mycelial mat should be dense and tenacious so that a film will be formed on the surface of the 'pehtze' to serve as an envelope to protect the finished sufu from distortion in its shape. ('Pehtze' means the bean curd freshly grown with the fungus but not yet processed and aged to become sufu)" (p. 75).

In Taipei, Taiwan, sufu is made in three factories; all three used the same strain of fungi, which we will designate as *Rhizopus chinensis* var. *chungyuen.* Sufu is also made at

home. "It is well recognized by Chinese housewives that when soybean curd is covered with rice straw it will at last become pehtze of sufu. This may be explained by the fact that a kind of fungus naturally inhabiting on the rice straw may have the chance to grow on bean curd under favorable conditions." Two strains of fungi were isolated from the rice straw: *Mucor heimalis* and *Mucor silvaticus.* Many photomicrographs of all three molds are shown. Kaoliang wine is preferred is the typical solution of 12% NaCl and 10% ethanol (generally added as rice wine or distilled liquor) (p. 76-83).

The five varieties shown in the table are: Rose sufu (to which some rose essence is added), Fermented rice sufu (tsao sufu, to which some pressed residue from rice wine {also called "fermented rice mash"}, cloves and orange peels are added), Red sufu (to which red koji and soy mash are added; red koji is boiled rice grown with *Monascus anka* [*angkak*]), and Kwantung Sufu [sic, Kwangtung Sufu from Kwangtung province in southeast China] (to which salt, red koji, red pepper and anise are added), and Yunnan sufu.

Note: This is the earliest English-language document seen (Feb. 2007) that uses the terms "rose sufu" "tsao sufu" "fermented rice sufu" "red sufu" "Kwantung sufu" "Kwangtung sufu" or "Yunnan sufu" to refer to different types of fermented tofu. It is also the 2nd earliest English-language document seen (Feb. 2007) that contains the term "fermented tofu." And it is the earliest English-language document seen (Feb. 2007) that uses the word "pehtze" to refer to "bean curd freshly grown with the fungus but not yet processed and aged to become sufu." Address: Inst. of Chemistry, Academia Sinica, Taiwan.

204. György, Paul; Murata, K.; Ikehata, H. 1964. Antioxidants isolated from fermented soybeans (tempeh). *Nature* (*London*) 203(4947):870-72. Aug. 22. [10 ref]
• ***Summary:*** The isoflavone 6,7,4'-trihydroxyisoflavone was found in tempeh and the authors believe this highly active substance is probably a normal constituent of soybeans. [Note: This isoflavone was later shown to be a product of the fermentation process]. This may be an example of isoflavone modification that may occur during the fermentation or processing of soybeans. "Daidzein and genistein are the aglucones of the known glucosides, daidzin and genistin. Enzymatic hydrolysis of the glucosides through the action of *Rhizopus oryzae* has been proved... The antioxidants liberated in tempeh act probably through their protection and preservation of the biologically eminently effective vitamin E in soybeans and not by direct biological action. When larger amounts of 6,7,4'-trihydroxyisoflavone become available, its antioxidant effect in vitamin E-deficient animals should be investigated." Address: 1. Univ. of Pennsylvania; 2-3. Osaka City Univ., Osaka, Japan.

205. Hardjo, Suhadi. 1964. Pengolahan dan pengawetan kedelai untuk bahan makanan manusia [Soybean processing and preservation for human consumption]. Paper presented at Seminar Kedelai (Soybean Seminar, Rapat Kerdja Kedelai). 14 p. Held 28-30 Sept. 1964 at Bogor, Indonesia. [Ind]*
• ***Summary:*** Describes several methods of processing and preserving soybeans in Indonesia, including the production of tempeh, tofu (tahu), soy sauce (kecap), tauco (soybean paste), koji, and soybean flour.

Note: This is the earliest document seen (March. 2009) uses the word "tauco" (spelled in that way) to refer to Indonesian-style miso.

206. Ko Swan Djien; Sastramihardja, I. 1964. Some experiments on fermentation of soybean. Presented at Seminar Kedelai (Soybean Seminar, Rapat Kerdja Kedelai). Held 28-30 Sept. 1964 at Bogor, Indonesia. [Eng]*

207. Mustakas, G.C.; Griffin, E.L., Jr.; Allen, L.E.; Smith, O.B. 1964. Production and nutritional evaluation of extrusion-cooked full-fat soybean flour. *J. of the American Oil Chemists' Society* 41(9):607-14. Sept. [14 ref]
• ***Summary:*** The abstract begins: "A processing method for preparing full-fat soybean flours for human consumption by a new extrusion cooking method was developed." The paper continues: "The extrusion equipment described in this paper was used in 1961 to convert soybeans directly to full-fat meals for feed mixing. Swine feeding tests carried out on these meals at Purdue University [Indiana] were reported [Jimenez et al. 1961, in *Feedstuffs* 33(44):42] to give comparable weight gains and feed conversion efficiencies of regular defatted soybean meal with added fat.

"On the basis of the Purdue experiment, it was conceived that it might be possible to apply the cooker-extruder process to dehulled soybeans to produce an edible-grade full-fat soybean product which could be ground to a highly nutritious flour for human foods."

"A collaborative project was therefore sponsored by UNICEF, and undertaken by the Northern Utilization Res. & Dev. Div., ARS, USDA [NRRL], and the Wenger Mixer Manufacturing [Sabetha, Kansas] to develop and evaluate a simplified extrusion cooking process for the production of full-fat soybean flour for edible uses." Contains an analysis of 12 soybean flours processed under different conditions. "The United Nations Children's Fund (UNICEF) has been improving local diets in the developing countries, especially of children and of pregnant and nursing mothers. Since [cow's] milk is a logical food for this group, UNICEF has assisted in building and equipping over 200 milk-processing plants in the developing countries to provide safe milk or milk powder."

"Asians have traditionally used soybean foods, generally in a moist form. Some of these are: soy milk (a water extract of the ground whole bean); tofu (a precipitated curd similar to cottage cheese); and tempeh (a fermented product of the

decorticated bean). Because of their relatively short shelf life they are usually made locally each day as a cottage or small village industry."

The product flavor was evaluated. "The prevention of off-flavors and odors which result from fat deterioration is of major importance." Only one lot was stabilized with an antioxidant. Accelerated stability tests were conducted on two lots at 100ºF and 113ºF for 1-39 weeks. The higher-temperature lot began to show evidence of rancidity by its elevated peroxide value of 6.4 at the end of 15 weeks, and this rancidity was strong at the end of 26 weeks when the peroxide value reached 54. The fresh products had a desired nutty flavor, and the strong beany-bitter flavor had been removed.

"Proposed Clinical Testing. A 1,000-lb lot of the milled soy flour has been forwarded to the P.N. Sarihusada Co., Jogjakarta, Indonesia, where it will be formulated and packaged for acceptability testing in the areas now supplied by the plant with the dried water-extracted soya milk formulation. Clinical and acceptability testing is being done by the College of Medicine of the National Taiwan University, Taipei, Taiwan. It is part of a large-scale clinical test with infants up to 12 months of age to compare the extruded soy flour formulated as a milk, with various other soybean products." Two illustrations show the extrusion equipment, which was operated by LaVon Wenger.

Note 1. This is the earliest document seen (Dec. 1997) that discusses extrusion cooking in connection with soybeans for food uses. This appears to be the first production of full-fat soy flour (FFSF) by an extrusion cooker.

Note 2. This is the earliest document seen (Sept. 2000) that describes the equipment used to make soy flour. Address: 1-2. NRRL, Peoria, Illinois; 3. Food Conservation Div., UNICEF, United Nations, New York; 4. Wenger Mixer Manufacturing, Kansas City, Missouri.

208. Prawiranegara, Dradjat D. 1964. Pentingnja kedelai dalam menu Indonesia [The importance of soybeans in the Indonesian menu]. In: Seminar Kedelai, Bogor. (Rapat Kedelai Kerdja, Bogor). See p. 5. Held 28-30 Sept. 1964. [Ind]*

209. Soedarmo, P. 1964. Kedudukan katjang kedelai sebagai makanan di Indonesia [Soybeans as a food for Indonesians]. In: Seminar Kedelai, Bogor. (Soybean Seminar, Rapat Kedelai Kerdja, Bogor). See p. 5. Held 28-30 Sept. 1964. [Ind]*

210. Hesseltine, C.W. 1964. Fungi and fermented foods (Abstract). *Abstracts of the 10th International Botanical Congress.* p. 55-56.
• ***Summary:*** "In the Western World, the least understood field of industrial mycology is the nonalcoholic food fermentations." For the last 5 years, the author's laboratory has been investigating miso and tempeh. The 5 objectives of the research are outlined. Address: NRRL, Peoria, Illinois.

211. Ikehata, Hideo; et al. 1964. Hakkô daizu tempeh ni kansuru kenkyû. II. Koyoketsu busshitsu no seishitsu [Research on tempeh. II. The nature of hemolytic substances]. *Eiyo* (*Nutrition and Nutrology*) 17(1):35. [Jap]*

212. Aykroyd, Wallace R.; Doughty, Joyce. 1964. Legumes in human nutrition. *FAO Nutritional Studies* No. 19. xi + 138 p. Reissued by FAO in 1982. [119 ref]
• ***Summary:*** Contents: Preface. Introduction. History of legumes. Production and consumption. Composition and nutritive value. Methods of processing and cooking. Effects of processing on nutritive value. Toxic substances. Legume proteins. Observations on the value of legumes in human feeding. The place of legumes in human diets. Appendixes. References.

Appendix 1, titled "Legumes eaten by man" (p. 101-14), lists the various legumes by their Latin names. The entry for *Psophocarpus tetragonolobus* gives its vernacular names as "Goa bean, asparagus pea, winged pea, winged bean, sesquidillas."

Note: This is the earliest English-language document seen (Aug. 2007) that uses the word "sesguidillas" to refer to the winged bean. Address: 1. Dep. of Human Nutrition, London School of Hygiene and Tropical Medicine; Former Director, Nutrition Div., FAO, Rome, Italy.

213. Murata, Kiku; Ikehata, H.; György, P. 1964. Detection and isolation of the antioxidants from fermented soya beans, tempeh. In: Proceedings of the Sixth International Congress of Nutrition. Edinburgh and London: E. & S. Livingstone Ltd. xv + 683 p. See p. 601. Held 9-15 Aug. 1963 at Edinburgh, Scotland.
• ***Summary:*** The authors detected an antioxidant in the alcohol extract of tempeh which is similar to that of vitamin E; it prevents haemolysis of red blood cells to dialuric acid. They attempted to isolate the active antioxidants from tempeh and succeeded in obtaining two isoflavons and one unknown "Factor 2" in crystalline forms. Two of the crystals were identified as daidzein and geninstein. Compared with vitamin E, they have only 1% and 5% respectively of the activity to prevent the haemolysis of red blood cells. However "Factor 2" has twice the activity of vitamin E.

Also summarized in *Nutrition Abstracts and Reviews* (1964, p. 1792). Address: 1-2. Osaka City Univ., Osaka, Japan; 3. Philadelphia General Hospital, Philadelphia, Pennsylvania.

214. Oei Jang Tjoe. 1964. Penentuan kadar riboflavin dari hasil berbagai fermentasi kedelai dengan tjara mikrobiologi [Microbiological determination of the riboflavin level in various fermented soybean products]. Thesis (Skripsi),

Bagian Biologi Institut Teknologi Bandung, Bandung, Indonesia. 40 p. PBITB. [Ind]*
Address: Bandung, Indonesia.

215. Steinkraus, K.H.; Van Buren, J.P.; Hackler, L.R.; Hand, D.B. 1965. A pilot-plant process for the production of dehydrated tempeh. *Food Technology* 19(1):63-68. Jan. [13 ref]
• ***Summary:*** The pilot plant produced 54.5 kg/day of fresh tempeh or 27 kg/day of dry tempeh, using 1 man 8 hours a day and the equipment described. Step-dehulling, precooking, inoculation with *Rhizopus oligosporus,* fermentation and dehydration are described with research results. Chemical composition of tempeh is given. Modifications for use at village level are given. Address: Dep. of Food Science and Technology, New York State Agric. Exp. Station, Cornell Univ., Geneva, New York 14456.

216. Wolf, Walter J. 1965. Chemistry of soybean proteins. Paper presented at National Dairy Products Corp., Glenview, Illinois. 17 p. Feb. 4. Typed, without signature (carbon copy).
• ***Summary:*** This lecture is a "broad review of current knowledge with emphasis on chemical properties which may be important in food properties of soy proteins." It included 20 slides, each described briefly in a "List of slides" at the end of the paper.

Correspondence in connection with this lecture shows: (1) That Dr. Wolf and Dr. H.L. Wang of the NRRL were each invited by Dr. Hugh Mottern (Manager, Long Range Planning) to present papers on Feb. 4; expenses will be paid by NDPC–which appears to be related to Kraft Foods. The title of Dr. Wang's talk will be "Fermented Soybean Foods" and she will discuss primarily [fermented] soybean cheese, tempeh, and miso. Initially Mottern asked Dr. Wolf to give a seminar on full-fat soy flour, but that was later broadened to soy proteins. NDPC is currently having a series of seminars on soybeans and soybean products (8, 11, and 18 Jan. 1965; 1 Feb. 1965). Address: Northern Regional Research Lab., Peoria, Illinois.

217. *Chemurgic Digest.*1965. Special fermentations to produce new food products. March. p. 2.
• ***Summary:*** Discusses the work of the Northern Regional Research Laboratory with tempeh and miso. Dr. C.W. Hesseltine is in charge of the Laboratory's culture collection, one of the largest, most complete, and most industrially important in the world. It contains more than 8,000 microorganisms, all kept under refrigeration.

218. Diser, Gleason M. comp. 1965. Glossary of soybean terms. *Soybean Blue Book* 25(6):18-21. March.
• ***Summary:*** This is the last issue of the *Blue Book* that contains "A glossary of soybean terms" (p. 18-21), a valuable section that has remained largely unchanged since 1961. Address: Minneapolis, Minnesota.

219. Abbott, J.C. 1965. Protein rich foods from oilseeds: Economic aspects. *P.A.G. News Bulletin* (*Protein Advisory Group, WHO / FAO / UNICEF*) No. 5. p. 19-38. April. [15 ref]
• ***Summary:*** Table 1 lists annual consumption (in metric tons) of oilseed protein foods in some main consuming areas. Column 1: Miso, tofu, tempeh and other fermented or cooked soybean products: Mainland China 3,736,000. Japan 2,536,000. Indonesia 200,000. South Korea 160,000. Taiwan 153,000. Hong Kong 15,000. Malaya 15,000. Singapore 15,000.

Column 2: Soy milks: Singapore and Malaya 1,300 metric tons, Hong Kong 1,000.

Note: This is the earliest document seen (Sept. 2002) that contains industry or market statistics for soymilk by geographical region. Address: Chief, Marketing Branch, FAO Headquarters, Rome, Italy.

220. Hesseltine, C.W. 1965. A millennium of fungi, food, and fermentation. *Mycologia* 57(2):149-97. March/April. [38 ref]
• ***Summary:*** A landmark, widely cited work on indigenous fermented foods. Interestingly, it makes no mention of amazake, or kanjang (Korean soy sauce). Contents: Tempeh. Ragi. Sufu (describes process, mentions pehtzes and the mold *Actinomucor elegans* NRRL 3104). Thamnidium (meat tenderizer and flavor enhancer from the mold *Thamnidium elegans*). Miso. Shoyu (incl. tamari. "In China, shoyu is more of the tamari type, that is, more soybeans are used and less wheat,..."). Tea fungus. Ang-Kak (p. 179-81). Advantages of fermenting foods. The future of food fermentations.

The glossary gives brief descriptions of aga-koji, akakoji, amylo process, anchu, angkak, angkhak, ang-quac, anka, ankak, arack, arak, arrack, atsumandie, awamori, bagoong, bakhar, beni-koji, benikoji, braga, brem, busa, chao, ch'au yau (Chinese name for shoyu), chee-fan (a type of Chinese cheese or sufu), chiang (Chinese equivalent of miso), chicha, Chinese cheese (sufu), Chinese red rice (ang-kak), chiu-chu (Chinese yeast), chiu-niang (Chinese term for koji), chou [*ch'ü*] (Chinese equivalent of koji), dahi, dawadawa (made from African locust bean–*Parkia filicoidea;* soy is not mentioned), dhokla, dosai, fermentation of citron, fermented fish, fermentation of maize, fermented minchin (wheat gluten), fermented soybeans ("a Chinese food prepared from small black soybeans." See A.K. Smith 1961 [soy nuggets]), fish paste, fish sauce, fish soy, fu-yu, fu-yue, fuyu (see sufu [fermented tofu] for all 3), ginger beer plant, grib, hamanatto, hon-fan [fermented tofu], hongo, hung-chu, idli, injera, jamin-bang, java yeast, jotkal, kaffir beer, kanji, katsuobushi, katyk, kefir, ketjap, kimchi, kishk,

kisselo mleko, koji, kombucha (tea fungus fermentation), kome-miso, kuban, kumiss, kumys, kushik, kushuk, kvass, kwass, kyoku-shi, lao-chao, leben, lebeny, levain of khasia, levain of sikkin, lontjom (ontjom), magou, mahewu, maize fermentation of the maoris, mazun, medusen tee, meen, meitauza, meju (fermented soybeans of Korea), mén, mien (Chinese yeast), mirin, mish, miso, moromi, mugi miso, murcha, nappi, nata, natto, ngapi, nuoc-mam, nukamiso, ontjom, patis, paw tsay, peh-khak, pehtze, peujeum, peyem, poi, prahoc, pulque, raggi, ragi, ranu, red pepper sauce, red rice, red sufu, sajur asin, saraimandie, sekihan, shiro koji, shottsuru, shoyou, sho-yu, shoyu, soja japonais (shoyu), sonti (a rice beer wine of India), South African fermented corn, soy, soybean cheese [fermented tofu], soy sauce, sufu, su fu [both fermented tofu], sweet flour paste, taette, tahuli, tahuri [both "Philippine fermented soybean curd"], takuwan, tamari, tane koji, tao-cho [taotjo], taokoan [pressed or firm tofu, not fermented], tao dji (see taotjo {sic}), tao-si ([soy nuggets]; see Handbook of Philippine Agriculture. 1939. p. 132-43), tao-tjung, tao-yu, taotjo, tapej, tape ketan, tape ketella, tarhana, tea beer, tea cider, tea fungus, teekwass, teeschwamm, tempe, tempeh, tempeh bongkrek, tempeh kedelee, thamnidium, thumba, tibi, tien mien chang [chiang], tojo, tokua, torani, tosufu, toyo, trassi, tsue fan, tuwak, uri, u-t-iat, wunder pilz, yen-tsai.

Note 1. This is the earliest document seen (Feb. 2007) that mentions *Actinomucor elegans* in connection with sufu [fermented tofu]. In 1966 Hesseltine describes it as the best mold for use in making this fermented food.

Note 2. This is the earliest document seen (July 2000) that mentions "mugi miso"–a type of miso made with barley koji. By the mid- to late-1960s, macrobiotic companies in the USA were importing barley miso from Japan and labeling it "Mugi Miso."

Note: This is the earliest English-language document seen (Feb. 2007) that uses the terms "fuyu" or "fu-yue" to refer to fermented tofu.

Photos show: (0) Clifford W. Hesseltine (portrait). (1-3) *Rhizopus oligosporus* mold, used to make tempeh (3 views). (4) Skewered cubes of sufu in an incubator, with one skewer of uninoculated tofu cubes and three rows of tofu inoculated with *Actinomucor elegans* showing luxuriant growth of mold. (5) Cubes of Chinese cheese [fermented tofu] removed from brine. (6) Dilution plate of tane koji showing different types of *Aspergillus oryzae.* Address: NRRL, Peoria, Illinois.

221. Miller, Harry W. 1965. Meeting the world's nutritional needs with soy milk. *Soybean Digest.* May. p. 19-21.
• ***Summary:*** In East Asia, milk is in short supply and expensive. A replacement made from soybeans has proved acceptable both tastewise and nutritionally. Moreover, animals are not an efficient means of producing protein. In East Asia, soybeans for food use have traditionally been soaked and then milled. Thus a "wet milling operation" is used instead of dry milling, as to make flour. "For adult use, they have built up a number of soy protein dishes, called 'meat without bones'. However they have not taken into consideration the nutritional needs of infants and growing children, and malnutrition is seen everywhere in these developing countries."

"In Japan, 30 pounds per capita of soybean are consumed as food but to provide soy milk for infants and children another 15 pounds per capita need to be added." For soy milk processing two systems are in use: the small community soy milk plant (the fresh milk may be dispensed from the conventional milk can without bottling, thus lowering the cost) and the large commercial bottling plant. "In Hong Kong, soy milk is made, bottled, and distributed everywhere in the colony for 3½ cents for a 7-ounce bottle. It has the largest sale of any bottled beverage in the colony... In Hong Kong are two factories of the most modern type, with upwards of 40 large delivery beverage trucks, under the genius and leadership of K.S. Lo, general manager. These plants daily manufacture some 25,000 cases each containing 24 bottles of soy milk [i.e. 600,000 bottles/day]. These are delivered to hospitals and schools, and this milk is on sale at all beverage places..." In Singapore, in Bangkok, Thailand, and in Manila, Philippines, soy milk is also made and well accepted. In Formosa, where 2-3 years ago there was only one soy milk plant in Taipei, today more than a dozen rural pilot plants have sprung up all over the country.

Photos show: (1) A bottling machine at a soy milk plant in Hong Kong. (2) Boy scouts in Hong Kong drinking bottled soy milk. Address: M.D., Director Emeritus, International Nutrition Research Foundation, Arlington, California.

222. *Soybean Digest.*1965. Expect "entirely new foods" from Asian fermentations. May. p. 26-27.
• ***Summary:*** One of these new foods may be a tempeh-like product made from wheat, Dr. C.W. Hesseltine, retiring president of the Mycological Society of America, told that group at its annual meeting. USDA's Northern Utilization Research Laboratory is making a broad effort to find new outlets for American farm products. "Scientists at Peoria [Illinois] began studying the use of U.S. soybeans in foods such as Indonesian tempeh and Japanese miso more than 5 years ago. They have supported contract research on fermented foods in foreign laboratories for the past 2 years... The retiring president discussed research and processing of six fermented foods. Among them were tempeh and miso." A photo shows Dr. Hesseltine.

223. Rawi, Ihsan el; Oey, Kam Nio. 1965. Soya-rice baby food. *Paediatrica Indonesiana* 5(1-2):606-08. Jan/June. Supplement. [7 ref. Eng]
• ***Summary:*** Saridele is a commercial weaning food made in a factory in Jogja (Central Java). It is powdered soya milk

fortified with vitamins and minerals. Animal trials (young albino rats) show that saridele has a high P.E.R. value, especially after adding rice flour. A table compares the PER of whole milk, skim milk, Saridele, fried tempeh, and fried whole soybeans.

The latter, which are the least expensive, are prepared as follows: Soak whole soybeans overnight in water (or for 1 hour in hot water). Remove the hulls by rubbing and pour off the hulls. Drain and rise the soybeans, then drain until dry. Deep fry the soaked whole soybeans in hot cooking oil until golden brown in color. Then grind or pound the fried beans.

"The combination of tempeh and red rice is a daily food for adults and older children." There is no reason why it cannot be made into a porridge and served to younger children after weaning. Address: Nutrition Inst., Ministry of Health, Jakarta, Indonesia.

224. De, Sasanka S. 1965. The present state of protein-rich food development in Asia and the Far East. *J. of Nutrition and Dietetics* (*India*) 2(3):166-76. July. [23 ref]
• ***Summary:*** Gives an excellent account of soymilk production in Asia during the mid-1960s and a brief history of the FAO/WHO/UNICEF/Protein-rich food program. "The First International Conference sponsored by FAO, WHO and Josiah Macy Jr. Foundation (New York) held in Jamaica in 1953, discussed the biological, technical and pathological aspects of protein malnutrition. The next Conference on 'Human protein requirements and their fulfillments in practice' held in Princeton in 1955 under the same sponsorship, gave detailed consideration to the testing of new protein rich foods before their use in child feeding was recommended.

"The Protein Advisory Group (PAG) was established by the Director-General of WHO in 1955 to 'act on behalf of WHO in rendering advice to FAO and UNICEF on the safety and suitability for human consumption of proposed new protein-rich foods.' The PAG... became a tripartite FAO/WHO/UNICEF Protein Advisory Group in 1961."

Soybean milk: "In 1939, K.S. Lo established a firm known as 'Hong Kong Soyabean Products' to produce sterilized bottled soya milk. The two plants of the firm in Hong Kong produce 12,000 cases (24 x 7-oz. bottles per case) a day."

Also discusses miso, natto, tempeh, full-fat soya flour, soya presscake and meal, groundnut protein isolate. Address: Regional Office for Asia and Far East, FAO, Bangkok, Thailand.

225. Findlay, W.P.K. 1965. Fermented foods. *British Vegetarian.* July/Aug. p. 282-83. [1 ref]
• ***Summary:*** In 1964 at the Botanical Congress in Edinburgh, Scotland, an American mycologist, Dr. C.W. Hesseltine, gave a fascinating account of the studies he has made of foods fermented with molds. A full account of his work has just been published in *Mycologia.* 1965. 57(2): March/April. This is a summary of that article, focusing on tempeh, sufu or Chinese cheese, miso, and shoyu or soy sauce. Address: D.Sc.

226. Steinkraus, K.H.; Lee, C.Y.; Buck, P.A. 1965. Soybean fermentation by the ontjom mold *Neurospora. Food Technology* 19(8):119-20. Aug. [5 ref]
• ***Summary:*** The ontjom mold was compared with the tempeh mold. The former had a lower maximum growth temperature and grew more slowly but produced the same general changes in a soybean substrate as the latter.

Surprisingly, a tempeh-like product made with soybeans but inoculated with the onchom mold *Neurospora* was never traditionally made in Indonesia. The soybeans were used only to make tempeh, and the onchom was always made from peanut presscake or okara. The authors developed and describe an acceptable soy onchom, which resembled tempeh except that the flavor was more nutlike. Address: 1. Dep. of Food Science and Technology, Cornell Univ.

227. Wang, Hwa L.; Hesseltine, C.W. 1965. Studies on the extracellular proteolytic enzymes of *Rhizopus oligosporus*. *Canadian J. of Microbiology* 11(4):727-32. Aug. [9 ref]
• ***Summary:*** "Two proteolytic enzyme systems were observed in the culture filtrates of *Rhizopus oligosporus.* One has an optimum pH at 3.0; the other, at 5.5. Both enzyme systems have maximum activities at 50-55ºC and are fairly stable at pH 3.0-6.0. Maximum production of the enzymes occurred after 72 to 96 hours of incubation and then it decreased rapidly."

Note: An extracellular enzyme (or exoenzyme), is an enzyme that is secreted by a cell and that works outside of that cell. It is usually used for breaking up large molecules that would not be able to enter the cell otherwise. This term is also often used to refer to the hydrolytic digestive enzymes secreted by fungi [such as *Rhizopus oligosporus*]. The majority of enzymes are intracellular, not extracellular (Source: Wikipedia, May 2010). Address: NRRL, Peoria, Illinois.

228. *Harian Karya* (*Indonesia*).1965. Tempe naik tahta [Tempeh steps to a higher throne]. Sept. 21. [Ind]
• ***Summary:*** This article reports with amazement that Ko Swan Djien, head of the Department of Microbiology at the Bandung Institute of Technology, studied tempeh at the university.

229. Ohta, Teruo. 1965. Tenpe [Tempeh]. *Nippon Jozo Kyokai Zasshi* (*J. of the Society of Brewing, Japan*) 60(9):778-83. Sept. [Jap]
Address: Norinsho Shokugo Kenkyujo, Tokyo.

230. Sorenson, William G.; Hesseltine, Clifford W. 1965.

Carbon and nitrogen utilization by *Rhizopus oligosporus* (Abstract). *Phytopathology* 55(10):1077. Oct.
• ***Summary:*** The main soluble carbohydrates in soybeans (stachyose, raffinose, and sucrose) were not utilized as sole sources of carbon by the tempeh mold *Rhizopus oligosporus* NRRL 2710. However such common sugars as glucose, fructose, galactose, and maltose did support excellent growth of the mold, as did xylose. Address: Northern Utilization Research and Development Div., USDA, Peoria, Illinois.

231. Murata, Kiku. 1965. Annual report of research conducted under grants authorized by PL-480. Project title: Nutritional value of tempeh. Osaka, Japan. 15 p. Grant Number: FG-Ja-110; A11-HN-1.
• ***Summary:*** Dates of research period covered by report: 14 Oct. 1964 to 31 Oct. 1965. Includes 3 tables and 4 graphs. Introduction: "It is significant to study the nutritional value of tempeh in detail from various points of view, not only to study the biologically active substances but also to find changes in content of nutrients of tempeh during the fermentation of soybeans."

Summary: Hemolysis-preventing and antioxidant activities were detected in tempeh but not in boiled unfermented soybeans. Among the biologically active substances isolated from tempeh, it was found that the isoflavone 6,7,4'-trihydroxyisoflavone, which was originally isolated from tempeh but never isolated previously from natural foods, was most active in preventing in vitro dialuric acid-induced hemolysis of red blood cells. The content of riboflavin and nicotinic acid increase significantly during tempeh fermentation.

Note: This is the earliest document seen that contains the term "biologically active substances." By the early 1990s these substances were renamed "phytochemicals." Address: Food and Nutrition Lab., Faculty of Science of Living, Osaka City Univ., Nishi-ku, Osaka, Japan.

232. Stillings, B.R.; Hackler, L.R. 1965. Amino acid studies on the effect of fermentation time and heat-processing of tempeh. *J. of Food Science* 30(6):1043-48. Nov/Dec. [17 ref]
• ***Summary:*** After the typical 24-hour fermentation, the amino acid methionine, increased slightly, whereas cystine, tryptophan, lysine, histidine, arginine and aspartic (amino acids) all decreased slightly. Free amino acids increased during fermentation. "Deep-fat frying of tempeh caused some amino acids to decrease after 5 minutes [longer than tempeh is typically fried] ... lysine and cystine were most susceptible to heat destruction." Steaming tempeh for typical lengths of time had no effect on the amino acid content. Address: Dep. of Food Science and Technology, New York State Agric. Exp. Station, Cornell Univ., Geneva, New York 14456.

233. Murata, Kiku. 1965. Nutritional value of tempeh. Annual Report of Research Conducted Under Grants Authorized by PL-480. Grant No. FG-Ja-110; All-NH-1. 15 p. *

234. Bachmann, B.J.; Strickland, W.N. 1965. Neurospora bibliography and index. New Haven, Connecticut: Yale University Press. 225 p. *

235. Ikehata, Hideo; Ohtsuki, K.; Murata, Kiku. 1965. Hakkô daizu tempeh ni kansuru kenkyû. IV. Kôyô ketsu-sei busshitsu bunrihô no kentô [Research on tempeh. IV. Investigations on separating hemolytic substances (Abstract)]. *Eiyo to Shokuryo* (*J. of Japanese Society of Food and Nutrition*) 18(1):13-14. [Jap]
• ***Summary:*** Discusses 6, 7, 4'-Trihydroxyisoflavone and Factor 2. Address: Osaka Univ.

236. Inui, Taiji; Takeda, Y.; Iizuka, H. 1965. Taxonomical studies on genus *Rhizopus. J. of General and Applied Microbiology* (*Tokyo*). Supplement to Vol. 11. p. 1-121. [29 ref]
• ***Summary:*** Good on taxonomy but not much on practical tempeh making. Address: Central Research Lab. of Sanraku-Ocean Co., Ltd., Fujisawa-shi Kanagawa (Inui and Takeda); Inst. of Applied Microbiology, Univ. of Tokyo (Iizuka).

237. Ko Swan Djien. 1965. Tempe [Tempeh]. In: M. Makagiansar and R.M. Soemantri, eds. 1965. Research di Indonesia: 1945-1965. Vol. 2. Bidang Teknologi dan Industri. Djakarta: Departemen Urusan Research Nasional Republik Indonesia. xi + 298 p. See p. 312. 24 cm. [50 ref. Ind]* Address: Indonesia.

238. Ko Swan Djien. 1965. Tindjauan terhadap penelitian fermented foods Indonesia [Observations and investigations on Indonesian fermented foods]. In: R.M. Soemantri, ed. 1965. Research di Indonesia: 1945-1965. Vol. 2. Jakarta: P.N. Balai Pustaka. See p. 209-23. [Ind]
Address: Indonesia.

239. Ochse, J.J.; Soule, M.J., Jr.; Dijkman, M.J.; Wehlburg, C. 1965. Cultivos y mejoramientos de plantas tropicales y subtropicales [Cultivation and improvement of tropical and subtropical plants. 2 vols.]. Mexico: Wiley. See vol. II, p. 1162-63. [Spa]*
• ***Summary:*** The section titled "Soybean" discusses the following: Vernacular names in various languages. Overview of world production. Botany. Varieties. Breeding and selection. Climatic and soil requirements. Culture. Harvesting. Uses (incl. soy sauce, tempeh, and tofu). Future possibilities. Diseases. Ochse was born in 1891.

Note: This book was originally published in English in 1961 by Macmillan Co. in New York. Address: 1. Consultant, Tropical and Subtropical Agriculture, Research

Consultant in Economic Botany, Univ. of Miami, Coral Gables; 2. Assoc. Prof. of Fruit Crops, Univ. of Florida, Gainesville; 3. Prof. of Applied Tropical Botany and Genetics, Univ. of Miami, Coral Gables; 4. Asst. Plant Pathologist, Univ. of Florida, Everglades Experiment Station, Belle Glade. All: Florida.

240. Hesseltine, Clifford W.; Martinelli, A., Jr. Assignors to the USA as represented by the Secretary of Agriculture. 1966. Methods for producing tempeh. *U.S. Patent* 3,228,773. Jan. 11. 3 p. Application filed 13 Dec. 1962.
• ***Summary:*** The authors have developed a method for producing commercial quantities of tempeh in perforated plastic bags.

Note: As of March 1978, Dr. Martinelli's address is: Instituto Zimotecnico, Universidade de Sao Paulo, Piracicaba, Brazil. Address: NRRL, Peoria, Illinois.

241. Hesseltine, Clifford W.; Smith, Mabel L. Assignors to the USA as represented by the Secretary of Agriculture. 1966. Cereal-containing varieties of tempeh and process therefor. *U.S. Patent* 3,243,301. March 29. *
• ***Summary:*** Methods have been developed for producing tempeh from cereal grains (such as wheat, rice, barley, oats, or rye) or from mixtures of grain and soybeans. Formerly, tempeh had been produced exclusively from soybeans. It was found that *Rhizopus oligosporus* NRRL 2710 works very well for making these foods. Address: NRRL, Peoria, Illinois.

242. *New York Times.*1966. Fermenting lifts grain food value: Biologists told the process could curb malnutrition. April 13. p. 53.
• ***Summary:*** Dr. Hwa L. Wang of the USDA's Northern Research and Development Division (Peoria, Illinois) said, "Protein deficiency is the most urgent problem in the world today." Born in China but educated in the USA, she is now a U.S. citizen. She said that fermentation was "the standard method of preparing an Indonesian food called tempeh. The Indonesians make this by using certain molds to ferment soybean." Drs. Wang and C.W. Hesseltine head the USDA's project that uses the mold *Rhizopus oligosporus* "to ferment combinations of wheat, barley, oats or rice with soybean flour."

243. Schmeck, Harold M., Jr. 1966. Environment and biology. *New York Times.* April 17. Section IV. p. 11, col. 4.
• ***Summary:*** Drs. Hwa L. Wang and C.W. Hesseltine of the USDA are fermenting grain mixtures with the mold *Rhizopus oligosporus.* "The result of the fermentation is a cake of food material with good protein and good vitamin content, tasting somewhat like nuts or mushrooms and somewhat comparable to Indonesian fermented food called tempeh which is made by a similar process from soybeans."

244. *Agricultural Research.*1966. From traditional Indonesian tempeh: Simple, uniform process produces new high-protein foods. 15(1):8-9. Aug.
• ***Summary:*** Describes the research on new types of tempeh conducted by microbiologist C.W. Hesseltine, biochemist H.L. Wang, and microbiological technician M.L. Smith at the USDA's Northern Regional Research Lab at Peoria, Illinois. They are making tempeh from wheat, oats, rice, barley, rye, wheat-soybean mixtures, and rice-soybean mixtures. Photos show H.L. Wang making soybeans into tempeh.

245. Wang, Hwa L.; Hesseltine, C.W. 1966. Wheat tempeh. *Cereal Chemistry* 43(5):563-70. Sept. [17 ref]
• ***Summary:*** The wheat tempeh was made from cracked Conley hard red spring wheat. "Among the cultures tested, *Rhizopus oligosporus* NRRL 2710 gave the most satisfactory wheat tempeh... The yield of wheat tempeh by the procedures described was approximately 84.5% (on a dry solid basis) after 20 hours of fermentation [at 31ºC]... Soluble nitrogen and reducing substances increased steadily whereas total nitrogen remained fairly constant. Proteolytic enzyme having optimal pH 5.5 was responsible for the breakdown of protein. Of the vitamins analyzed, niacin and riboflavin of wheat tempeh greatly exceeded that of wheat; thiamine appeared to be less. Thus, this new fermented wheat product may provide vitamins, as well as calories and proteins, at low cost." Address: NRRL, Peoria, Illinois.

246. Sorenson, W.G.; Hesseltine, C.W. 1966. Carbon and nitrogen utilization by *Rhizopus oligosporus. Mycologia* 58(5):681-89. Sept/Oct. [13 ref]
• ***Summary:*** "The utilization of various carbon and nitrogen compounds by *Rhizopus oligosporus* Saito NRRL 2710 was investigated. The principal components of the soluble carbohydrates of soybeans, i.e., stachyose, raffinose, and sucrose, were not utilized as sole sources of carbon. Common sugars such as glucose, fructose, galactose, and maltose supported excellent growth as did xylose. Various vegetable oils could be substituted for sugars as sources of carbon with excellent growth.

"Ammonium salts and such amino acids as proline, glycine, aspartic acid, and leucine were excellent sources of nitrogen. Other amino acids were less suitable, and tryptophan supported no growth at all. Sodium nitrate was not utilized as the sole source of nitrogen. Experiments with citrate-buffered media demonstrated that *R. oligosporus* grows well at a pH as low as 2.6-3.0." Address: NRRL, Peoria, Illinois.

247. Swaminathan, M. 1966. The use of soyabean and its products in feeding infants and in the prevention of protein malnutrition in weaned infants and pre-school children in developing countries. *Indian J. of Nutrition and Dietetics*

3(4):138-50. Oct. [63 ref]
• ***Summary:*** Contents: Introduction. Chemical composition: Carbohydrates, fat, minerals, vitamins, proteins. Factors affecting the nutritive value of soya proteins: Trypsin and growth inhibitors, heat processing, other factors. Nutritive value of soya proteins (with or without methionine supplementation): Experiments with animals, experiments with human beings, supplementary value to other food proteins. Processed foods from soyabean for feeding infants and preschool children: Milk substitutes and infant foods, processed protein foods based on soya (soya flour, Multipurpose Food or MPF, soup powder). Foods based on soyabean and other oilseed meals: Precooked roller dried foods, extrusion-cooked full-fat soybean flour. Other soya products (soy protein isolate, tofu, natto, miso, tempeh, soy sauce). Conclusion. Address: Central Food Technological Research Inst. (CFTRI), Mysore, India.

248. Hesseltine, C.W.; Shotwell, Odette L.; Ellis, J.J.; Stubblefield, R.D. 1966. Aflatoxin formation by *Aspergillus flavus. Bacteriological Reviews* 30(4):795-805. Dec. [39 ref]
• ***Summary:*** Introduction. Fungi producing aflatoxins and other toxins of *A. flavus.* Natural occurrence of aflatoxin. Factors affecting aflatoxin formation in nature. Production of aflatoxin in culture. Aflatoxin studies at the Northern Regional Research Laboratory.

The occurrence of mycotoxins has been known for several decades. In 1913 Alsberg and Black of the USDA studied the biochemistry of toxins of certain molds isolated from corn meal. *Penicillium puberulum* was found to produce penicillic acid which was toxic. Interest in aflatoxins arose after the death of a large number of young turkeys in Great Britain in 1960. At least 4 aflatoxins are known to exist, produced by certain strains of *Aspergillus flavus* Link, *A. parasiticus* Speare, and *Penicillium puberulum* Bainier.

"Aspergillus oryzae and its near relatives are widely used in the preparation of koji for such food fermentations as shoyu (soy sauce), miso, black beans [soy nuggets / fermented black soybeans], and sake" (p. 802). *A. oryzae* is a close relative of *A. flavus;* they are distinguished on the basis of minor morphological characteristics. Aflatoxin has been found on only two commercial commodities: Peanuts and cottonseed cake. Although *A. flavus* can be made to grow on soybeans, none of the strains produced much aflatoxin regardless of the conditions. Aflatoxins have not been found in commercial soyfoods produced by *Aspergillus oryzae.*

The authors obtained very low toxin production (0.03 micrograms/milliliter) on pearled soybeans (Hawkeye variety) using a strain of *Aspergillus flavus.* Address: NRRL, Peoria, Illinois.

249. Burkill, I.H. 1966. Dictionary of the economic products of the Malay Peninsula, 2nd ed. 2 vols. Kuala Lumpur, Malaysia: Ministry of Agriculture and Co-operatives. xiv + 2444 p. See vol. 1 (A-H), p. 1098-1103. Index. 24 cm. [11 ref]
• ***Summary:*** Information on the soy bean (*Glycine max*) is found under Glycine. Contents: Origin. Man has selected the more tropical races and is still selecting. Search for a race suitable for Malaya. Java, long ago, found one suitable for the drier parts of the island. Secondary uses as fodder, a cover crop, and green manure. High food-value of the seed. The seed, ripe or nearly ripe, as food. Its special use in diabetes. Artificial milk. Vegetable casein [for industrial uses]. substitute for coffee. Seedlings [sprouts] eaten. Sauces, &c., from the bean. Témpé made in Malaysia with the aid of a fungus. Teou-fu [tofu] prepared by the Chinese. Tao-cho prepared [in Java] with the aid of fungus. Sho-yu or soy kechap. Miso, a Japanese preparation. The making of soy kechap in Java. Organisms in fermentation. Oil [soy-bean oil, or kachang oil]. Criminal use (hairs on the pods cause irritation within the digestive tract). Fibre (in the stem). Joss sticks (Ash of the stem is said to be used in joss-sticks in Indo-China). The soybean is frequently cultivated in Burma and Siam.

A photo (frontispiece) facing the title page shows Isaac Henry Burkill (1870-1965). This second edition is only slightly different from the original 1935 edition of which 2,000 copies were sold. This edition was published on behalf of the governments of Malaysia and Singapore by the Ministry of Agriculture and Cooperatives, Kuala Lumpur, Malaysia. Address: Director of Gardens, Straits Settlements (Singapore; 1912-1925).

250. Milner, Max. 1966. General outlook for seed protein concentrates. *Advances in Chemistry Series* No. 57. p. 52-64. Chap. 5. World Protein Resources. [8 ref]
• ***Summary:*** "Seed proteins, particularly those of the cereals and legumes, are mainstays of human protein nutrition, providing several times more of this nutrient than animal proteins...

"World Protein Resources: The cereals contribute in round numbers 75 million metric tons of protein, of which wheat provides 25 million, rice 12 million and corn 20 million tons. The legumes, consisting of various beans, peas and lentils, in aggregate, provide, surprisingly, only about 8 million tons. Additional but minor plant sources of protein are tubers, including potatoes, and nuts. The world animal protein supply, including principally meat, milk, eggs, and fish, has been estimated to be about 20 million metric tons. And finally, the potential contribution of the oilseeds, which include principally soybeans, cottonseed, and peanuts, can be considered to be about equal to that of all the animal protein now available, 20 million tons per annum."

A long section titled "Soybeans" (p. 57-59) discuses soybeans and soyfoods, including tofu, miso, natto, tempeh, soybean milk, full-fat soybean flour, soy protein concentrates and isolates, and spun soy protein products. Address:

UNICEF, United Nations, New York, NY; Present address: Office of Tchnical Cooperation and Research, Agency for International Developement, Washington, DC.

251. Murata, Kiku; Ikehata, H. 1966. Hemolysis preventing antioxidant activity of synthesized 6.7.4' -trihydroxyisoflavone and that isolated from tempeh. In: 1966. Proceedings of the Seventh International Congress of Nutrition, Hamburg. Braunschweig, West Germany: Verlag Friedr. Vieweg & Sohn GmbH. See vol. 5, p. 656-59. [3 ref]
• ***Summary:*** Contents: Introduction. Synthesis of 6.7.4' -trihydroxyisoflavone and its derivatives and their biological activities. Antihemolytic activities of tempeh with different fermentation times. Production of □-glucosidase activity in *Rhizopus oligosporus.* Summary. Address: Osaka City Univ., Osaka, Japan.

252. Schenk, E.G.; Naundorf, G. 1966. Lexikon der tropischen, subtropischen und mediterranen Nahrungs- und Genussmittel [Dictionary of tropical, subtropical, and Mediterranean foods and food adjuncts (stimulants / enjoyables)]. Herford, Germany: Nicolaische Verlagsbuchhandlung Herford. xiv + 199 p. Index. 21 cm. Series: Manualia Nicolai 1. [200* ref. Ger]
• ***Summary:*** Pages 70-71 give a list of Japanese foods (after Mayerhofer and Pirquet 1926) in no apparent order, with the Japanese name followed by a translation of that name into German. Included in the long list are: Akamiso, miso, shiromiso, tofukasu [okara], daizu, fu [dried wheat gluten], kingyo-fu, kiri-fu, kiri-mochi [frozen and dried rice cake], ame [malt extract], mirin, aburage [tofu fried in vegetable oil], natto–Bohnenkäse, Tofu–Sojatopfen, Tonyu–Sojamilch, azuki [small red beans], kwansen-fu, kinako–Sojabohnenmehl, geröstet, amasake–unvergorener Sake, umeboshi, koritofu [frozen and dried tofu], midzuame [soft ame = rice syrup], shoyu–Sojasauce, yuba–eine Bohnenspeise. Plus many types of sea vegetables.

On pages 140-42 the following terms are defined in German: Soja [soya], Sojabohne [soybeans], Sojabohnenkäse [soy cheese or tofu], Sojabohnenmehl [soybean meal], Sojabohnenöl [soybean oil], Sojakäse [fermented soy cheese], Sojamilch [soymilk], Soja-Nahrungsmittel [soyfoods]: Koji, Miso, Tofu, Nato [sic, natto], kondensierte Soja-Milch [condensed soymilk], Japanische Verarbeitungen [Japanese processed foods: Japanische Soja-Sauce Shoju (Shoyu), Miso, Tofu], Soja-Nahrungsmittel, javanische [Javanese soyfoods: Tao-Hoe, Tempeh, Ketjap, Tao-Tjiong [a term, and perhaps a product, between *doujiang* and *tao-tjo,* Indonesian-style miso], Sojatunken, Soja-Verarbeitungen: Sojamilch, Bohnenkäse, Teoufou (China), Tofu (Japan), Dan Phu (Vietnam), Natto (Japan), Tao-tehe (China).–Bohnenbrei Miso (Japan), Tao-tjiung (doujiang, China).–Sojasauce: Shogu [sic, Shoyu] (Japan), Tsiang-Yeou, Tao-yu (China), Ketjap (Java), Tuong (Vietnam).–Gärmittel: Kiut see (Japan). Then a table shows the nutritional composition of 8 of these foods.

Note 1. This book contains more than its fair share of errors and could be better organized.

Note 2. This is the earliest German-language document seen that uses *Sojabohnenkäse,* the German word meaning "soybean cheese," to refer to tofu. Address: 1. Prof. Dr. med. habil., Dr. phil. nat, Laurensberg ueber Aachen, Germany.

253. van Veen, A.G. 1966. Toxic properties of some unusual foods. In: Toxicants Occurring Naturally in Foods, 1st ed. 1966. Washington, DC: National Academy of Sciences. 301 p. See p. 174-82. National Academy of Sciences, Natural Research Council, Publication No. 1354. [21 ref]
• ***Summary:*** Contents: Introduction. Quail. Djenkol (a bean). Kava-kava (or Kawa-kawa). Leucaena glauca. Bongkrek (or tempeh bongkrek). Ackee. Address: Graduate School of Nutrition, Cornell Univ., Ithaca, New York 14850.

254. Shallenberger, R.S.; Hand, D.B.; Steinkraus, K.H. 1967. Changes in sucrose, raffinose, and stachyose during tempeh fermentation. *USDA Agricultural Research Service.* ARS-74-41. p. 68-71. March. Proceedings of the 8th Research Conference on Dry Beans. Held 11-13 Aug. 1966 in Belaire, MI.
• ***Summary:*** During tempeh fermentation (for 80 hours; typically tempeh is fermented for 24 hours), sucrose decreased, raffinose increased slightly, and stachyose decreased dramatically. Soaking and cooking raw soybeans reduced the sugar content by about 50%. On a percent dry basis, sucrose decreased the most (to 1.84 from 4.53), raffinose to 0.35 from 0.73, and stachyose to 1.40 from 2.73. Address: New York State Agric. Exp. Station, Geneva, New York.

255. De, Sasanka S.; Russell, J.S.; Andrè, L.M. 1967. Soybean acceptability and consumer adoptability in relation to food habits in different parts of the world. *USDA Agricultural Research Service.* ARS-71-35. p. 20-27. May. Proceedings of International Conference on Soybean Protein Foods. Held 17-19 Oct. 1966 at Peoria, Illinois. [1 ref]
• ***Summary:*** Contents: Traditional soy products in the Far East: Soysauce, soy milk, bean curd, tempeh, natto and miso, roasted soy flour, kochu chang [Korean soybean miso], sprouted beans. Introduction [of soybeans] in other countries: Brazil, USSR, Africa, Latin America, Turkey. New types of products: Defatted soy flour, full-fat soy flour and beverages made from it developed by the Soybean Council of America. Justification: Cost of a pound of protein from different foods. Beef $4.60. Pork $4.30. Poultry $1.50. Nonfat dry milk solids $0.41. Dry beans $0.35. Soybeans $0.14. Attempted introductions: India. Factors involved in adoptability.

"Kochu chang is produced in every household in Korea from mashed boiled [soy] beans which are hung in bags for

2 to 3 months. The product is broken up, dried, and ground. It is then mixed with ground red pepper [plus salt and water] and kept for some time before use."

This paper was presented by Leon Marie Andrè.

Note 1. This is the earliest English-language document seen (Jan. 2007) that contains the term "roasted soy flour." We read (p. 22): "This product is produced in small amounts and consumed with rice cake [mochi]. There is hardly any information on the nutritive value of the product."

Note 2. This is the earliest English-language document seen (March 2009) that uses the word "kochu chang" (or "kochu-chang") to refer to Korean-style red pepper and soybean paste (miso). Address: 1-2. Food and Agriculture Organization of the United Nations, Rome, Italy; 3. FAO Liaison Officer and adviser to UNICEF.

256. Fischer, R.W. 1967. The use of soy in food products. *Soybean Digest.* May. p. 29, 31-32, 35-36, 38.
• ***Summary:*** An excellent overview, with considerable history. Contents: Introduction. Grisly hand of hunger. Soybean oil. Oriental soy foods. Soy flour and grits (with a good history of Berczeller, A.E. Staley, Shellabarger, Allied Mills, J.R. Short Milling Co. and Wytase). Isolates and concentrates. The war years (during and immediately after World War II, soy flour and grits come to be widely disliked). New products and know-how.

"Oriental soy foods:... In the Orient soybeans have, for centuries, played an important part in human diets as soy milk for infants, shoyu, or soy sauce as we call it, miso, tofu, tempeh, kinako, natto, yuba, etc."

"Isolates and concentrates: In the mid-1930's processes for further refining the protein factors of soy began to appear. The first 70% soy protein concentrate was turned out by Mead Johnson Co. using the Bonato process of sulfur dioxide and sulfurous acid extraction, but was discontinued for lack of adequate markets for the product. In 1936 the Glidden Co. began working on the production of an isolated protein [90-100% protein] from extracted soy flakes for industrial uses. Glidden, as a major manufacturer of resin, wanted the isolate as a stabilizer for the resin used in sizing paper to provide wet strength. By 1939 Glidden was producing an enzyme hydrolyzed isolated protein to be used with egg albumen for its whipping capacity in producing food toppings... Over the years soy protein isolates have found their greatest application in the industrial field, particularly as paper coatings for high gloss products."

A photo shows cans of Worthington Choplets, Soyameat (3 varieties), and Numete–all made from spun soy protein fibers. Address: Soypro International Inc.

257. Hesseltine, Clifford W. 1967. Fermented products: Miso, sufu, and tempeh. *USDA Agricultural Research Service.* ARS-71-35. p. 170-80. May. Proceedings of International Conference on Soybean Protein Foods. Held 17-19 Oct. 1966 at Peoria, Illinois. [12 ref]
• ***Summary:*** Discusses: Miso. Sufu, or Chinese cheese [fermented tofu]. Tempeh. Absence of aflatoxin in fermented food products. Table 1 shows mold fermented food products tested for aflatoxin and found negative. These include shoyu, miso, Chinese black beans (Soy nuggets from Taiwan), Hamanatto, moromi, soy tempeh, wheat tempeh, rice tempeh, wheat-soybean tempeh.

Concerning sufu: "The pehtzes [molded tofu cubes] are next brined in various solutions depending on the flavor desired. A typical brine would consist of 12% NaCl and 10% ethanol (sometimes added as rice wine). In other instances, only a salt brine may be used. The molded cakes are allowed to age for about 2 months. The finished cheese along with the brine is bottled, sterilized, and marketed as sufu."

Of all the various *Mucor* species tested for use in making, the *Actinomucor elegans* used commercially is the best proteinase and almost the best lipase producer. "This same fungus is used in China to produce a food made by fermentation of wheat gluten" Address: Northern Utilization R&D Div., ARS, USDA, Peoria, Illinois.

258. *Soybean Digest.*1967. Cereals, soybeans combined in USDA food process. May. p. 40, 42.
• ***Summary:*** This article begins: "New cereal foods can be made in modern processes adapted by Department of Agricultural scientists from primitive ways of making an Indonesian food, tempeh, from soybeans.

"The new foods, made from cereals or cereal-soy mixtures, can be deep fried as chips, baked or used as ingredients for foods such as soups... The cereal-soy tempehs hold promise as sources of high-quality protein, but have not yet been tested for nutritional value.

"The fried chips have mild flavors of meat, popcorn, mushrooms or nuts,..."

A photo shows Jeffrey Lee, age 3, eating a strip of fried tempeh. Jeffrey is the son of Mr. and Mrs. Stephen Lee, Peoria, Illinois.

Note: This article is based on: Hesseltine, C.W.; Smith, Mabel; Wang, Hwa L. 1967. "New fermented cereal products." *Developments in Industrial Microbiology* 8:179-86.

259. Orr, Elizabeth; Adair, David. 1967. The production of protein foods and concentrates from oilseeds. *Tropical Products Institute Report* No. G31. 104 p. June. Also titled T.P.I. Report (London). [44 ref]
• ***Summary:*** Contents: Foreword. Acknowledgements. Introduction. 1. The use of oilseeds as a source of protein. 2. Oilseed resources. 3. The manufacture of protein flours by standard oil milling processes. 4. Some cost aspects of the manufacture of protein flour by standard oil milling processes. 5. Examples of the use of edible flours made by standard oil milling processes. 6. Full fat soya flours. 7.

Oriental methods of processing soya. 8. Other processes for making protein products. 9. The distribution of protein products. 10. Current experience of making protein flours and foods from oilseeds. 11. The initiation of protein food programmes with particular reference to the role of the administrator. Appendices. 1. Protein nutrition. 2. Oilseed statistics. 3. Toxic hazards. 4. P.A.G. Guides [PAG]. 5. Aflatoxin. 6. Questionnaire. 7. Some examples of the cost of packaging oilseed-based protein foods. 8. Prices of edible oilseed products and protein flours and foods made from oilseeds. Bibliography. Chapters 6 and 7 are especially relevant to soyfoods.

"Full fat soya flour (FFSF) is manufactured in the USA by Archer Daniels Midland Co. and Central Soya, and in the UK by 3 firms: British Arkady Co. Ltd., Soya Foods Ltd., and British Soya Products Ltd. There are no official statistics for production in either country. A trade source of information has estimated UK usage of soya flour at 30,000 tons per annum, but this figure includes defatted soya flour made from meal imported from the USA. Full fat soya flours can be divided into 2 main categories: (a) flours used primarily for bleaching purposes in bread, and (b) general purpose flours. When the flour is to be used mainly for bleaching it is made from uncooked beans, since the natural enzymes in the bean must remain active until the bleaching process has been completed. It is estimated that about half the full fat soya flour made in the UK is used in bread manufacture."

A table lists all known commercial full-fat soy flours, their composition and prices. Describes the Promo Process and Wenger Process for making FFSF, with cost data. Gives case histories for Pronutro in South Africa and Nutresco in [Southern] Rhodesia.

Chapter 7. Kinako. Fermentation products: Soya sauce (shoyu), miso, natto, tempeh. Developing the use of fermented products. Aqueous extracts: Soya milk and tofu, kori-tofu. Soya milk as a substitute for cow's milk. The package soy milk shop (including Tetra Pak and Prepac packaging; the Prepac system, developed by the S.E.A.B. Co., Villejuif, France, has a capacity of 1,500 packs/hour). Case histories for soya milk: Rural cooperatives in Taiwan, Saridele in Indonesia, and Vitasoy in Hong Kong. Soya milk made from soya flour: The 4 known manufacturers are Promo Ltd. of the U.K. ("The product made by Promo is marketed under the brand name of 'Velactin by the Wander company."), and Loma Linda Foods (Soyalac and Granogen), Mead Johnson (Sobee or Soybee), and Borden's Soy Processing Co., all of the USA. Promo and Loma Linda use the traditional Oriental method rather than using soy flour.

Note: This is the earliest document seen (Sept. 2002) concerning Tetra Pak and soy. Address: TPI, 56/62 Gray's Inn Road, London WC1.

260. Hesseltine, C.W.; Wang, Hwa L. 1967. Traditional fermented foods. *Biotechnology and Bioengineering* 9(3):275-88. July. [8 ref]

• ***Summary:*** Contents: Summary. Introduction. Fish fermentations. Soybean and peanut fermentations: Koji, shoyu, miso, hamanatto, natto, ontjom, sufu, tempeh. Discussion: Advantages of preparing foods by fermentation. Address: NRRL, Peoria, Illinois.

261. Dimler, R.J. 1967. Soybeans and corn join forces in food! *Soybean Digest.* Sept. p. 50-53.

• ***Summary:*** Discusses composition of soybean and corn foods, essential amino acids, village process for making full-fat soy flour, CSM (Corn-Soy-Milk mixture; developed by the American Corn Millers Federation and originally known as Blended Food product, Formula No. 2). The ingredients are 68% gelatinized corn meal, 25% defatted soy flour (toasted), 5% nonfat dry milk solids, and 2% vitamins and minerals, cereal-soya tempeh.

"Last fall [1966], the director general of the National Children's Bureau, Health Ministry of Brazil, visited the Northern Laboratory to discuss the Village Process. On his return to Brazil, he arranged purchase of six sets of equipment by UNICEF. Mr. Gus Mustakas, one of the chemical engineers responsible for developing the process, was invited to Brazil to demonstrate the process and to provide technical assistance. Mr. Mustakas has just returned home, and reports that he gave instructions on the process to groups of doctors, nutritionists, and social workers of the National Children's Bureau. These groups are now introducing the process to villages in Brazil for the purpose of providing installations to improve nutrition among young children suffering from dietary protein deficiency." Address: Director, NRRL, Peoria, Illinois 61604.

262. Murata, Kiku; Ikehata, Hideo; Miyamoto, Teijiro. 1967. Studies on the nutritional value of tempeh. *J. of Food Science* 32(5):580-86. Sept/Oct. [27 ref]

• ***Summary:*** The nutritional composition of tempeh and unfermented soybeans were compared. There were no large differences in protein and ash content between tempeh and unfermented soybeans. Fiber was slightly increased during fermentation. The fat content of tempeh was slightly lower than that of soybeans, but the acid value was noticeably higher. Free amino acids were increased during fermentation. The amount of different free amino acids in the palatable tempeh was from 1 to 85 times as much as that of unfermented soybeans. Riboflavin increased 8 to 47 times, vitamin B-6 (pyridoxine) increased 4 to 14 times, and nicotinic acid (niacin) increased 2 to 5 times in tempehs made and sun-dried in Indonesia. Pantothenic acid also increased during fermentation, although thiamine was little altered.

Tables: (1) Chemical composition of tempeh and

unfermented soybeans. (2) Amino acid composition of tempeh and unfermented soybeans. (3) Changes in free amino acids of tempeh during fermentation. (4) Chemical characteristics of oils from tempeh and unfermented soybeans. (5) Vitamin content of Indonesian tempeh and unfermented soybeans (in dry matter).

Figures: (1) IR spectra of oil fractions from soybeans and tempeh. (2) Changes in thiamine and riboflavin content of tempeh during fermentation. (3) Changes in pantothenic acid and vitamin B content of tempeh during fermentation. (4) Changes in nicotinic acid content of tempeh during fermentation. Address: Food and Nutrition Lab., Faculty of Science of Living, Osaka City Univ., Osaka, Japan.

263. *Nutrition Reviews.*1967. Soy fibers–A new approach to vegetable protein acceptability. 25(10):305-07. Oct. [6 ref]
• ***Summary:*** The subtitle summary states: "Fibers have been formed from soybean protein and incorporated into meat analogs. The process, its nutritional and economic aspects, and the mechanism of fiber formation are described."

Traditional foods made from soybeans include tofu, natto, miso, and tempeh. U.S. food manufacturers have developed a new process for making "fibers from isolated soy protein, and for incorporating these fibers into meat-like analogs which may find consumer acceptance as a meat substitute in this country. These products should be cheaper than meat and can be made as or more nutritious than meat by addition of the missing vitamins and minerals." The final products, meat analogs, typically contain (on a dry basis) 40% soy fiber, 10% protein binder (usually egg albumin), 0-50% fat and/or 0-50% flavors, colors, and supplemental nutrients.

264. *Soybean Digest.*1967. USDA develops wheat-soy tempeh. Nov. p. 4.
• ***Summary:*** This tempeh was developed by Dr. H.L. Wang, biochemist, and Dr. C.W. Hesseltine, microbiologist, and others at USDA's Northern Utilization Research Lab.

265. Leitao, M.F.F.; Menezes, T.J.B.; Tango, J.S. 1967-1968. Producao de "Tempeh," produto fermentado de soja [Production of tempeh–a fermented soy product]. *Coletanea do Instituto de Tecnologia de Alimentos* (*Campinas*) 2:333-39. [10 ref. Por]*
Address: Brazil.

266. Pigeaud, Theodore G.Th. 1967-1970. Literature of Java. Catalog raisonné of Javanese manuscripts in the library of the University of Leiden and other public collections in the Netherlands. 4 vols. The Hague: Martinus Nijhoff. See vol. II, p. 32. 25 cm. [5000+* ref. Eng]
• ***Summary:*** Vol. II is titled "Descriptive lists of Javanese manuscripts." These lists "are to take the place of the Old Dutch Catalogues of the Library of the University of Leiden,..."

In the section titled "Delft Collection" (p. 25-50) is a description of the *Serat Centhini* manuscript (which mentions tempeh) in volume II, p. 32. "LOr 1814 (I-V)–B-30.802. 21 x 35 cm... Centini, encyclopedical romantic poem in macapat verse, dated 1775 A.J., i.e. 1846 A.D., by Ranga Sutrasna, who lived in the reign of Paku Buwana V (1920-1823). Five leather bound volumes with quadratic kraton script, written in Surakarta, originally belonging to the Delft Collection. Cat. Vreede p. 323-27 has a Dutch epitome and references to literature, The Centini has been edited in Batavia (KBG, romanized) in 1912/15. See Pigeaud, 'De Tjabolan en de Tjentini' (Verh. KBG vol. 72, 1933), which has an extensive Dutch summary and lists of initial lines of cantos."

Pigeaud was born in 1899. Address: PhD, Leiden.

267. Ikehata, Hideo. 1967. Daizu no furabonoido [Soybean flavonoids]. *Shokuhin Kogyo* (*Food Industry*) 10(16):42-47. [16 ref. Jap]
• ***Summary:*** Discusses genistein, daidzein, daidzin, isoflavones, and estrogens. Address: Osaka Shiritsu Daigaku, Japan.

268. Kasuya, Ritsu; Ikehata, H.; Miyamoto, T.; Murata, K. 1967. Nattô to tempeh no B-rui bitamin [B-vitamin content of natto and tempeh]. *Kaseigaku Zasshi* (*J. of Home Economics of Japan*) 18:362-64. [10 ref. Jap]
Address: Osaka, Japan.

269. Direktorat Gizi. 1967. Daftar komposisi bahan Makanan [Indonesian food composition tables]. Jakarta: Bhratara. Direktorat Gizi Departemen Kesehatan R.I. 59 p. [Ind]
• ***Summary:*** Chapter 2 contains data on the nutritional composition of beans and seeds including okara (*ampas tahu*), soybeans–fresh (*basah*) and dry (*kering*), and bongkrek (*tempe bungkil kelapa*).

Note: This is the earliest Indonesian-language document seen (Oct. 2001) that mentions okara, which it calls *ampas tahu.* Address: Indonesia.

270. Hesseltine, C.W.; Smith, Mabel; Wang, Hwa L. 1967. New fermented cereal products. *Developments in Industrial Microbiology* 8:179-86. Chapter 20. [10 ref]
• ***Summary:*** "New fermented tempeh-type products were prepared from wheat, oats, rye, barley, rice, and combinations of rice or wheat with soybeans by selected strains of *Rhizopus oligosporus* from the Indonesian tempeh fermentation. All fermentations were carried out at 31ºC for 24 hours or less. The products possess a very pleasant odor, a desirable color, and a very acceptable mild taste. Fermentations may be carried out in either shallow perforated trays or perforated plastic packages. The fermentation products may be preserved for at least a month

by freezing. Data are given on the changes of temperature and weight losses due to fermentation, as well as on methods of modifying flavor."

The use of sorghum or peanuts with soybeans gave poor results.

Tables: (1) Time of boiling required by different grains in preparation for fermentation. (2) Evaluation of cooked and uncooked fermented food products. (3) Evaluation of uncooked and cooked products made from combinations of cereals and legumes. (4) Change in temperature during large scale fermentation of equal amounts of soybean grits and cracked wheat.

Figures: (1) Cakes of tempeh. Wheat, soybeans, rice, wheat-soybeans, rice-soybean. (2) Fresh tempeh sliced. Soybeans, wheat, rice, wheat-soybeans, and rice-soybean. Address: NRRL, Peoria, Illinois.

271. Indonesia. Departemen Portanian [Indonesian Department of Agriculture]. 1967. Mustika rasa; membuat resep 2 masakan Indonesia dari Sabang sampai Merauke. [Gems of taste: Indonesian cookery]. Djakarta, Indonesia: Indonesia. Departemen Portanian [IDA]. xi + 1,123 p. Illust. (part color). 22 cm. [Ind]*
Address: Indonesia.

272. Lien Soen In. 1967. Pembuatan Vitempo sebagai makanan anak dan penilaian daya tahannya [Preparation of Vitempo as a children's food and shelf-life tests]. Thesis (Skripsi), Akademi Kimia Analis, Bogor, Indonesia. 24 p. [Ind]*
• ***Summary:*** Vitempo is a children's food made of 78% soy tempeh (made from defatted soybean meal), 20% sugar powder, 2% rice flour, and 4 ml/100 gm of coconut oil. Address: Bogor, Indonesia.

273. Mateles, Richard I.; Wogan, Gerald N. eds. 1967. Biochemistry of some foodborne microbial toxins. Cambridge, Massachusetts: MIT Press. ix + 171 p. Papers presented at the Symposium on Microbial Toxins held at the meeting of the American Chemical Society, New York, on 12 Sept. 1966. [100+* ref]
• ***Summary:*** Contents: Part I: Bacterial and algal toxins. Part II: Fungal toxins. One chapter in each part is about soy. They are cited separately. Address: MIT, Cambridge, Massachusetts.

274. Nakano, Masahiro. ed. 1967. Hakkô shokuhin [Fermented foods]. Tokyo: Korin Shoin. 244 p. See esp. p. 81-101. [Jap]
• ***Summary:*** Includes sections on soymilk yogurt (cultured with *Lactobacillus bulgaricus*) and *nyu fu* [fermented tofu].

Chapter 6, *Nyu fu* notes that this is an ancient food that came from China and Taiwan, but has never become a part of Japanese cuisine. In the United States (in English) it is known as "Soybean cheese" and "Vegetable cheese," while in China it is known as "Nyufu" as well as Chaw taufu, Sufu, Funyu, etc.

6.1.2–Places of production and varieties: Nyufu is made mainly in the middle to southern four coastal provinces of China. These include (pinyin / Wade-Giles): Jejiang / Chekiang (Jap: Sekkô), Jiangsu / Kiangsu (Jap: Kôso), Fujian / Fukien (Jap: Fukken), Guangdong / Kwangtung (Jap: Kanton). A lot of Nyufu is also made in Taiwan, which is located off the coast of Fujian province.

Since nyufu has been produced for a long time over a vast area, there are many varieties. A study conducted in the 1920s found the varieties shown in chart 6.1 in the Shanghai market (Shanghai is in Jiangsu province near the mouth of the Yangtze River).

(1) Pickled without mold on the tofu. (i) Jianning-dofu: Drain then dry the tofu, add salt, and pickle in jiang or the residue / dregs left after making soy sauce

(ii) Doufuru: Drain then dry the tofu. Sprinkle it with salt then pickle it in koji.

(2) Culture mold on small cubes of tofu until a fragrant white mycelium surrounds each cube, then pickle.

(iii) Jiangrufu: Pickle in jiang or the residue / dregs left after making soy sauce.

(iv). Honjiang rufu [red jiang fermented tofu]: Pickle in a mixture of red rice / angkak (a red koji made by growing *Monascus* mold on rice) and the residue / dregs left after making soy sauce.

(v) Zaorufu: Pickle is sake lees.

(vi) Hongrufu: Pickle in red sake lees.

(vii) Jiujia rufu: Pickle in white sake / daku-shu, like unrefined sake (*doburoku*).

(viii) Xiangrufu (fragrant rufu): Pickle in jiang with olive leaves, fragrant mushrooms, etc.

Dr. Masahiro Nakano was born in 1907. Address: National Food Research Inst., Tokyo.

275. van Veen, A.G. 1967. The bongkrek toxins. In: R.I. Mateles and G.N. Wogan, eds. 1967. Biochemistry of Some Foodborne Microbial Toxins. Cambridge, MA: MIT Press. ix + 171 p. See p. 43-50. [13 ref]
• ***Summary:*** Bongkrek poisonings have occurred for as long as could be remembered in Central Java (Indonesia), mainly in the province of Banjumas [also spelled Banyumas, or Banjoemas in Dutch] and its surrounding areas. "Although mass poisonings involving sometimes as many as 200 people had been known to occur since at least the end of the last century, the cause was unknown; it was certain only that it was not a contagious disease... Moreover, the population held the belief that the poisonings were due to evil spirits or to the Goddess of the Indian Ocean in an angry mood! The poisonings occurred a few times a year, and there were never many survivors... During the economic depression in Indonesia, between 1931 and 1937, the poisonings were very

numerous. Mertens and van Veen from the Eijkman Institute in Djakarta began investigation of them...

"It was found that as a rule the poisonous products were poorly fermented and that they always contained coconut press cake (the fermented product is then called 'bongkrek' or 'tempeh bongkrek') or grated coconut ('semaji'). A few grams of the poisonous material, even after having been cooked in a soup or fried in oil, seemed to be enough to kill a man...

"It appeared that the villagers who were used to manufacturing bongkrek or semaji for themselves or for sale nearly always produced good, harmless products... However, in periods of economic distress when the villagers who customarily sell their coconuts, copra, or coconut press cake to the processors cannot do so, they start to manufacture bongkrek or semaji themselves for home consumption. Many of them, not knowing the technique, may not be able to get a good fermentation, so that the *Rhizopus* does not grow fast enough (e.g., within 18 to 48 hours) and other microorganisms get an opportunity to grow. In most cases, these will be mainly spoilage bacteria or other fungi but every now and then there may be an accidental infection with the toxic *Pseudomonas cocovenenans,* and this microorganism may be able to multiply fast for two reasons. Usually the fungus grows much faster than any bacteria or yeast present in the basic material, but if it does not do so the *Pseudomonas* has a chance. The latter, moreover, excretes two antibiotic substances which inhibit any fungus growth that takes place. Later van Veen (1950) was able to show that at least one of the substances causing the fatal poisoning in man is also a strong antibiotic for the *Rhizopus.*

The authors were able to extract from suitable culture media two poisonous substances. One was the yellow poison called toxoflavin because its chemical and physical properties were very similar to those of riboflavin, which at that time had only recently been discovered. The other, bongkrek acid, had all the characteristics of a highly unsaturated fatty acid. "In general, bongkrek acid is a much more severe poison for animals and humans than is toxoflavin. It mobilizes the glycogen from the liver, thus leading to fatal hypoglycemia."

"After the war, when antibiotics had become known, van Veen found that bongkrek acid in salt form was a very active antibiotic for the bongkrek fungus, *Rhizopus,* as well as for *Penicillium glaucum,* yeast, and a number of bacteria (van Veen, 1950)." Address: Graduate School of Nutrition, Cornell Univ., Ithaca, New York.

276. Associated Press (AP). 1968. Poison food kills 60. *Chicago Tribune.* Feb. 20. p. 13.
• ***Summary:*** "Jakarta, Indonesia, Feb. 19–About 60 persons have died of food poisoning in Bandung, West Java, the official news agency, Antara, reported today. Antara said they died after eating poisonous soybean cakes."

Note 1. These people almost certainly died from eating coconut-presscake tempeh (*tempe bongkrek*), which contains no soybeans, but is made and eaten in much the same way as regular soybean tempeh.

Note 2. This article, titled "Illness kills 60," also appeared in the *Hartford Courant* (Feb. 20, p. 31C).

277. Diokno-Palo, Natividad; Palo, Macario A. 1968. Two Philippine species of *Phycomycetes* in tempeh production from soybean. *Philippine J. of Science* 97(1):1-16. March. [13 ref]
• ***Summary:*** "Half or more of Indonesia's soybean harvest of 17 million bushels in 1959 was utilized for making this food product [tempeh] and many thousands of people particularly in big cities make a living on it. Tempeh is not known in food markets in the Philippines. There is no published report which mentions or describes its manufacture in any region of this country."

In a preliminary test conducted under room temperature conditions (27-32ºC) *Rhizopus stolonifer* (NRRL 1477), a foreign mold strain, was observed to produce a better tempeh cake than any other foreign *Rhizopus* strains. Illustrations and photos show: A fascicle of sporangiophores of *Rhizopus stolonifer* bearing full-developed sporangia, from the base of which grow downward rootlike filaments (rhizoids) that attach it to the substrate. Within the sporangia are spores. *Cunninghamella elegans* A-12679 with unbranched conidiophores arising slightly from hyphal branches. Conidia and pointed sterigmata. Address: National Inst. of Science and Technology (NIST), Manila, Philippines.

278. van Veen, A.G.; Graham, D.C.W.; Steinkraus, K.H. 1968. Fermented peanut press cake. *Cereal Science Today* 13(3):96, 98-99. March. [18 ref]
• ***Summary:*** Discusses ontjom and the aflatoxins it may contain. Aflatoxins can cause liver tumors. "We were able to show that under the influence of *Neurospora sitophila* the aflatoxin B-1 content decreases by about 50%. In one experiment we found that *Rhizopus oligosporus* reduced the aflatoxin content of peanut press cake by about 70%." Address: Cornell Univ. 1-2. Ithaca; 3. Geneva, New York.

279. Ikehata, Hideo; Wakaizumi, M.; Murata, K. 1968. Antioxidant and antihemolytic activity of a new isoflavone, "Factor 2" isolated from tempeh. *Agricultural and Biological Chemistry* 32(6):740-46. June. [14 ref]
• ***Summary:*** "A new isoflavone assigned the trivial name 'Factor 2' which was first isolated from tempeh, a fermented soybean product, and identified as 6,7,4'-trihydroxyisoflavone was technically synthesized and tested for antioxidant activity by several methods. Factor 2 was proved to be a potent antioxidant in aqueous solution at pH 7.4. However it was not effective in preventing autoxidation of soybean oil and soybean powder. Factor 2

given orally to rats fed a vitamin-E deficient diet was also negative in hemolysis preventing activity. Biological activity of tempeh and the isolated Factor 2 to prevent hemolysis of red blood cells of rats fed a vitamin-E deficient diet was discussed." Address: Food and Nutrition Lab., Faculty of Science of Living, Osaka City Univ., Nishi-ku, Osaka, Japan.

280. Murata, Kiku; Miyamoto, T.; Taguchi, F. 1968. Biosynthesis of B vitamins with *Rhizopus oligosporus. J. of Vitaminology* (*Kyoto, Japan*) 14(3):191-97. Sept. 10. [4 ref]
• ***Summary:*** "The thiamine, riboflavin, and biotin content of the fungus increased during tempeh fermentation in proportion to weight or nitrogen content. Concentration of riboflavin and biotin in the medium also increased. The thiamine content of the medium decreased indicating that it was taken up from the medium by the fungus rather than synthesized." Address: Nutrition Lab., Faculty of Science of Living, Osaka City Univ., Nishi-ku, Osaka 550, Japan.

281. Stanton, W.R.; Brook, E.J.; Wallbridge, A. 1968. Fermentation methods for protein enrichment of cassava. Presented at the Third International Fermentation Symposium. Held in Sept. at New Brunswick. *
Address: 1. PhD, Head, Microbiology Section, Tropical Products Inst., London, England. Later: Prof. of Botany, Univ. of Malaya, Kuala Lumpur, Malaysia.

282. Wang, Hwa L.; Ruttle, Doris I.; Hesseltine, C.W. 1968. Protein quality of wheat and soybeans after *Rhizopus oligosporus* fermentation. *J. of Nutrition* 96(1):109-14. Sept. [17 ref]
• ***Summary:*** The growth of rats fed fermented wheat improved significantly over those fed unfermented wheat. The Protein Efficiency Ratio (PER) of wheat and wheat/soybean mixtures was significantly increased by fermentation with *Rhizopus oligosporus* NRRL 2710, although that of soybeans alone was unchanged. These improvements were partly attributed to the increase in availability of lysine in wheat by fermentation. A mixture of equal parts wheat and proteins gave a good pattern of amino acids. The fermentation process raised the PER of the mixture so that it was comparable to casein. Address: NRRL, Peoria, Illinois.

283. Camargo, R. de. 1968. Tecnologia de alimentos ricos em proteina vegetal [Technology of foods rich in vegetable protein (Abstract)]. *Simposio Brasileiro de Alimentacao e Nutricao, Anais* (*Recife*) 2:151-52. Recife: Universidade Federal de Pernambuco. [Por]*
Address: Brazil.

284. Ebine, H.; Kimura, H.; Wadaka, H. 1968. [Application of *Rhizopus* for shoyu manufacturing]. *Chomi Kagaku* (*Seasoning Science*) No. 15. p. 1-. [Jap]*
Address: National Food Research Inst., Tokyo.

285. Yu, Jean Ya-Chen. 1968. The preservation of ocean fish with fermented soybean (tempeh). MSc thesis, University of Kentucky. vii + 71 leaves. Illust. 29 cm. *
• ***Summary:*** Includes bibliographic references (leaves 66-71). Jean Ya-Chen Yu was born in 1942.

286. Borgstrom, Georg. 1968. Principles of food science: Food microbiology and biochemistry (Vol. 2). New York, NY: Macmillan. xiv + 473 p. Index. 26 cm. [9 ref]
• ***Summary:*** In Chapter 4, "Fermentation," is a section titled "soybeans" (p. 110-12) which discusses: Tofu or teou-fu, miso, sufu, natto, tempeh, taotjo and ketjap (shoyu / soy sauce).

"Frozen tofu (kori tofu, or koya dofu) is tofu that has been frozen for several weeks and dried. Aburage is fresh tofu dried in deep fat. Namage is fresh tofu that has been surface-fried."

In Chapter 10, "Trends in food utilization," is a section titled "Soybean" (p. 297-301) which discusses: Soybean products and fermented products ("These foods are all rather unknown among Western peoples, although they are eaten by millions of people and constitute some of the most common foods on earth." Yet some "typical oriental soy foods," such as tofu and tempeh, are finding acceptance in the West. One soy product that is widely used in most parts of the world is soy sauce. Soy flour and soy grits were first made commercially in the USA in the early 1930s. Milk made from the soybean is important in China {see Vol. I, Chap. 15}. Fermented products include taotjo, soy sauce or ketjap). Soybean protein, including soybean oil and defatted soybean oil meal (In 1961, 9.5 million tons of soybean oil meal was used in the USA, mainly for animal foods, with special grades used for food and industrial products, such as isolated soybean protein. Purified proteins extracted from dehulled and defatted meal, when toasted, are used in "Civil Defense emergency rations" and by the "international organization Meals for Millions." Some 90% of the processed soybean oil in the USA now goes into food uses. Soybean oil is now the most important ingredient in oleomargarine {see Fig. 10.1}. About one-third of the soybeans moved off the farm are exported; Japan is our biggest customer {taking about 57%} followed by Western Europe {27%}, Canada {8%} and Israel {5%}). Soybean uses (Despite its nutritive value, "the soybean is not looked upon with favor in many areas" for two main reasons: it does not soften well during cooking and it is difficult to digest. Many other legumes share these problems, but they are generally require less cooking. When soy flour is used, alone or with cereal flours, the drawbacks almost vanish. "Soybean milk is not comparable to animal milk or human milk except in protein content." And it usually has an unpleasant, bitter taste, but this can be removed at least cost by bulk processing. When

soybean curd is made in the typical way, "many nutritious components are lost," yet it is easy to digest. Soy sauce can be used only as a condiment because of its high salt content. Germinated soybeans make an excellent vegetable, which is rich in vitamin C).

Table 10-1 (p. 300) shows utilization of soybean oil (in millions of pounds) (1947-49 to 1967). The columns are: Shortening (the largest use and steadily increasing), margarine, cooking, salad and other edible oils (No. 2), total for food uses, total nonfood uses.

Toasted soy protein (Made by General Mills, starting in Belmont, Iowa, and named Hi-Pro and Protein Plus. "The Belmont plant has been running at capacity to supply for American Civil Defense stockpiling of toasted soy protein"). MPF (Multi-Purpose Food) made by a joint venture between General Mills and the Meals for Millions foundation. Gelsoy (the "first vegetable protein found to have gelling properties). Promine (an edible soy protein). Fibrotein (soy protein spun into filaments). Soybean oil (The initial purpose of the U.S. soybean crushing industry was to obtain oil. The residual meal was considered virtually useless).

Chapter 13, titled "The world food issue," is about world hunger, which is "an ever-present specter for 2.3 billion people of the present world population of 3.4 billion." These people are concentrated largely in warm parts of the globe. Also discusses "protein malnutrition" (the main problem) and the need for more animal protein. North America has an animal protein "intake nine times that of the Far East." A section on "Plant milks" (p. 428-29), which are made from pulses and cereals, includes a subsection titled "Soybeans" which begins: "Soybeans form the basis of the most widely used and successful plant milks in China, Hong Kong, Indonesia, and the Philippines. Such milk has recently become available in Europe and the United States, primarily for clinical purposes"–for children allergic to the proteins in cows' milk.

Notes: Many references, divided into English and non-English, books and papers, are given at the end of each chapter. Address: Michigan State Univ.

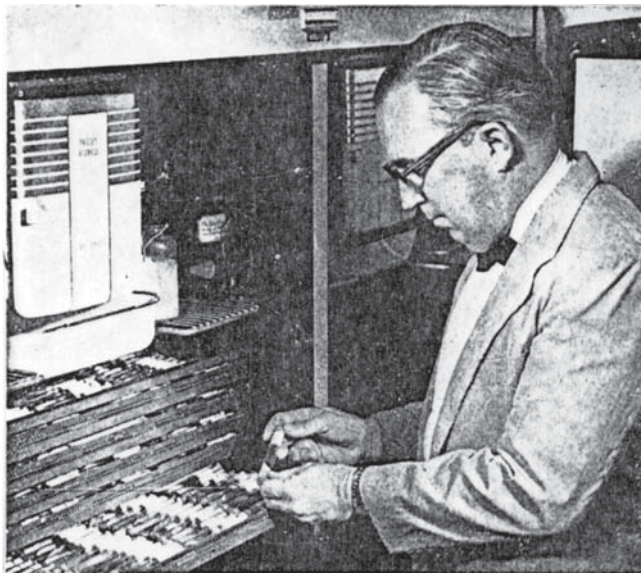
287. Uphof, J.C. Th. 1968. Dictionary of economic plants. 2nd ed., revised and enlarged. West Germany: Verlag von J. Cramer. See Glycine max, p. 246.
• ***Summary:*** Lists briefly the many food, industrial, and feed uses of the soybean. For example: "Seeds are source of an oil, made into glycerine; used in enamels, varnishes, paints, waterproof goods, linoleum, hard soaps, liquid shampoo, paste soap for hospital use, oil cloth, used in metal moulding, foundry cores; used with rubber for manuf. mats, hose etc., rubber substitutes, lubricant, in printing inks. When refined used for cooking, salads, margarine, shortening." Address: Tampa, Florida. Emeritus Prof. of Botany. Formerly faculty member of the Michigan State Univ. and State Univ. of Arizona. Economic botanist to the Board of Economic Warfare, Washington, DC.

288. Wang, Hwa L.; Ruttle, Doris I.; Hesseltine, C.W. 1969. Milk-clotting activity of proteinases produced by *Rhizopus*. *Canadian J. of Microbiology* 15(1):99-104. Jan. [9 ref]
• ***Summary:*** *Rhizopus oligosporus* NRRL 3271 produces an enzyme having high milk-clotting activity... The NRRL 3271 enzyme merits further study as a potential replacement for rennin or as an adjunct to be incorporated into rennin for the manufacture of cheese.

"The coagulation of milk by the enzyme rennin is a key step in making cheese. Since rennin is only obtainable from the stomachs of milk-fed calves, its limited availability has prompted many investigators to search for rennin-like enzymes from various sources. Among these sources are bacteria (1), fungi (5, 7, 8), and higher plants (2). None of those enzyme preparations, however, have been a satisfactory substitute for animal rennin." Address: NRRL, Peoria, Illinois.

289. Hesseltine, C.W.; Wang, H.L. 1969. Oriental fermented foods made from soybeans. *USDA Agricultural Research Service.* ARS-74-50. p. 45-52. Feb. Proceedings of the Ninth Dry Bean Research Conference.
• ***Summary:*** Contents: Introduction. Koji. Shoyu or soy sauce. Miso. Hamanatto. Sufu. Tempeh. Natto. Idli. Conclusion. Flow sheets show the basic process used in making most of these foods. A photo taken in Aug. 1948 shows a miso plant in Tokyo, Japan, with large wooden vats in the foreground. A part of this plant was destroyed during World War II. Address: Northern Utilization Research and Development Div., USDA, Peoria, Illinois.

290. *Agricultural Research.*1969. Tempeh: Protein-rich food may increase disease resistance. 17(10):5. April.
• ***Summary:*** "Tempeh, a good-tasting, oriental soy food,



also has a medicinal property–it inhibits the growth of some bacteria."

"Scientists at the Northern laboratory recently discovered that *R. oligosporus* produces antibacterial compounds that may stimulate growth and increase disease resistance."

"Antibacterial compounds extracted from tempeh and from *R. oligosporus* growing on skim milk or soybean meal were tested against 25 species of bacteria. Eleven species were affected by the compounds, and nine species completely stopped growing. Four species of bacteria inhibited by the antibacterial compounds are typical inhabitants of the human intestinal tract." A photo shows Dr. Clifford Hesseltine selecting *R. oligosporus* culture from the USDA Agricultural Research Service (ARS) culture collection.

291. Banzon, Julian; Steinkraus, Keith H. 1969. How to use soybeans from your garden. College of Agriculture, University of the Philippines. 5 p. Mimeographed circular. Distributed through Los Banos Extension Dept.
• ***Summary:*** Introduction (the importance of protein, of which soybeans are a good source). How to grow soybeans in the Philippines, by Richard Bradfield of IRRI. How to make soybean milk and other nutritious soybean foods: Steamed green soybeans, mature dry soybeans, soybean milk, tokua–soybean curd, taosi (soybeans fermented with *Aspergillus oryzae* mold), tempeh.

Note: This is the earliest English-language document seen (Oct. 2008) that uses the word *taosi* to refer to soy nuggets. Address: 1. Prof. of Chemistry; 2. Visiting Prof., Microbiology and Food Science. Both: Univ. of the Philippines, College of Agriculture, Laguna, Philippines.

292. Chen, Linda H.; Packett, L.V.; Yun, I.; Yu, J. 1969. The potential of tempeh to serve as an antioxidant in lipids and in tissue (Abstract). *Federation Proceedings* (*FASEB*) 28(2):306 (Abst. #271). March/April.
• ***Summary:*** "Tempeh (fermented soybean) obtained from Indonesia was mixed into tocopherol stripped corn oil at 1, 25, and 50% levels. Alpha tocopherol was added to stripped corn oil at 0.03% and 0.01% levels and all samples incubated six weeks at 37ºC."

The antioxidant potential of tempeh was found to be greater than that of alpha tocopherol at 0.03% for up to 4 weeks. Address: Univ. of Kentucky, Lexington, KY 40506.

293. Stanton, W.R.; Wallbridge, A. 1969. Fermented food processes. *Process Biochemistry* 4(4):45-51. April. [34 ref]
• ***Summary:*** "Fermentation of starch tubers such as cassava with fungal organisms such as Rhizopus can result in a food product with significant increases in protein content." The cassava dough is inoculated then extruded (like noodles) into fermentation trays.

Table 1 shows many different "vegetable cheeses and related fermented foods." The first such food mentioned is minchin, made from wheat [gluten] in China. The microorganisms used are *Paecilomyces, Aspergillus, Cladosporium, Fusarium, Syncephelastrum, Penicillium,* and *Trichothecium* species. This is an anaerobic fermentation of wheat gluten for 2-3 weeks at room temperature during the winter, with 10% salt added. The product is cut into strips and used as a condiment. Eaten as a meat substitute, it is rich in protein, nutritious, and healthy.

Fermented soy products include sufu, tempeh, meitauza, Hamanatto, shoyu, miso, and natto. Address: 1. PhD, Head, Microbiology Section, Tropical Products Inst., London, England; 2. Parke Davis Co.

294. Russo, J.R. 1969. Can new protein sources avert world shortage? Part II. *Food Engineering* 41(6):80-83. June.
• ***Summary:*** Part I of this article discussed protein in new forms such as fish protein concentrate, meat protein concentrate, and protein from petroleum. This part discusses protein from oilseeds, the least expensive and most promising source. Products containing soy include beverages such as Vitasoy in Hong Kong, ProNutro in South Africa, and Saci in Brazil. In Brazil, Cerealina has been introduced by Corn Products Company. Also discussed are synthetic amino acids, new foods from meat wastes, and food processing "wastes." Photos show a Saci bottle and an Incaparina bag. Address: Asst. ed., Food Engineering.

295. Wang, Hwa L.; Ruttle, Doris I.; Hesseltine, C.W. 1969. Antibacterial compound from a soybean product fermented by *Rhizopus oligosporus. Proceedings of the Society for Experimental Biology and Medicine* 131(2):579-83. June. [11 ref]
• ***Summary:*** "In the course of investigating the proteolytic enzyme systems of *Rhizopus oligosporus* Saito, a mold used for tempeh fermentation, we found that the mold produces a compound that inhibits the growth of bacteria associated with cheese making... the cheese failed to become acid because of failure of the lactic acid bacteria to grow."

Many fungi produce antibiotics. However it is rare for Phycomycetes (such as members of the genera *Rhizopus* or *Mucor*) to produce antibiotics. Thus it was unexpected when this investigation showed that *R. oligosporus* produced antibacterial compound(s) that inhibited the growth of *Streptococcus cremoris.* "The production of antibacterial agents by these species certainly would help to explain the nutritional value of fermented foods as claimed by natives, and the beneficial effects of tempeh on patients with dysentery as observed by Van Veen and Schaefer (1950)...

"The compound may not be an important antibacterial drug, but it is well established that antibiotics, in addition to minimizing infections, elicit growth-stimulating effects in animals. All these results, however, emphasize that

antibiotics have a particularly striking growth-stimulating effect in diets that are deficient in any one of several vitamins or proteins, or some growth factors still unknown...

"Oriental people constantly are exposed to overwhelming sources of infection and their diets are frequently inadequate, yet they possess a wonderful resistance to disease. Our finding that an antibacterial agent is produced by *R. oligosporus* possibly offers a clearer understanding of the true value of tempeh in the diet of Indonesians, and perhaps of fermented foods in the diets of Orientals." Address: NRRL, Peoria, Illinois.

296. Orr, Martha Louise. 1969. Pantothenic acid, vitamin B-6, and vitamin B-12 in foods. *USDA Home Economics Research Report* No. 36. 53 p. Aug. [440* ref]
• ***Summary:*** Lists the content of these three vitamins for whole dry soybeans, tempeh, soy flour (full-fat, high-fat, low-fat, and defatted), and a sweetened powdered soymilk product.

The percentage of vitamin B-6 in the form of pyridoxol, pyridoxal, and pyridoxamine is as follows: for soybeans (44, 44, 12) or (18, 77, 5), soyflour (63, 25, 12).

297. Proceedings of All India Workshop Conference on Processing, Utilisation & Marketing of Soybean (Second). 1969. Experiment Station, Pantnagar, Uttar Pradesh, India. (Govind Ballabh Pant Krishi Evam Prodyogik Vishwavidyalay). 181 p. Unnumbered. Held 7-9 Oct. 1969 at Uttar Pradesh Agricultural University, Pantnagar (District Nainital). 26 cm. [73 ref]
• ***Summary:*** Contents: Objectives and sponsors. Programme. Working committees. Welcome address. Inaugural address. Papers: Technology of processing soybeans, by M.W. Formo. Technology of soybean utilization, by S.S. Kalbag. Marketing of soy products, by S. Ghose. The role of the Government of India and international agencies in development of soybean in India, by P.R. Krishnaswamy & S. Ghose. Agro-economics aspects of soybean production in India, by I.J. Singh. Prospects for soybean foods in India, by N. Subramanian. Utilisation of soy flour for infant foods and foods for weaned children, by M.R. Chandrasekhara. Defatted and full-fat soy flours by conventional process, by F.E. Horan. Soy protein concentrates and isolates, by E.W. Meyer. Alternative processes for full-fat soy flours for use in developing countries, by G.C. Mustakas. Potential and use of soy protein for low-cost infant foods in India, by R.A. Hill. Potentials in marketing soy foods, by James J. O'Connor. Marketing soy protein products and problems of acceptance, by D.W. Johnson. Role of imitation milk in the feeding of tomorrow's population, by F.V. Kosikowski.

Conference sponsors: The Protein Food Assoc. of India; University of Illinois/USAID; Jawahar Lal [sic, JNKVV] Agricultural University; Indian Council of Agricultural Research; Uttar Pradesh Agricultural University. Address: Pantnagar, India.

298. Protein Advisory Group. 1969. PAG Guideline 5 for edible, heat-processed soy grits and flour. *PAG Guideline* (*Protein Advisory Group, WHO / FAO / UNICEF*) No. 5. 8 p. Nov. *

299. Teeter, Howard M.; Schaefer, Wilbur C. 1969. Food uses of soybeans: Research at the Northern Laboratory. *Soybean Digest.* Nov. p. 16-18. [3 ref]
• ***Summary:*** Contents: Introduction. Our research on edible soybean oil. Contributions to oil usage. Edible soybean meal and protein (soy protein foams for a stable whip). Soybean use in oriental foods: Tempeh, tofu, full-fat soy flour, extrusion cooking. Corn-Soya-Milk blend (CSM).

The use of edible soy products has been increasing at 5 to 7% per year. Address: NRRL, Peoria, Illinois.

300. Hesseltine, C.W.; Wang, H.L. 1969. Fermented soybean foods. In: Proceedings of the Third International Conference on Global Impacts of Applied Microbiology. See p. 403-20. Held 7-14 Dec. 1969 at Bombay, India. [11 ref]
• ***Summary:*** Contents: Introduction: The three fundamental drives of man (food, shelter, reproduction), benefits of soybean fermentation. Sufu. Hamanatto. Natto. Tempeh. Magou (now made in South Africa on a modern industrial scale from fermented corn and soybeans). Address: Northern Utilization Research and Development Div., USDA, Peoria, Illinois.

301. Ebine, H.; Matsuura, M. 1969. [Application of *Rhizopus* for shoyu manufacturing: (Part II) Properties of *Rhizopus* enzymes]. *Chomi Kagaku* (*Seasoning Science*) No. 16. p. 15-. [Jap]*
Address: National Food Research Inst., Tokyo.

302. **Product Name:** [Tempeh].
Foreign Name: Tempé.
Manufacturer's Name: Handelsonderneming van Dappern. Renamed Tempé Produkten B.V. in April 1983.
Manufacturer's Address: 66 Kloosterbostraat, 6464 Kerkrade, The Netherlands. Phone: 045-455-803.
Date of Introduction: 1969.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Robert van Dappern. Largest tempeh plant in the Netherlands. Interview with Ike Van Gessel. 1982. June. The company started in Rotterdam in 1969. They learned how to make tempeh from a Dutch-Indonesian sailor, who had started to make tempeh in the Netherlands in 1949. He made it for family and friends but did not sell it commercially.

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 29. This was Europe's third earliest commercial tempeh company, founded in 1969. In Jan. 1972 the thriving

company moved to Kerkrade from Rotterdam. In June 1980 the company bought a $1,000,000 modern factory in Kerkrade and expanded production greatly. By mid-1982 it was the largest tempeh company in the world, making 6,000 to 8,000 lb of tempeh a week. In April 1983 the name was changed to Tempé Produkten B.V.

Letter and Label sent by Ike Van Gessel. 1992. Dec. 20. The man who taught Robert van Dappern to make tempeh was not a sailor but a private person named Mr. Remmert, who passed away in 1970. The company now makes 5,000 kg/week of tempeh. It is located at: Tunnelweg 107, 6468 EJ Kerkrade, Netherlands. Phone: 045-455803.

The Label is 8.5 by 5.5 inches. Orange and black on clear plastic. 450 gm. UPC indicia.

303. Streeter, Carroll P. 1969. A partnership to improve food production in India. A special report from the Rockefeller Foundation. See p. 80-85. 27 cm.
• ***Summary:*** Discusses the all-India soybean research program that was launched in 1967, with technical guidance from the University of Illinois under a U.S. AID contract and financial support from the Indian Council of Agricultural Research.

304. **Product Name:** Tempe.
Manufacturer's Name: Toko Baru.
Manufacturer's Address: 969A Glendora Ave., West Covina (Los Angeles area), CA 91790. Phone: 213-962-0317.
Date of Introduction: 1969.
New Product–Documentation: Shurtleff and Aoyagi visited this small Indonesian delicatessen which makes its own tempeh in Jan. 1977. They met Randy Kohler included the company in a list of tempeh shops in North America in the 1977 edition of "What is Tempeh?" Shurtleff & Aoyagi. The Book of Tempeh. 1979 (July). p. 148. Owner: Rudy Kohler. An Indonesian delicatessen. Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Rudy Kohler. By July 1982 the address has changed to 16006 Amar Rd., City of Industry, California 91746. Phone: 213-333-6220. The owner is the same.

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 39. America's 2nd earliest tempeh shop.

305. Camargo, R. de. 1969. Contribuicao ao estudo de dois alimentos orientais–o Tempeh e o tofu–obtidos da soja (Glycine max (L.) Merrill) [Contribution to the study of two East Asian foods, tempeh and tofu, obtained from the soybean (Glycine max (L.) Merrill)]. Docent's thesis: Escola Superior de Agricultura "Luiz de Queiroz," Piracicaba. 78 p. [Por]*
Address: Brazil.

306. Cowan, J.C. 1969. Soybeans. In: Encyclopedia of Chemical Technology. Vol. 18. 2nd ed. New York: John Wiley & Sons (Interscience Publishers). See p. 599-614. 27 cm. [44 ref]
• ***Summary:*** Contents: Introduction: Composition, standards and trading rules. Handling and storage. Processing: Preparation, screw-press and extruder-cooker operations, solvent extraction. Soybean products: Oil, meal and meal products, soy flour and related products, soy sauce and other food specialties (soybean milk, tofu, miso, natto, tempeh, sprouted soybeans, green vegetable soybeans). Production and export. Bibliography.

"An estimated 50 million lb of soy flour was marketed in 1967. About one-half of this went into pet foods and the rest into foods for humans." Address: USDA.

307. Iljas, Nasruddin. 1969. Preservation and shelf-life studies of tempeh. MSc thesis, Ohio State University. *
Address: Ohio State Univ.

308. Lijmbach, Gerardus Wilhelmus Maria. 1969. Bongkrekzuur, een toxine van *Pseudomonas cocovenenans* [Bongkrek acid, a toxin from *Pseudomonas cocovenenans*]. PhD Thesis, Technische Hogeschool, Delft, Netherlands. 116 p. [Dut]*
Address: Technische Hogeschool, Delft, Netherlands.

309. Noyes, Robert. 1969. Protein food supplements. *Food Processing Review* No. 3. 412 p. (Noyes Development Corp., Park Ridge, New Jersey). [80+ ref]
• ***Summary:*** A review of more than 80 patents on soybean processing. Address: Park Ridge, New Jersey.

310. Stanton, W.R. 1969. Some domesticated lower plants in South-east Asian food technology. In: Peter J. Ucko and G.W. Dimbleby, eds. 1969. The Domestication and Exploitation of Plants and Animals. Chicago: Aldine Pub. Co. xxvi + 581 p. See p. 463-690. Proceedings of a meeting... held at the Institute of Archaeology, London University. Illust. 26 cm. [10 ref]
• ***Summary:*** In this paper, "lower plants" refers to microorganisms and algae. These cultivated microorganisms include marine and lacustrine algae (nori, kombu), fungi (Aspergillus, Rhizopus species), yeasts (Saccharomyces species) and bacteria (Lactobacillus, etc.). In Indonesia, tempeh (cakes made by fermenting soybeans) and fermented groundnuts "provide about one-third of the total crude protein requirement the population..." (p. 464). A complex fermentation is used to make miso, a fermented soybean paste, in Japan; a number of different microorganisms take part at different stages. Some 75% of the households in Japan use miso daily as the main soup seasoning–according to a recent survey.

"The Japanese products represent a northward and eastward migration of the 'sho' process (a general term

in Japan for the high salt fermentations). Today these fermentations are carried out under highly industrialized conditions, the organisms being given the benefit of highly specialized environments, and the domestication in consequence has proceeded here further than it has elsewhere in the region" (p. 467). Address: Tropical Products Inst., London.

311. Ucko, P.J.; Dimbleby, G.W. eds. 1969. The domestication and exploitation of plants and animals: Proceedings of a meeting of the Research Seminar in Archaeology and Related Subjects held [18-19 May 1968] at the Institute of Archaeology, London University. Chicago, Illinois: Aldine Publishing Co.; London: Gerald Duckworth & Co. Ltd. xxvi + 581 p. Illust. General index. Index of sites and localities. Index of authors. 26 cm. [500+* ref]
• ***Summary:*** One goal of this seminar is to gain an "insight into modern man's relationship to his habitat. In the last decade or two a change in methods of investigating these events has taken place, due to the mutual realization by archaeologists and natural scientists that each held part of the key and neither alone had the whole. Inevitably, perhaps, the floodgate which was opened has resulted in a new spate of knowledge..." "This meeting was called so that workers in the archaeological, anthropological, and biological fields could bridge the gap between their respective disciplines..." (p. ix).

"Mankind took an immensely long time to learn how to gain food by any other means than hunting, fishing and gathering. Our record of manufactured tools goes back over one million years but evidence of domesticated animals and plants only starts at a date somewhere near the end of the European Ice Age, i.e. after ca. 10,000 BC" (p. xvii).

While archaeology is presently best suited to study domestication, a movement is taking place in archaeological thought which recognizes the essential unity of the ecological approach; man is increasing being viewed as part of an ecosystem in which he has played a significant, if not dominant, role for some millennia. Increasingly man is seen as "another animal in the world of nature" (p. xxiii).

One cannot solve a problem unless one asks the right questions. And to ask the right questions one must look at the problem from a particular viewpoint. "That viewpoint, so far as the origin of domesticated plants is concerned, is, I am convinced, the ecological one... we must look at wild and cultivated plants associated with man as an ecological complex and view this in relation to the ecology of man himself." Scientists must search for exact "archaeobotanical data."

Vavilov considered the soyabean a primary crop (Hawkes, p. 25). In Indonesia, "fermented cakes of soya beans and groundnut [tempeh and onchom] provide about one-third of the total crude protein requirement of the population..." (Stanton, p. 464). In Japan, advanced fermentation processes are used to make miso and shoyu. Today these fermentations take place under highly controlled, industrial conditions in highly specialized environments (Stanton, p. 467).

This book shows clearly that many crops were domesticated before the soybean. In China, foxtail millet (*Setaria italica* var. *germanica*), broom corn millet (*Panicum miliaceum*), rice (*Oryzae sativa*), and wheats (*Triticum* spp.) have been identified in neolithic contexts (Watson, p. 398-99). In Tehuacan, Mexico, radiocarbon datings for common beans (*Phaseolus vulgaris*) have been reported from 5,300 B.P. [before the present] (Smartt, p. 452-53). Chili peppers (*Capsicum annuum*) share with *Phaseolus* beans and the Cucurbits (squashes) the distinction of being among the first plants cultivated in the New World (Americas). Chili peppers have been found in early sites in both Middle and South America. In Mexico, they have been dated back to about 7,000 BC. "This antedates the development of agriculture and implies that wild plants were being exploited." The first plants cultivated in Peru appear to be gourds and squashes, but by 2,000 BC peppers were grown in the Ancon area on the central coast (Pickersgill, p. 443, 446-47). Address: 1. Dep. of Anthropology, University College, London; 2. Dep. of Human Environment, Inst. of Archaeology, London.

312. Zycha, H.; Siepmann, R.; Linneman, G. 1969. Mucorales. Eine Beschreibung aller Gattungen und Arten dieser Pilzgruppe [The Mucorales. A description of all genera and species of this group of molds]. West Germany: Verlag von J. Cramer. viii + 355 p. See p. 74-84. Illust. Index. 25 cm. [809* ref. Ger]
• ***Summary:*** Within the Mucorales, and within the family Mucoraceae, are a number of genera that are important to fermented soyfoods: I. Mucor. VI. Actinomucor. IX. Rhizopus.

The genus Rhizopus was named by Ehrenberg in 1820 (Nova Acta Acad. Leop. 10, 1, 198). The following species of Rhizopus mold are discussed in detail, with a short bibliography of previous names for some, and some are illustrated with exquisite line drawings: 1. *Rhizopus homothallicus.* 2. *Rhizopus sexualis.* 3. *Rhizopus microsporus.* 4. *Rhizopus circinans.* 5. *Rhizopus echinatus.* 6. *Rhizopus oligosporus* (named by Went & Prinsen Geerligs 1895; In 1907 Saito named it *R. tamari* and found it in Japanese Soja-Koji). 7. *Rhizopus arrhizus* (4 illust. from Zycha 1935). 8. *Rhizopus cohnii.* 9. *Rhizopus oryzae.* 10. *Rhizopus nigricans* (6 illust. from Zycha 1935). Address: 1-2. Biologische Bundesanstalt fuer Land- und Forstwirtschaft, Inst. fuer Forstpflanzenkrankheiten, Kassler Str. 22, D-351 Hann. Muenden, West Germany.

313. Noznick, Peter P.; Luksas, Anthony. J. Assignors to Beatrice Food Company, Chicago, Illinois (A corporation of Delaware). 1970. Process for making tempa [sic, tempeh].

U.S. Patent 3,489,570. Jan. 13. 2 p. Application filed 2 May 1968.
• ***Summary:*** A process for making powdered tempeh by submerged fermentation. "Tempa, also known as tempeh, is a popular food of Indonesia. It is prepared from cooked and dehulled soybeans fermented with the 'tempa mold.'" The prior art for making tempa is described.

In this patent: "Tempa is prepared by comminuting wet whole soybeans to form a slurry which approaches a solution. The slurry is sterilized and maintained sterile throughout the balance of the process. The slurry is placed in a fermenter, inoculated with tempa mold and strongly agitated and aerated. The fermented slurry is pasteurized and dried."

314. Hellendoorn, E.W. 1970. Onbewerkte en bewerkte peulvruchten in onze voeding [Unprocessed and processed legumes in our food]. *Voeding* 31(1):1-14. Jan. 15. [10 ref. Dut]
• ***Summary:*** The soybean (*de sojaboon*) and soyfoods (p. 6-7) include: Soybean meal (*sojameel*), soy oil (*de olie*), soy sprouts (*gekiemde sojaboonen*), tofu (*tahu*), soy sauce (*sojasaus*), miso, and tempeh. Address: Doctor, Centraal Instituut voor Voedingsonderzoek TNO, Zeist.

315. Centre de Documentation Internationale des Industries Utilisatrices de Produits Agricoles (CDIUPA). 1970--. IALINE (Industries Agro-Alimentaires en Ligne) base de données [IALINE (Food and Agricultural Industries On-Line) database]. 1, avenue des Olympiades–91300 Massy, France. [271542 ref. Fre]
• ***Summary:*** This is the world's best database for French-language publications related to food and nutrition. It first became available for use in Jan. 1970, and that is also the date of the earliest record in the database. It is produced by the Center for International Documentation on Industrial Utilization of Agricultural Products (CDIUPA), founded in 1965 by the French Ministry of Agriculture. CDIUPA is administered by APRIA (*Association pour la Promotion Industrie Agricole*), which is a member of the International Commission of Agricultural and Food Industries.

The current contents of the database is published in a monthly journal titled "Industries Agro-Alimentaires: Bibliographie Internationale," which began under that title in Jan. 1983. It was preceded by *Bibliographie Internationale des Industries Agro-Alimentaires. Bulletin Bibliographique* (published from Jan. 1967 to Dec. 1982). In the monthly journal, the citations are grouped under 6 broad headings: 1. General (with 8 subcategories). 2. Agro-food industries (industries agroalimentaires; with 17 subcategories; Many documents on soyfoods are cited in subcategory N titled *"Protéines d'origine animale, végétale, microbiologique, algues et levures aliments"*). 3. Fermentation industries (with 6 subcategories). 4. Food microbiology. 5. Food toxicology. 6. Utilization and adding value to agricultural and food-industry by-products. Biotechnology. The journal contains 3 indexes: Subject index. Index of sources (periodicals [with journal names written out in full], acts of congress, books, theses). Author index.

Information related to soyfoods is likely to be found under the following headings in the subject index: Aspergillus oryzae; Farine de soja (incl. soy flour, and roasted soy flour or kinako); Huile de soja (soy oil); Koji; Lait de soja (soymilk); Miso; Nato (incl. natto); Produit à base de soja (incl. dawa-dawa, kinema, soy cheese [western style], soy nuggets/Hamanatto, soynuts, soy ice cream, soy yogurt, thua-nao, yuba), Protéine de soja (soy protein products); Protéine de soja, Produit extrudé (extruded soy products); Protéines d'origine animale, végétale; Sauce de soja (soy sauce); Soja (incl. green vegetable soybeans); Soja, germe (soy sprouts); Sufu (fermented tofu); Tempeh; Tofu. Address: Massy, France. Phone: (1) 69.20.97.38.

316. Dwidjoseputro, Dakimah. 1970. Microbiological studies of Indonesian ragi. PhD thesis in Biology, Vanderbilt University, Nashville, Tennessee. vi + 125 p. Jan. Illust. No index. 29 cm. Published in Indonesia in 1976. [64* ref]
• ***Summary:*** Contents: Acknowledgments. List of tables. List of plates. 1. Introduction. 2. Review of literature. 3. Materials and methods. 4. Experimental results. 5. Discussion. 6. Summary. Literature cited. Address: Nashville, Tennessee.

317. Ebine, H.; Matsuura, M. 1970. Rizoopusu-zoku no shôyu jôzô e no riyô. II. Rizoopusu-zoku kôbo to tokusei [Application of *Rhizopus* for shoyu manufacturing. II. Properties of Rhizopus enzymes]. *Shokuryo Kenkyujo Kenkyu Hokoku* (*Report of the Food Research Institute*) No. 25. p. 140-45. Feb. Reprinted from Chomi Kagaku 16(4):15-19 (1969). [4 ref. Jap; eng]
Address: Food Research Inst., Shiohama 1-4-12, Koto-ku, Tokyo, Japan (Norinsho Shokuryo Kenkyujo).

318. Iljas, Nasruddin; Peng, Andrew C.; Gould, Wilbur A. 1970. Tempeh: Find ways to preserve Indonesian soy food. *Ohio Report on Research and Development* 55(1):22. Jan/Feb.
• ***Summary:*** Tempeh, a fermented food, is consumed as a main dish rather than a flavoring or seasoning agent. Tempeh was preserved by freezing, canning, or dehydrating. Freezing, the best way, was as follows: Slice tempeh into pieces about ½ inch thick and 3½ inches long. Fill a 303 x 407 can with the pieces and process in boiling water for 5 minutes. Seal the tempeh in 303 cans and immediately store in a freezer at -20ºF.

When ready to serve, thaw the frozen tempeh by exposing it to room temperature for several hours. Soak tempeh pieces in a 5% salt solution (table salt in tap water), then deep-fry in peanut oil for 4 minutes at 350ºF.

The yield of tempeh from raw soybeans was found to be 84.96% on a dry basis.

Photos show: (1) On a shallow tray (right to left): soybeans, slices of fresh tempeh, slices of deep-fried tempeh. (2) Deep-frying tempeh in a basket deep-fryer. Address: 1. Graduate student; 2. Assistant Prof.; 3. Prof. All: Dep. of Horticulture, The Ohio State Univ., Columbus, and the OARDC.

319. *Ohio Report on Research and Development.*1970. Special Report: Soybean Research. 55(1):1-24. Jan/Feb.
• ***Summary:*** Contains various articles by different authors, each of which is cited separately. Address: Wooster, Ohio.

320. Gray, William D. 1970. The use of fungi as food and in food processing. *CRC Critical Reviews in Food Technology* 1(2):225-329. May. (Chemical Rubber Co. Press, Cleveland, Ohio). [348* ref]
• ***Summary:*** The section titled "Oriental fungus-processed foods (p. 263)" discusses: Broad differences between fermentation processes in the Occident and Orient, miso, shoyu, Hamanatto, tempeh, ang-khak, ontjom, sufu, meitauza, ketjap, katsuobushi, and other fungus-fermented foods: Chee-fan (a type of sufu), fermented minchin (wheat gluten), fermented soybean prepared from black soybeans in China (soy nuggets), tao-cho, tao-si, and taotjo (the last 3 foods made from soybeans). Address: Dep. of Botany, Southern Illinois Univ., Carbondale, Illinois.

321. van Veen, Andre G.; Steinkraus, Keith H. 1970. Nutritive value and wholesomeness of fermented foods. *J. of Agricultural and Food Chemistry* 18(4):576-78. July/Aug. [18 ref]
• ***Summary:*** Contents. Introduction. Materials and methods: Tempeh, ontjom, bongkrek, idli, fish sauces, fermented rice, yoghurt-wheat foods. Nutritive value. Digestibility. Vitamins. Acceptability. Wholesomeness of fermented foods. Address: New York State Agric. Exp. Station, Cornell Univ., Geneva, New York.

322. Wang, Hwa L.; Hesseltine, C.W. 1970. Multiple forms of *Rhizopus oligosporus* protease. *Archives of Biochemistry and Biophysics* 140(2):459-63. Oct. [5 ref]
• ***Summary:*** "Extracellular proteases of *Rhizopus oligosporus* have been purified and separated into five active fractions (A-E) by ammonium sulfate fractionation, gel filtration, or diethylaminoethyl cellulose chromatography. All fractions showed single bands on acrylamide gel electrophoresis." Address: NRRL, Peoria, Illinois.

323. Dwidjoseputro, Dakimah; Wolf, Frederick T. 1970. Microbiological studies of Indonesian fermented foodstuffs. *Mycopathologia et Mycologia Applicata* (*The Netherlands*) 41(3-4):211-22. Dec. 4. [18 ref]
• ***Summary:*** Ragi is Indonesian starter culture. From ragi-tempe (tempeh starter) and tempe were isolated *Rhizopus oryzae, R. arrhizus, R. oligosporus, R. stolonifer, Mucor Rouxii, M. javanicus* and *Trichosporon pullulans.*

From ragi-ketjap, used to prepare Indonesian soysauce, were isolated *Rhizopus oligosporus, R. arrhizus, R. oryzae, Aspergillus oryzae,* and *A. flavus,* the latter species probably being an accidental contaminant. The microflora of *tapé* (*tapeh*) is also described. Two new species are described: *Candida lactosa* and *Hansenula malanga,* from ragi-tapé from Surakarta and Malang, respectively. Address: Vanderbilt Univ., Nashville, Tennessee. Dwidjoseputra now resides in Malang, Indonesia.

324. Murata, Kiku; Miyamoto, Teijiro; Kokufu, Etsuko; Sanke, Yukiko. 1970. Studies on the nutritional value of tempeh. III. Changes in biotin and folic acid contents during tempeh fermentation. *J. of Vitaminology* (*Kyoto, Japan*) 16(4):281-84. Dec. 10. [10 ref]
• ***Summary:*** Changes in biotin and total folic acid activities during fermentation with *Rhizopus oligosporus* were investigated. It was found that the contents of biotin and total folate compounds in tempeh were 2.3 and 4-5 times higher than those in unfermented soybeans, respectively. Address: Food and Nutrition Lab., Faculty of Science of Living, Osaka City Univ., Sumiyoshi-ku, Osaka, Japan (Post No. 558).

325. Lijmbach, G.W.M.; Cox, H.C.; Berends, W. 1970. Elucidation of the chemical structure of bongkrekic acid. I. Isolation, purification and properties of bongkrekic acid. *Tetrahedron* 26(24):5993-99. Dec. Based on Lijmbach's 1969 PhD thesis, Delft. [26 ref]
• ***Summary:*** The preparation, isolation and purification of the toxic antibiotic bongkrekic acid (BA), produced by *Pseudomonas cocovenenans* on partially defatted coconut are described. It has been shown that BA is a branched unsaturated tricarboxylic acid with a gross formula of $C_{28}H_{38}O_7$. The presence of three methyl groups, one methoxyl group, one ring system and six double bonds–two isolated and two pairs of conjugated double bonds, both conjugated with a carboxyl group–is proved. Address: Lab. of Biochemistry and Biophysics, Technical Univ. Delft, Julianalaan 67, Delft, Netherlands.

326. Wang, H.L.; Hesseltine, C.W. 1970. Oriental fermented foods. Paper presented at Part I, Seminar on Protein Food Promotion. 5 p. Typed manuscript. Held Nov. 22 to Dec. 1, 1970 at Inst. of Food Research and Product Development, Kasetsart Univ., Bangkok, Thailand. [13 ref]
• ***Summary:*** Contents: Introduction. Miso. Hamanatto. Sufu. Natto. Tempeh. Nutritional value of fermented foods. Absence of aflatoxin in fermented food products.

A note on page 1 of this manuscript states: "To be

published in Part I of Seminar on Protein Food Promotion, November 22-December 1, 1970, Institute of Food Research and Product Development, Bangkok, Thailand." This was an invited paper. Address: NRRL, Peoria, Illinois.

327. Hermana, -; Soetedja, -. 1970. Advances in the preparation of tempeh. I. New method of preparing tempeh. *Gizi Indonesia, J. of the Indonesian Nutrition Association* 2(3):167-68. [3 ref. Eng]
• ***Summary:*** The traditional method for making tempeh is described. In the new method, soybeans were dehulled by a burr mill. 1 kg of dehulled soybeans was cooked in water heated to the boiling point, then soaked in this water for 22 hours. The beans were washed to remove their seed coats, then reboiled in fresh water for 40 minutes, drained, and left to cool. The soybeans were inoculated with a tempeh mould preparation (1 gram inoculated 1 kg of soybeans) and wrapped in cheese-cloth for 24 hours. Then they were bagged in perforated polyethylene bags having pinholes in a grid pattern 4 cm apart, then fermented for 14 to 16 hours.

Tempe made by this new method had a milder aroma and better texture than traditional tempeh, and had a keeping quality of 3 days. Even after 3 days, the color of the tempeh remained white; changes in texture and aroma were slight. Address: Nutrition Research, Unit Jl. Semboja, Bogor Indonesia.

328. Jensen, J. Stoumann. 1970. Traditionelle orientalske gaeringsprodukter, hovedsageligt paa basis af soyaboenner. Fremstilling og anvendelse. En oversigt [Traditional East Asian fermented products, mainly those made from soybeans. Production and uses. An overview]. Unpublished manuscript. Lyngby, Denmark. 40 p. Forwarded to DANIDA 29 March 1971. Unpublished manuscript. [11 ref. Dan]*
Address: Dep. of Biochemistry & Nutrition, Technical Univ. of Denmark, Lyngby, Denmark.

329. Jensen, J. Stoumann. 1970. Indledende resultater af forsoeg med fremstilling af tempeh (et forgaeret foedemiddel) pa basis af hesteboenner [Initial results of research on production of tempeh (a fermented food) using cowpeas]. Unpublished manuscript. Lyngby, Denmark. 37 p. Forwarded to DANIDA 27 March 1971. Unpublished manuscript. [11 ref. Dan]*
Address: Dep. of Biochemistry & Nutrition, Technical Univ. of Denmark, Lyngby, Denmark.

330. Krisdinamuririn, Y. 1970. Kumpulan beberapa resep masakan dengan tepung kedele [A collection of recipes using soy flour in cooking]. Bogor: Balai Penelitian Gizi Unit Sembodja, Departemen Kesehatan RI (Sembodja Nutritional Research Unit, Ministry of Health). 26 p. [Ind]*
Address: Bogor, Indonesia.

331. Muhilal, -; Karyadi, Darwin; Prawiranegara, Dradjat D. 1970. A study on aflatoxin in contents of peanuts and products. *Gizi Indonesia, J. of the Indonesian Nutrition Association* 2(3):162-66. *
Address: Indonesia.

332. Murata, Kiku. 1970. Hakkô daizu, tenpei (Tempeh) no eiyô-ka ni kansuru kenkyû (Sosetsu) [Studies on the nutritional value of tempeh (general remarks and introduction)]. *Osaka Shiritsu Daigaku Kaseigakubu Kiyo* (*Bulletin of the Faculty of Home Economics, Osaka City University*) 18:19-33. [30 ref. Jap; eng]
• ***Summary:*** "After investigation of the nutritional value of tempeh, including antioxidative and antihemolytic activities of tempeh, for several years, the following results were obtained: 1. Lipid of the tempeh powder is stable, while that of the unfermented soybean powder is labile to oxidation during storage. 2. It was found that isoflavones, especially Factor 2 (6-7-4'-trihydroxyisoflavone), which was liberated with □-glucosidase during fermentation with *Rhizopus,* was one of the antioxidants in tempeh. 3. The isolated or chemically synthesized crystalline Factor 2 was active in preventing hemolysis of the red blood cells of the vitamin E deficient rats *in vitro* but not in *in vivo* tests. 4. Protein Efficiency Ratio (PER) of tempeh and of unfermented soybeans (fresh or stored) were not significantly different. However, hemolysis percentages of blood of rats fed stored tempeh were less than 20%, while those of rats fed stored unfermented soybeans were 100% throughout the experimental period after 2 weeks. The serum tocopherol of the tempeh group was higher than that of the unfermented soybean group. 5. Most of the B vitamins except thiamine in tempeh were increased to 4-8 times as much as those of unfermented soybeans during fermentation. 6. It was observed that supplementation of methionine (1.09%), lysine (0.34%), and threonine (0.24% in protein level) improved PER as well as that of tempeh 7: whole egg 3 in protein level." Address: Osaka.

333. Hardjohutomo, Harsono. 1970. Pengganti tempe bongkrek [Substitutes for tempeh bongkrek]. Jakarta: Penerbit Pradnja Paramita. 31 p. 18 cm. [Ind]
Address: Dosen Fakultas Perikanan, Institut Pertanian Bogor, Indonesia.

334. Robeau, Alec. 1970. Cooking the Indonesian way. New South Wales, Australia: A.H. & A.W. Reed. 160 p. Index. 21 cm.
• ***Summary:*** The Introduction has good, long definitions of many Indonesian ingredients including: Ketjap, ketjap manis, soya beans, tahu (tofu, and how to make it at home), taotjo ("These are salted soya beans and are readily available in all Chinese stores and shops." [Note: Taotjo is Indonesian-style miso]), tempe [tempeh].

Soy-related recipes include: Sajur oblok (Smoked fish and vegetable dish, with ¼ lb diced tempe, p. 34-35). Sajur gudek (Spiced vegetables and jackfruit dish, with ¼ lb diced tempe, p. 37). Sajur kangkung (Spiced watercress, with ¼ lb diced tempe, p. 38). Tahu Surabaja (Fried soya bean cakes with vegetables, with ½ lb diced tofu, p. 46). Kuah sate II (Spiced peanut sauce (with ketjap), p. 52). Babi ketjap (Pork in soyabean sauce, with 3 tablespoons soy sauce, p. 74-75). Sambal taotjo (Spiced chilli paste with taotjo, p. 119). Tempe goreng (Fried tempe, p. 128. Serve as a snack or side dish).

335. *Food Processing* (*Chicago*).1971. Specialty 'fermented foods'... highly nutritious, digestible [Tempeh]. 32(1):F7-F9. Winter. Foods of Tomorrow section.
• ***Summary:*** Discusses tempeh, and the research of C.W. Hesseltine and H.L. Wang of the Northern Regional Research Laboratory, Peoria, Illinois. Five color photos show tempeh at different stages.

336. Murata, Kiku; Ikehata, H.; Edani, Y.; Koyanagi, K. 1971. Studies on the nutritional value of tempeh. II. Rat feeding test with tempeh, unfermented soybeans, and tempeh supplemented with amino acids. *Agricultural and Biological Chemistry* 35(2):233-41. Feb. [13 ref]
• ***Summary:*** In a rat feeding experiment, it was observed that the PER value of tempeh (fresh or stored) was not significantly different from that of the unfermented soybeans (fresh or stored). However the peroxide value of the oil of stored tempeh was only 10% of that of stored soybean powder [soy flour].

"Substitution of whole egg for tempeh to supply 30% of protein in the diet improved the quality of the protein as measured by the protein efficiency ratio. An equal improvement was accomplished by supplementation of tempeh with lysine, methionine, and threonine in such amounts as the level of these amino acids equal to that in the tempeh-egg diet." Address: Food and Nutrition Lab., Faculty of Science of Living, Osaka City Univ., Sumiyoshi-ku, Osaka, Japan.

337. Schroder, D.J.; Jackson, H. 1971. Preparation of soybean cheese using lactic starter organisms. III. Effects of mold ripening and increasing concentrations of skim milk solids. *J. of Food Science* 36(1):22-24. Jan/Feb. [11 ref]
• ***Summary:*** Fermented soybean cheeses were prepared from blends of skim milk powder and soybean milk in 4 different proportions. The amount of skim milk had little effect on the flavor of the finished cheese due to the dominant beany flavor from the soybeans. The original cheese was made with *Streptococcus thermophilus* as a starter, plus rennet added after 1 hour to assist in the coagulation of the milk. The cheeses were waxed and stored at 20ºC. The surface of the cheeses were inoculated with one of two molds: *Rhizopus oligosporus, or Penicillium camemberti.*

A third trial consisted of making tempeh, then grinding the tempeh to make a milk, which was made into cheese by the normal method. Mold ripening resulted in desirable changes in texture, but these were offset by the development of bitter flavors. Address: Dep. of Food Science, Univ. of Alberta, Edmonton, Canada; Schroeder present address: Univ. of Minnesota, St. Paul.

338. Calloway, D.H.; Hickey, C.A.; Murphy, E.L. 1971. Reduction of intestinal gas-forming properties of legumes by traditional and experimental food processing methods. *J. of Food Science* 36(2):251-55. March/April. [18 ref]
• ***Summary:*** Tofu and tempeh have little flatus activity, i.e. they cause little gastrointestinal gas.

The two basic types of bean sprouts, soybean and mung bean, gave almost identical reactions. Both cause slightly more breath hydrogen, total flatus and bacterial gases in the flatus than the baseline treatment but somewhat less than the 100-gram doses of beans.

MPF [Multi-purpose food] is a high-protein food (containing 50% protein) with toasted soy grits as the only protein source. The size of the test dose (136 gm) contained the same amount of protein as 20 gm of soybeans. This amount of MPF contains only one-third the carbohydrate content found in soybeans (21 vs. 67 gm) a very little fat (1.4 gm). The gas forming property of the soybean was found to be "retained in proportion to the amount of carbohydrate present and was otherwise unchanged by the processes applied." Address: Dep. of Nutritional Sciences, Univ. of California, Berkeley.

339. Sanke, Yukiko; Miyamoto, Teijiro; Murata, Kiku. 1971. Studies on the nutritional value of tempeh. IV. Biosynthesis of folate compounds with *Rhizopus oligosporus*. *J. of Vitaminology* (*Kyoto, Japan*) 17(2):96-100. June 10. [5 ref]
• ***Summary:*** A previous study (Murata et al. 1970) showed that active folate compounds were produced in tempeh during fermentation with *Rhizopus oligosporus*. This study was conducted to clarify whether folate activity in tempeh was formed *de novo* or released from a bound form during fermentation. The former (de novo formation) was found to be the case.

Folate compounds are related to folic acid. *Webster's Dictionary* defines folic acid (derived from the Latin folium = leaf, and first used in 1941) as "a crystalline pteroylglutamicacid ($C_{19}H_{19}N_7O_6$) that is a vitamin of the B complex and is used especially in the treatment of nutritional anemias." Address: Food and Nutrition Lab., Faculty of Science of Living, Osaka City Univ., Sumiyoshi-ku, Osaka, Japan (Post No. 558).

340. Spicer, A. 1971. Synthetic proteins for human and animal consumption. *Veterinary Record* 89(18):482-87. Oct. 30.

• ***Summary:*** Microbial protein can be textured into meat-like strands. "As regards the Eastern world, microfungi are extensively used in the processing of soya beans to make them suitable human food products. Miso and tempeh are but two examples. The average Indonesian eats 154 gm per day of tempeh, thus consuming several grams of *Rhizopus* in his daily diet." Address: The Lord Rank Research Centre, High Wycombe, Bucks, England.

341. Packett, Leonard V.; Chen, Linda H.; Liu, Jean Y. 1971. Antioxidant potential of tempeh as compared with tocopherol. *J. of Food Science* 36(5):798-99. Sept/Oct. [6 ref]
• ***Summary:*** "Different levels of tempeh were mixed into corn oil, and incubated at 37ºC for a maximum of 6 weeks. Peroxide values were determined biweekly. Results showed that tempeh can prevent lipid oxidation. Corn oil containing 50% tempeh showed higher antioxidant potential than those containing 25% tempeh, 0.01% □-tocopherol, or 0.03% □-tocopherol. This study substantiates the antioxidant potential of tempeh and suggests its use with other foodstuffs to help preserve the lipids contained therein." Address: Dep. of Nutrition & Food Science, Univ. of Kentucky, Lexington, KY 40506.

342. Sastroamidjojo, M.S.A. 1971. An answer to world food crisis? *ANU Reporter* (*Australian National University*) 2(19). Nov. 26.
• ***Summary:*** "Mr. Setiadji Sastroamidjojo, a Colombo Plan student doing a PhD in physics, believes that commercial food producers are neglecting their responsibility by not taking up the large-scale production of tempeh, a soya-bean based food used by Indonesian people for the past 2,000 years.

"Mr. Sastroamidjojo believes that tempeh, if produced on a large enough scale and distributed throughout the underdeveloped areas of the world, could save countless thousands of people from hunger and possible starvation.

"Until recent years there have been problems of heat transference associated with the commercial production of the food, but Mr. Sastroamidjojo believes he answered these problems in his own research on the subject, the findings of which were published in Japan last year." He believes "that a wheat-based tempeh will be more acceptable to the people of western nations. He sees Australia as an excellent country in which to establish the commercial manufacture of tempeh." It has a surplus of wheat, is close to the obvious markets, and could develop sophisticated, automated process that would allow low-cost, large scale production. "Once the industry was established, Australia would not only be able to export dried tempeh but would be able to export the 'know-how' of its manufacture so that Asian and African countries may benefit." A total of 20 intestinal bacteria are said to be inhibited by tempeh. "Indonesians recognize it as a medicine for dysentery."

343. Hermana, -; Roedjito, Sri Wismaniah. 1971. Pembuatan laru tempe dan pengamatan kekuatannja selama penjimpanan [Preparation of tempe mold inoculum and observation on its activity during storage]. *Penelitian Gizi dan Makanan* (*Research on Food and Nutrition*) 1:52-60. [5 ref. Ind]
• ***Summary:*** Methods of preparing 3 kinds of tempeh starter are described. The best is that made by growing tempeh mold inoculum on rice. Its activity did not decrease when it was stored in a closed container at 25 degrees C for 6 months. Address: 1. Balai Penelitian Gizi (Nutrition Research), Unit Jl. Semboja, Bogor; 2. Bag. Gizi dan Makanan, Dep. I.K.K., Faperta, I.P.B., Bogor.

344. Hesseltine, C.W. 1971. Problems of supply of inocula for fermentations, especially solid state fermentations. In: G.C. Ainsworth and J. Webster, eds. 1971. First International Mycological Congress, Abstracts. Unwin Brothers Ltd., The Gresham Press, Old Woking, Surrey England. 113 p. See p. 44-45. Congress held Sept. 1971 at Exeter, England.
• ***Summary:*** "The fungus used in a fermentation is the key to the success or failure of the process. It is the catalyst that makes the fermentation work.

"A fungus culture must have certain general attributes if the process it generates is to be operable. Regardless of the nature of the product and the simplicity or complexity of the engineering process, the strain: (1) must be genetically stable; (2) must produce many vegetative cells, spores, or other reproductive units; (3) must grow vigorously and rapidly after inoculation into seed tanks or other containers used to prepare large amounts of inoculum before the fermentation production; (4) should be a pure culture, not only free of other microscopically visible micro-organisms, but also free of phages; (5) should produce the required product within a short period of time, preferably in 3 days or less; (6) should produce the desired product to the exclusion of other substances; (7) should be able to protect itself against contamination, if possible; (8) should be readily maintained for reasonably long periods of time; (9) should be amenable to change by mutagenic agents; and (10) must give a predictable amount of desired product in a given fermentation time."

Much of this presentation describes "the use of inoculum and the course of solid substrate fermentations which, in several systems, give product yields much higher than can be obtained by either still or conventional stirred tank fermentations of the same size." Address: NRRL, Peoria, Illinois.

345. Murata, Kiku. 1971. [Studies on the nutritional value of tempeh]. *Osaka Shiritsu Daigaku, Kassei Gakubu Kiyo* (*Report of Osaka City University*) 18:19-33. [30 ref. Jap]*
• ***Summary:*** Daidzein and genistein found in fermented

soybeans are reported to possess antioxidant activity. Address: Osaka City Univ., Japan.

346. Slamet, Dewi Sabita; Tarwotjo, Ignatius. 1971. Kadar zat gizi dalam ontjom [The nutrient content of ontjom]. *Penelitian Gizi dan Makanan* (*Research on Food and Nutrition*) 1:49-52. [7 ref. Ind]
Address: 1. Balai Penelitian, Gizi Unit Semboja, Bogor; 2. Akademi Gizi, Djakarta.

347. Arbianto, Purwo. 1971. Studies of bongkrek acid: Taxonomy of the producing bacterium, its production and its physiological function. PhD thesis in bacteriology, University of Wisconsin. vii + 194 p. No index. 22 cm. [91* ref]
• ***Summary:*** Contents: Introduction. Literature review. Section I: Characterization and identification of the organism. Literature review, materials and methods, experimental, discussion. Section II: Studies on the conditions for bongkrek acid production. Introduction, experimental, discussion. Section III: Studies on the physiological function of bongkrek acid. Introduction, materials and methods, experimental, discussion. Summary. Literature cited. Address: Wisconsin.

348. De, Sasanka S. 1971. Technology of production of edible flours and protein products from soybean. *FAO Agricultural Services Bulletin* No. 11. 151 p. AGS: ASB/11. [37 ref]
• ***Summary:*** Contents: Preface. Introduction. Oil milling operations. Quality control of edible flour and grits. Process procedure for production of soya flour and grits. Production of full-fat soya flour: Wenger process, Buehler process, simple process for villagers. Protein isolate: Advantages, process, yield and quality, Alfa-Laval process, estimated cost and calculations on economic return. Production of other soya products: Soy milk, Saridele, Stork method of soy milk production, pilot plant production of tempeh, protein fibers and meat analogs, extrusion-expansion products (meat analogs), bean curd (tofu). List of equipment suppliers. Annexes: PAG Microbiological requirements. 27 tables. 23 figures.

Note: This is the earliest document seen (Aug. 2002) concerning Alfa-Laval's work with soy products (soy protein isolate). Address: Senior Food and Agricultural Industries Officer, Food and Agricultural Industries Service, FAO.

349. Hesseltine, C.W.; Wang, H.L. 1971. Fermented soybean foods. In: Y.M. Freitas and F. Fernandes, eds. 1971. Global Impacts of Applied Microbiology, GIAM III. India: Univ. of Bombay. See p. 403-20. Conference held in 1969 in Bombay, India. [11 ref]
• ***Summary:*** Contents: Introduction: Nine advantages of fermenting soybeans. Sufu. Hamanatto. Natto. Tempeh. Magou (from South Africa).

"In South Africa, an interesting fermented native food (*magou*) is now made on a modern industrial scale from fermented corn and soybeans. *Magou* is prepared by the fermentation of coarsely ground white corn meal (maize). Pure cultures of *Lactobacillus* used in this fermentation were isolated from native *magou.* The culture, which is not pure, is started in coarse whole wheat flour." Then it is used to ferment corn meal for 22-24 hours. "The mash from the fermentation tanks is mixed with defatted soybean meal, sugar, whey, or buttermilk powder and yeast. The soybean meals used contain at least 52 per cent protein. After thorough mixing of all the ingredients, the mix is spray dried. Currently this product sells for about 10 cents a pound in 50 pound bags... *Magou* is used principally for feeding miners and other workers employed in heavy industry. It is well adapted to being taken into the mines and reconstituted at the point of consumption." Address: NRRL, Peoria, Illinois.

350. Ohta, Teruo. 1971. Tenpe [Tempeh]. In: T. Watanabe, H. Ebine, and T. Ohta, eds. 1971. Daizu Shokuhin [Soyfoods]. Tokyo: Korin Shoin. 271 p. See p. 208-17. [4 ref. Jap]
Address: National Food Research Inst., Tokyo, Japan.

351. Steinkraus, K.H.; van Veen, A.G. 1971. Biochemical, nutritional and organoleptic changes occurring during production of traditional fermented foods. In: Y.M. Freitas and F. Fernandes, eds. 1971. Global Impacts of Applied Microbiology, GIAM III. India: Univ. of Bombay. See p. 444-50. Conference held in 1969 at Univ of Bombay, India. [13 ref]
• ***Summary:*** Discusses tempeh, ontjom, Ecuadorian rice, fish paste, idli, flour kishk, bongkrek, and the wholesomeness of fermented foods. Address: Cornell Univ., New York.

352. Watanabe, Tokuji; Ebine, Hideo; Ohta, Teruo. eds. 1971. Daizu shokuhin [Soyfoods]. Tokyo: Korin Shoin. 271 p. Illust. Index. 22 cm. [134 ref. Jap; eng+]
• ***Summary:*** This is the best book published to date on soyfoods in Japan. Contents: 1. Classifications and varieties of soybeans (p. 1). 2. Physical characteristics of soybeans (p. 5). 3. Chemical characteristics of soybeans (p. 9). 4. Standards and methods of examining soybeans (p. 47). 5. Special characteristics and problems of using soybeans for food (p. 53). 6. Current status of the soybean industry in Japan (p. 63). 7. Soymilk and various types of tofu: Aburage (deep-fried tofu pouches), ganmodoki (deep-fried tofu burgers), kôri-dofu (dried frozen tofu), soymilk, and yuba (p. 75). 8. Fermented soyfoods: Natto, shoyu, miso, fermented tofu (*rufu*) (p. 123). 9. Other soyfoods (incl. kinako, soy sprouts or moyashi, tempeh or tenpe, p. 203). 10. Quality and usage of defatted soybeans (*dasshi daizu*) (p. 219). 11. New food uses of soybeans and especially defatted soybeans (incl. 70% soy protein powder, soy protein curds, soy protein

isolate, surimi gel, spun soy protein fibers) (p. 229). 12. Advice regarding supplying protein from organizations such as the United Nations and FAO (p. 257).

A 47-page translation of portions of this book (parts of Chapter 6 and all of Chapters 7) by Akiko Aoyagi and Chapters 8.1 and 8.2 by Alfred Birnbaum are available at Soyfoods Center.

Tokuji Watanabe was born in 1917. Hideo Ebine was born in 1921. Teruo Ota was born in 1926. Address: National Food Research Inst., Tokyo.

353. Chen, Linda H.; Packett, L.V.; Yun, Insun. 1972. Tissue antioxidant effect on ocean Hake fish and fermented soybean (tempeh) as protein sources in rats. *J. of Nutrition* 102(2):181-85. Feb. [13 ref]

• ***Summary:*** "Soybean, tempeh, fish or fish-soybean and fish-tempeh mixtures were used as the sole protein source in diets with or without vitamin E added. Rats were fed 4 weeks, killed and the antioxidant status of the liver, spleen and kidney was determined by using thiobarbituric acid (TBA) assay. Dietary vitamin E reduced TBA values in the liver, kidney and spleen by factors of 11.1, 1.1 and 4.6 respectively. Tempeh did not alter tissue antioxidant status even though earlier studies proved it to contain a potent natural antioxidant. Fish-tempeh or fish-soybean combinations acted synergistically in reducing liver TBA values ($P<0.01$) below fish, tempeh or soybean alone." Address: Dep. of Nutrition and Food Science, Univ. of Kentucky, Lexington, KY 40506.

354. Thio, Goan Loo. 1972. Introduction of soybeans for human nutrition, Republic of Zambia. Amsterdam, Netherlands: Royal Tropical Institute, Dept. of Agricultural Research. iii + 48 p. Feb. 28 cm.

• ***Summary:*** Description of workshops held at 8 places in Zambia in August and Sept. 1971, teaching preparation and use of traditional, low-tech soyfoods (soymilk, tofu, tempeh, okara). Contents: Summary. Introduction. Programme. Equipment and raw materials. Finance. Language. Workshops: Lusaka morning workshop, Lusaka afternoon workshop, Kabwe workshop, Ndola workshop, Solwezi workshop, Katete workshop, Mansa workshop, Kasama workshop, Monze workshop. Conclusions. Recommendations. Acknowledgments.

List of Annexes: I. Itinerary. II. Technical programme of soybean workshops. III. Soybeans, soybean products, and their applications (a brochure prepared for Zambia in June 1971; discusses soymilk, tofu, tempeh, fried soybeans [soynuts], boiled young whole soybeans [green vegetable soybeans], fried tofu, dried sliced tofu, soymilk residue flour [ground okara], soy croquettes (soyrolls, made from okara flour and soymilk), soy biscuits [made with okara flour], vegetable soysoup [with soymilk], tofu omelette, tofu salad with peanut sauce, soy-maize bread [with soymilk and tofu], average chemical composition of soybeans). IV. Examples of modified Zambian recipes with the addition of soybean products (using mostly tofu, soymilk, and okara flour). V. Preparation methods for soybean products adapted to village conditions: Soymilk, tofu. VI. Proposed training system.

Note: This is the earliest English-language document seen (Oct. 2001) that uses the term "soymilk residue" (or "soy milk residue") to refer to okara. Address: Senior Technologist, Royal Tropical Institute, Dept. of Agricultural Research..

355. Wang, Hwa L.; Ellis, J.J.; Hesseltine, C.W. 1972. Antibacterial activity produced by molds commonly used in Oriental food fermentations. *Mycologia* 64(1):218-21. Jan/Feb. [6 ref]

• ***Summary:*** Antibiotics (such as penicillin) have long been made from fungal cultures.

Tempeh made with *Rhizopus oligosporus* (strain NRRL 2710) was found to have natural antibacterial activity. That means that the tempeh mold is capable of synthesizing an antibiotic. It is well established that antibiotics minimize infections. Conclusion: "The finding of antibacterial compounds produced by molds commonly used in Oriental food fermentations, therefore, offers a better understanding of the true value of fermented foods." Address: NRRL, Peoria, Illinois.

356. Van Buren, J.P.; Hackler, L.R.; Steinkraus, K.H. 1972. Solubilization of soybean tempeh constituents during fermentation. *Cereal Chemistry* 49(2):208-11. March/April. [12 ref]

• ***Summary:*** Tempeh is typically fermented for about 24 hours. However if it is fermented for 72 hours (3 times as long as usual) about two-thirds of the nitrogen-free extract (NFE) and half the crude protein and fat have become soluble in water. Changes in the composition of tempeh during fermentation at 0, 12, 24, 36, and 72 hours are given for crude protein (decreases slightly), ammonia (increases 8-fold after 24 hours), available lysine (decreases slightly), free fat (decreases), bound fat (decreases), fatty acids as a percentage of total fat (increases 8.7-fold after 24 hours), crude fiber (increases), nitrogen-free extract (increases slightly), pH (increases), and moisture (increases).

The disappearance of crude protein shows that the mold rapidly utilizes amino acids and low-molecular-weight peptides for its own growth. Address: Dep. of Food Science and Technology, New York State Agric. Exp. Station, Geneva, New York 14456.

357. Gandjar, I.; Hermana, -. 1972. Some Indonesian fermented foods from waste products. In: W.R. Stanton, ed. 1972. Waste Recovery by Microorganisms: Selected Papers for the UNESCO / ICRO Work Study Held at the University of Malaya, 1-18 May 1972. Kuala Lumpur: Published by the

Ministry of Education, Malaysia, for the Malaysian National Commission of UNESCO. 221 p. See p. 49-54. Held at Kuala Lumpur, Malaysia [9 ref]
• ***Summary:*** Contents: Introduction. The products: Ontjom, dage [pronounced dageh or dagé], tempe bongrek, tempe mata kedele, tempe gembus (okara inoculated with the tempe mold, *Rhizopus* species) and ontjom tahu (okara inoculated with *Neurospora sitophila*). Nutritive value. Toxicity studies (have been carried out for ontjom from peanut press cake, for ontjom tahu, and for tempe bongkrek). Discussion.

Table 1, titled "Various kinds of Indonesian fermented foods from waste products" contains 3 columns: Name of food, raw material, and microorganism(s). For example: Ontjom is made from peanut press cake inoculated with *Neurospora sitophila* or *Monilia sitophila.* Address: Indonesia.

358. György, Paul. 1972. Food product containing tempeh. *U.S. Patent* 3,681,085. Aug. 1. 3 p. Application filed 27 April 1970. [4 ref]
• ***Summary:*** "An edible food product is prepared by forming a uniform admixture of fish pieces or fatty meat pieces and tempeh and sterilizing the resulting admixture." In this invention, the tempeh is typically lyophilized (freeze-dried) then sieved to produce a fine, fluffy powder, and mixed with the macerated fish or cut meat.

Table 1 shows the PER of fish/soybean combinations. Carnation milk has a corrected PER of 3.00, whereas tempeh/fish (3:1 weight ratio) has a corrected PER of 2.48, and soybean/fish (3:1 weight ratio) has a corrected PER of 2.20.

Antioxidants in the tempeh keep the fish or meat fat from becoming rancid. Table 2 shows the oil content and peroxide value of two soy/fish products after 8 months of storage at room temperature in an atmosphere of air. Fermented tempeh/mackerel (3:1 weight ratio) had an oil content of 31.2% and a peroxide value of 0.6. Unfermented soybean/mackerel (3:1 weight ratio) had an oil content of 32.9% and a peroxide value of 16.6. A high peroxide value indicates rancidity. After the 8 months of storage, the tempeh/mackerel sample had a pleasant ester-like smell, whereas the unfermented soybean/mackerel sample smelled very strongly of rancid fish oil. Address: 201 Curwen Road, Rosemont, Pennsylvania.

359. Murata, Kiku; Fujita, K. 1972. Hakkô daizu tenpei no kôsansei kôyô ketsuin-shi no kensatsu [Studies on antioxidative and antihemolytic factor in tempeh]. *Seikagaku* (*Biochemistry*) 44(8):496. Aug. Presented at the 45th Annual Meeting of the Japanese Biochemical Society. [1 ref. Jap] Address: Osaka Shiritsu Daigaku, Kasei Shokumotsu, Japan.

360. Menezes, Tobias J.B. de. 1972. Alimentos e molhos obtidos por fermentacao da soja e de cereais [Foods and sauces obtained by fermentation of soybeans and cereal grains]. *Boletim do Instituto de Tecnologia de Alimentos* (*Campinas, Sao Paulo, Brazil*) No. 31. p. 49-63. Sept. [24 ref. Por]
• ***Summary:*** Contents: Introduction. Shoyu (*molho de soja*). Miso. Natto. Tempeh. Sufu. For each food, there is an introduction and a description of the process for making that food, sometimes with a flowchart.

Note: This is the earliest Portuguese-language document seen (April 2001) that mentions fermented tofu, which it calls "sufu." Address: Brazil.

361. Wang, Hwa L.; Vespa, Janet B.; Hesseltine, C.W. 1972. Release of bound trypsin inhibitors in soybeans by *Rhizopus oligosporus. J. of Nutrition* 102(11):1495-1500. Nov. [13 ref]
• ***Summary:*** During tempeh fermentation an active soybean trypsin inhibitor (SBTI) was liberated from a heat-resistant, inactive, bound (insoluble) form by protease enzymes produced by the *Rhizopus oligosporus* mold. Thus extracts prepared from tempeh showed higher trypsin-inhibiting activity than extracts prepared from boiled soybeans. Once released, however, the inhibitor was readily inactivated by heat. *Rhizopus oligosporus* protease was also found to inactivate crystalline SBTI. Address: NRRL, Peoria, Illinois.

362. Djurtoft, R.; Jensen, J. Stoumann. 1972. Fremstilling af tempeh (et forgaeret foedemiddel) [Production of tempeh (a fermented food)]. Statusrapport Nov. 1970–Dec. 1972. Lyngby, Denmark. 77 p. Forwarded to DANIDA 13 Dec. 1972. Unpublished manuscript. [11 ref. Dan]*
Address: Dep. of Biochemistry & Nutrition, Technical Univ. of Denmark, Lyngby, Denmark.

363. Leung, W-T.W.; Butrum, R.R.; Chang, F.H. 1972. Food composition table for use in East Asia. Atlanta, Georgia: Center for Disease Control, U.S. Dept. of Health, Education, and Welfare. xiii + 334 p. Dec. No index. 30 cm.
• ***Summary:*** Part I. Proximate composition, mineral and vitamin contents of East Asian foods, by Woot-Tsuen Wu Leung, Ph.D. (Nutrition Program, Center for Disease Control, Dep. of Health, Education and Welfare), and Ritva Rauanheimo Butrum, M.S., and Flora Huang Chang, B.S. (Federation of American Societies for Experimental Biology).

Part II. Amino acid, fatty acid, certain B-vitamin and trace mineral content of some Asian foods, by M. Narayana Rao, Ph.D., and W. Polacchi (Food Policy and Nutrition Division, Food and Agriculture Organization of the United Nations).

In Part I, Food Group 3 titled "Grain legumes and legume products" (p. 16-22) gives the composition of the following (100 grams edible portion and as purchased): Adzuki beans (*Phaseolus angularis;* incl. "Azuki-an," and boiled sweetened). Asparagus bean: See Cowpea, yardlong.

Asparagus pea: See Goabean. Bambara groundnut or jugo bean (*Voandzeia subterranea*). Bengal gram: See Chickpea. Blackeyed pea: See Cowpea, catjang. Blackgram: See Mung bean. Broad bean or horse bean (*Vicia faba;* incl. "Fuki-mame" and "Otafuku mame"). Burma bean: See Lima bean. Butter bean: See Lima bean. Catjang pea: See Pigeonpea. Chickpea or Bengal gram (*Cicer arietinum*). Cowpea, all varieties (*Vigna* species). Cowpea, yardlong: See Cowpea, all varieties. Dhal: See Lentil. Dolichos, Australia pea (*Dolichos lignosus*). French bean: See Kidney bean. Goabean [goa bean], asparagus pea, or winged bean (*Psophocarpus tetragonolobus*). Golden gram: See Mung bean. Green gram: See Mung bean. Haricot bean: See Kidney bean. Hindu cowpea: See Cowpeas, all varieties. Horse grain or horse gram or Madras gram (*Dolichos uniflorus; D. biflorus*). Horsebean: See Broadbean. Note 1. This is the earliest English-language document seen (Jan. 2005) that uses the word "horsebean" or the word "broadbean" to refer to *Vicia faba.*

Horsegram: See Horse grain. Hyacinth bean or Indian butterbean (*Lablab niger; Dolichos lablab*). Indian bean: See Mung bean. Indian butterbean: See Hyacinth bean. Jackbean, common (*Canavalia ensiformis*). Jugo bean: See Bambara groundnut. Kidney bean, French bean, navy bean, pinto bean, snap bean, or string bean (*Phaseolus vulgaris;* incl. "Usura-mame"). Lentil or dhal (*Lens culinaris; Lens esculenta; Ervum lens*). Lima bean, butter bean, or Burma bean (*Phaseolus lunatus; Phaseolus limensis*).

Note 2. This is the earliest English-language document seen (May 2003) that uses the scientific name *Lens culinaris* to refer to lentils.

Note 3. This is the earliest English-language document seen (Jan. 2009) that uses the name "Burma bean" to refer to the lima bean.

Madras gram: See Horse grain. Mung bean, Indian bean, red bean, green gram, golden gram, or blackgram / black gram (*Phaseolus aureus; Vigna radiata;* incl. vermicelli, dried starch, starch jelly, instant powdered green or red products with sugar and flour added). Mung bean, black gram or urd (*Phaseolus mungo; Vigna mungo*). Navy bean: See Kidney bean. Peanut or groundnut (*Arachis hypogaea;* incl. raw, roasted, with or without shell, salted, parched, seasoned, fried, peanut flour, peanut butter, peanut milk, peanut cake–defatted, peanut cake–defatted and fermented [onchom]). Peas, garden or field (*Pisum* species; incl. parched–salted, "Uguisu-mame"). Pigeonpea, or catjang pea (*Cajanus cajan; Cajanus indicus*). Pinto bean: See Kidney. Red bean: See Mung bean. Rice bean (*Phaseolus calcaratus; Vigna calcarata*). Soybean and soy products (Glycine max; G. hispida; G. soja; p. 19-21), incl: Whole mature seeds–dried (yellow, black), whole immature seeds dried, whole seeds–salted (black, green, green soaked, fried, fermented {natto}, pickled, roasted), flour of roasted soybeans, defatted soybeans–whole seeds. Soybean products: Curd–unpressed, curd–tofu–raw (plain, kinugoshi, fukuroiri), curd–tofu–fried (moist type, dried type–regular size, dried type–small size, canned, abura age), curd–roasted [grilled], curd–tofu–fermented (home-prepared, jarred), curd–tofu (dried–spongy square, preserved, dried–rope-like, commercial {fermented with chili pepper}–jarred), curd cheese, curd sheet (milk clot sheet {yuba}) (moist type, dried type, pickled in soysauce), curd–pressed–raw (plain, fermented, spiced, strips–semi-dry), miso (Japan) (plain, sweet {5.3% salt added}, salty–light {10.4% salt added}, salty–dark {11.7% salt added}, mame-miso {9.7% salt added}, powdered {18.5% salt added}), paste [jiang] (plain, fermented, red pepper added, sweet, malt), soybean milk (unenriched–unsweetened, "Kaset" {Thailand; canned–concentrated, fluid}, Saridele {a mixture of soybeans, sesame seeds or peanuts, with vitamins and calcium added–Indonesia}), soybean sauce (dark–thick, light–thin, unspecified), tempeh (fermented soybean product, Indonesia), "Budo-mame" (cooked–Japan), Soybean residue [okara] (liquid, powder). Urd: See Mungo bean. Velvetbean (*Mucuna utilis; Stizolobium utilis;* incl. dried or mold-treated {tempeh}). Winged bean: See Goabean, Indes.

Food Group 4 titled "Nuts and seeds (p. 23-29) includes: Almonds, hemp seeds–whole, perilla–common (*Perilla frutescens*), safflower seeds, sesame seeds, sunflower seeds (*Helianthus annuus*), watermelon seeds.

Food Group 5, titled "Vegetables and vegetable products" (p. 30-75) includes: Amaranth, mungbean sprouts, seaweeds (many types), soybeans–immature seeds [green vegetable soybeans], soybean sprouts (raw, cooked).

Note 4. This is the earliest English-language document seen (March 2004) that mentions silken tofu, which it calls (in a table): "Curd, tofu, raw: 'Kinugoshi,' Japanese preparation."

Note 5. This is the earliest English-language document seen (Dec. 2005) that contains the term "flour of roasted soybeans."

Note 6. This is the earliest English-language document seen (Oct. 2006) that uses the term "Blackeyed pea" to refer to the cow pea. Address: Dep. Health Education and Welfare.

364. Ebata, Junko; Fukuda, Y.; Hirai, K.; Murata, K. 1972. Tenpei no kôsan kasei busshitsu no seisei ni kanyo suru □-gurukoshidaaze [□-glucosidase involved in the antioxidant formation in tempeh, fermented soybeans]. *Noka* (*Agricultural Chemistry*) 46(7):323-29. [10 ref. Jap; eng] • ***Summary:*** The □-glucosidase involved in formation of antioxidants (some isoflavones) from fermented soybeans with *Rhizopus oligosporus* was investigated. Genistin was hydrolysed. Address: Faculty of the Science of Living, Osaka City Univ., Osaka, Japan.

365. Slamet, Dewi Sabita. 1972. The nutrient content of some protein-rich fermented foods and by-products from beans and nuts. Paper presented at International Course in

Food Science and Nutrition, Leuven, Netherlands. 15 p. * Address: Indonesia.

366. Sugimoto, Yoshimi; Murata, Kiku. 1972. Tenpei no kôsan kasei yûkô busshitsu no kensaku [Studies on the antioxidative factors in tempeh]. *Osaka Shiritsu Daigaku Kaseigakubu Kiyo* (*Bulletin of the Faculty of Home Economics, Osaka City University*) 20:13-19. [9 ref. Jap; eng]
Address: Osaka Shiritsu Daigaku, Katei Gakubu, Japan.

367. Food and Agriculture Organization of the United Nations (FAO). 1972. A selected bibliography of East-Asian foods and nutrition arranged according to subject matter and area. [Washington, DC]: Food and Agriculture Organization of the United Nations; U.S. Dept. of Health, Education, and Welfare. vii + 296 p. Dec. 27 cm. [1500* ref]
• ***Summary:*** This book has two title pages and can be cited in two ways. See Leung (1972). Address: Dep. of Health Education and Welfare.

368. Gandjar, Indrawati; Slamet, Dewi Sabita. 1972. Tempe gembus hasil fermentasi ampas tahu [Okara tempeh, a fermented product from soymilk residue]. *Penelitian Gizi dan Makanan* (*Research on Food and Nutrition*) 2:70-79. [11 ref. Ind]
• ***Summary:*** Okara tempeh contains 84.9% moisture, 8.4% carbohydrate, 4.0% protein, 2.1% fat, and 0.7% ash, plus 226 mg of calcium per 100 gm. Address: 1. Balai Penelitian Gizi Unit Diponegoro, Departemen Kesehatan R.I., Jakarta; 2. Balai Penelitian Gizi Unit Semboja, Departemen Kesehatan R.I., Bogor, Indonesia.

369. Hermana, -; Sibarani, Sujana; Herlinda, Judith. 1972. Percobaan perbaikan campuran "Tempe Fish Rice" [Experiment on the improvement of Tempeh Fish Rice mixture as a protein source]. *Penelitian Gizi dan Makanan* (*Research on Food and Nutrition*) 2:57-61. [4 ref. Ind]
• ***Summary:*** The previous composition of Tempeh Fish Rice was modified for the consumption as a food supplement by pre-school children. Composition the of the TFR was 30% tempeh powder, 30% rice flour, 10% fish meal, 25% sucrose, and 5% peanut oil. Improvement of quality was achieved. Even though the nutritional components were about the same, the NPU (Net Protein Utilization) was higher. The flavor, color, and aroma of the mixture were stable during the 10-week storage period. Address: 1. Balai Penelitian Gizi Unit Semboja, Departemen Kesehatan R.I., Bogor, Indonesia; 2. Bagian Gizi dan Makanan Departemen Ilmu Kesejahteraan Keluarga Fakultas Pertanian, Institut Pertanian Bogor; 3. Balai Penelitian Gizi Unit Diponegoro, Departemen Kesehatan R.I., Jakarta.

370. Hesseltine, C.W.; Wang, H.L. 1972. Fermented soybean food products. In: A.K. Smith and S.J. Circle, eds. 1972. Soybeans: Chemistry and Technology. Westport, CT: AVI Publishing Co. xiii + 470 p. See p. 389-419. Chap. 11. [54 ref]
• ***Summary:*** Contents: Introduction. Koji. Miso: Preparation of koji, treatment of soybeans (mixing, fermentation). Shoyu: Incl. chemical shoyu. Natto. Hamanatto. Tempeh. Sufu [fermented tofu]. New soybean products made by fermentation: Cheese-type products, fermented soybean milk, an ontjom-type product. 10. Future of fermented soybean foods.

Tables: (1) Demand for whole soybeans in Japan (1964-1967) to make miso, shoyu, and natto. In 1967, only 4.5% of the soybeans used to make miso were used in the form of defatted soybeans, whereas the same year 91.1% of the soybeans used to make shoyu were defatted. The total demand in 1967 (in 1,000 metric tons) was miso 177, shoyu 169, and natto 47. (2) Chemical composition of soybean foods: Miso (salty light, salty light, soybean miso), natto, soybeans. (3) Annual production of miso (1956-1967). Production of 530,078 tons in 1956 decreased to a low of 453,956 tons in 1962, then rose to 520,510 tons in 1967. (4) Composition of miso in relation to time of fermentation and ratio of soybeans:rice:salt for three types of miso: White miso, light-yellow salty miso, and yellow-red salty miso. (5) Average composition of shoyu made from whole soybeans and defatted soybean meal.

Illustrations (flowsheets): (1) Process for making red miso. (2) Process for manufacture of shoyu. (3) Process for making hamanatto. (4) Tempeh fermentation on a laboratory scale. (5) Preparation of sufu. (6) Preparation of soybean cheese. Address: NRRL, Peoria, Illinois.

371. Iljas, Nasruddin. 1972. Development and quality evaluation of soybean-based food–Tempeh. PhD thesis, Ohio State University. xi + 135 p. Page 3127 in volume 33/07-B of Dissertation Abstracts International. [132 ref]
• ***Summary:*** One part of fresh tempeh was mixed with 2 parts of chili sauce and 2 parts of tomato sauce, then cooked for 10-15 minutes. The flavor acceptability of the product was good. Address: Ohio State Univ., Columbus, Ohio, & Indonesia.

372. Jensen, J. Stoumann. 1972. Baelgplanten. Frugtens anvendelse og potentiel i menneskelig ernaering. En analyserende og diskuterende oversigt [Leguminous plants. Use of their seeds and its potential for human nutrition. An overview, with analysis and discussion]. Unpublished manuscript. Lyngby, Denmark. 110 p. Forwarded to DANIDA Sept. 1974. Unpublished manuscript. [23 ref. Dan]
• ***Summary:*** Under East Asian soyfoods, mentions soy sauce, miso, natto, sufu, and tempeh. Address: Dep. of Biochemistry & Nutrition, Technical Univ. of Denmark, Lyngby, Denmark.

373. Liener, I.E. 1972. Nutritional value of food protein products. In: A.K. Smith and S.J. Circle, eds. 1972. Soybeans: Chemistry and Technology. Westport, CT: AVI Publishing Co. xiii + 470 p. See p. 203-77. Chap. 7. [417 ref]
• ***Summary:*** Contents: 1. Introduction. 2. Protein and amino acid requirements of man: Protein requirements, amino acid requirements. 3. Evaluation of protein quality: Amino acid composition, biological techniques involving animals, protein efficiency ratio (PER), N-balance studies, plasma amino acids, experiments with human subjects, amino acid availability, in vitro techniques (physical tests, available lysine, tests for biologically active components [urease, trypsin inhibitor], enzymatic and microbiological techniques). 4. Nutritional significance of other soybean constituents: Available energy, vitamins (fat-soluble vitamins, water-soluble vitamins), minerals (calcium, phosphorus, zinc, other minerals), unknown growth factor(s). 5. Factors affecting the nutritive properties of soybean protein: heat treatment, supplementation with amino acids, storage, germination, effect of antibiotics, dietary source of carbohydrate. 6. Soybean products used for human consumption: Soybeans as a vegetable, soybean flour (incl. Multi-Purpose Food (MPF)), soybean milk, soybean curd, other fractions, protein concentrates, protein isolates (use in infant foods, use in textured foods), fermented products (tempeh, natto, miso). 7. Use of soybean products as protein supplement: As supplement to wheat protein (bread, other baked goods), as supplement to corn, as supplement to rice, use in vegetable protein mixtures, peanut and other oilseed proteins, blends containing corn, other cereals and legumes. Address: Univ. of Minnesota.

374. Nakano, Sasuke. 1972. Ryôri no kigen [The origin of foods]. Tokyo: Nihon Hoso Shuppan Kyokai. 225 p. [Jap]
• ***Summary:*** The important chapter titled "The natto triangle and miso," by Sasuke Nakao (p. 118-27) discusses natto, its relatives and ancestors in East Asia, and the "natto triangle" theory (with a map). Nakao hypothesized that natto originated in the monsoon area of Southeast Asia, where there are East Asian evergreen forests. He considered Yunnan province in China to be the original center of natto. His theory is based on the observation that there are many varieties of non-salted fermented soyfoods and soy condiments inside the "natto triangle." Yunnan province in southwest China, Thailand, Myanmar (Burma), Bhutan, Nepal, Indonesia, and Japan all fall within this triangle.

Note: The term "natto triangle" can be misleading, especially for non-Japanese. Natto is the only non-salted fermented soyfood or soy condiment indigenous to Japan. Natto is made by fermenting whole, cooked soybeans with bacteria (*Bacillus natto,* or *Bacillus subtilis*) in a warm place (ideally 104ºF or 40ºC) for about 24 hours. According to various Japanese legends, natto originated almost 1,000 years ago in northeast Japan when cooked soybeans were placed in a rice-straw sack strapped over the back of a horse. The natto bacteria are found abundantly on rice straw, and the warmth of the horse's body aided the fermentation. Under these conditions, the fermentation would take place naturally, without intentional inoculation. The "natto triangle" refers to the geographical area within a large triangle in East-, South-, and Southeast Asia–the only place in the world where non-salted fermented soyfoods and soy condiments are indigenous. A number of these–such as tempeh in Indonesia and unsalted soy nuggets in China–are fermented primarily with molds (e.g., *Rhizopus, Aspergillus*) rather than bacteria. The triangle has its three corners in northeastern Japan (on the northeast, for natto), northeastern India and Nepal (on the west, for kinema and thua-nao), and Java (Indonesia, on the south, for tempeh).

375. Nurrachman, -. 1972. Beberapa proses bahan makanan fermentasi secara tradisional di Indonesia [Several traditional Indonesian food fermentation processes]. Thesis (Skripsi), Akademi Gizi, Jakarta. 50 p. [Ind]*
• ***Summary:*** A bibliographic study on fermented foods, among which are tempeh and onchom (oncom). Address: Jakarta, Indonesia.

376. Smith, A.K.; Circle, S.J. 1972. Historical background (on soybeans and soybean foods). In: A.K. Smith and S.J. Circle, eds. 1972. Soybeans: Chemistry and Technology. Westport, CT: AVI Publishing Co. xiii + 470 p. See p. 1-26. Chap. 1. [53 ref]
• ***Summary:*** Contents: 1. Introduction. 2. U.S. history: Introduction of soybeans, processing for oil, soybean oil. 3. Soybean meal and protein: Animal feed industry, poultry industry, industrial uses. 4. Soybean production. 5. Oriental history: Ancient history, Oriental fermented foods (shoyu, miso, tempeh, ontjom, natto, hamanatto, tao tjo [Indonesian-style miso], kochu chang, ketjap), Oriental nonfermented foods (soybean milk, tofu), wedge press. 6. Soybeans and world food problems: Green Revolution, protein supplements (high protein food formulations, AID funded), amino acids, CSM, cottage industries.

Concerning industrial uses (p. 8-9): Soybeans rose in popularity as an agricultural crop in the USA at a time when other crops such as corn, wheat, cotton, and tobacco were being produced in surplus quantities. Soybeans took over much of the acreage vacated by these crops. "At that early period it was the hope of many leaders of agriculture, government, and industry that much of the oil and protein of the soybean could be diverted from the food and feed industries into industrial products such as paints, varnishes, soap stock, plastics, adhesives, plywood glue, paper coating and lamination, paper sizing, textile fibers, and other uses... In 1936 the US organized the Regional Soybean Industrial Products Laboratory for this purpose. These new industrial

uses were expected to help relieve the problem of farm surpluses... In 1935 the Glidden Company built the first plant for the isolation of industrial grade soybean protein (transferred to Central Soya in 1958). The largest use of industrial grade protein is in the paper-making industry, for coating and sizing of paper board.

"After World War I, soybean meal, because of its low cost, replaced casein as an adhesive for Douglas fir plywood glue, where it still retains a substantial part of the market for the interior grade product."

"While soybean proteins have several important industrial applications, especially in the paper industry for coating and sizing paper, which are expected to continue for years to come, the original dream of an ever-expanding industrial market [for soy proteins] has faded. In the polymer market it appears that for most applications the proteins cannot be made competitive with the increasing number of low cost, high quality synthetic resins... It is generally recognized that the increasing demand for proteins for feed and food will greatly surpass the anticipated industrial uses."

A graph (p. 1) shows: Soybean production in the United States for seed, 1940-1970. Address: 1. Oilseeds Protein Consultant, New Orleans, Louisiana; 2. Director, Protein Research, W.L. Clayton Research Center, Anderson Clayton Foods, Richardson, Texas.

377. Smith, Allan K.; Circle, Sidney J. eds. 1972. Soybeans: Chemistry and technology. Vol. 1. Proteins. Westport, Connecticut: AVI Publishing Co. xi + 470 p. Illust. Index. 24 cm. [500+ ref]
• ***Summary:*** One of the best and most comprehensive reviews on the subject, with extensive information on modern soy protein products. Each of the 12 chapters is written by an expert on the subject. Volume 2 was never published. Address: 1. PhD, Oilseeds protein consultant, New Orleans, Louisiana; 2. PhD, Director, Protein Research, W.L. Clayton Research Center, Anderson Clayton Foods, Richardson, Texas.

378. Smith, A.K.; Circle, S.J. 1972. Appendixes: Glossary of soybean terms: Terms used in conjunction with the processing of soybeans and the utilization of soy products. Official standards of The United States for soybeans. In: A.K. Smith and S.J. Circle, eds. 1972. Soybeans: Chemistry and Technology. Westport, CT: AVI Publishing Co. xiii + 470 p. See p. 438-56. Appendix. [4 ref]
• ***Summary:*** Glossary: Soybean(s), soybean processor, soybean processing (solvent extraction, mechanical processing, pre-press solvent processing), soybean oil, crude soybean oil, edible crude soybean oil, refined soybean oil, edible refined soybean oil, hydrogenated soybean oil, degummed soybean oil, winterized oil, technical grade refined soybean oil, soybean fatty acids, soybean soapstock, acidulated soybean soapstock, soybean lecithin, break material, sludge.

Soybean products: Ground soybeans, ground soybean hay, soybean hulls, solvent extracted soybean feed, soybean meal, dehulled solvent extracted soybean meal, soybean mill feed, soybean mill run, heat processed soybeans, nitrogen free extract (N.F.E.).

Standard specifications: Soybean chips, soybean cake, 41% protein soybean meal, soybean flakes, 44% protein soybean meal, dehulled soybean flakes, 50% protein solvent extracted soybean meal.

Soybean proteins: Soy flour, soy grits, soybean meal, defatted soy flour, low-fat soy flour, high-fat soy flour, full-fat soy flour, lecithinated soy flour, protein, isolated protein, toasting, textured protein products (TPP), meat analogs. Definitions: Soy grits and/or soy flour, isolated soy protein, soy protein concentrate.

Vegetable fats: Margarine, vegetable shortening.

Oriental foods: Soy sauce (shoyu), soy milk, miso, tofu, dried tofu, aburaage, kinako, namaage, ganmodoki, tempeh, natto, yuba, moyashi (soybean sprouts), vanaspati, ghee.

Official standards of the U.S. for soybeans. Soy flour standards. Analytical data range of commercial soy protein. Some U.S. companies marketing soy protein food ingredients. Nitrogen solubility index (NSI). Protein dispersibility index (PDI). Urease activity. Water absorption of soy flour. Address: 1. Oilseeds Protein Consultant, New Orleans, Louisiana; 2. Director, Protein Research, Anderson Clayton Foods, Richardson, Texas.

379. Spicer, A. 1972. Fungi as protein for food use. In: Proceedings of the [Sixth] International Symposium on Conversion and Manufacture of Foodstuffs by Microorganisms. Tokyo: Saikon Publishing Co. viii + 297 p. See p. 221-23. Held 5-9 Dec. 1971 at Kyoto, Japan. [Eng]
• ***Summary:*** Discusses: Incaparina, miso, tempeh. Address: The Lord Rank Research Centre, High Wycombe, Bucks, U.K.

380. Stanton, W.R. ed. 1972. Waste recovery by microorganisms: Selected papers for the UNESCO/ ICRO Work Study. Kuala Lumpur: Ministry of Education, Malaysia. 221 p. Held at the University of Malaya.
• ***Summary:*** UNESCO stands for the United Nations Educational, Scientific, and Cultural Organization. Address: Prof. of Botany, Univ. of Malaya, Kuala Lumpur, Malaysia.

381. Stanton, W.R. 1972. Microbially produced foods in the tropics. In: Proceedings of the [Sixth] International Symposium on Conversion and Manufacture of Foodstuffs by Microorganisms. Tokyo: Saikon Publishing Co. viii + 297 p. See p. 133-39. Held 5-9 Dec. 1971 at Kyoto, Japan. [21 ref. Eng]
• ***Summary:*** Includes a discussion of tempeh and ontjom. Address: Univ. of Malaya, Malaysia.

382. Thio, Goan Loo. 1972. Soybeans, soybean products and their application: A brochure prepared for a programme of introduction of soybeans for human nutrition in the Republic of Zambia. Royal Tropical Institute, 63 Mauritskade, Amsterdam-East, Netherlands. Annex III in Thio 1972, Introduction of Soybeans for Human Nutrition, Republic of Zambia. See p. 19-36. June. [Eng]
• ***Summary:*** Contents: Introduction. Soybeans. Soybean products (incl. immature soybeans in the pods): Soymilk, soybean curd (soybean cheese or toufu [tofu]), soy steak (tempeh). Applications of soybeans and soybean products: Fried soybeans, boiled young whole soybeans, fried soybean curd (fried toufu), dried sliced toufu (toufu crisp), soymilk residue flour [ground okara], soycroquettes (soyrolls), soybiscuits, vegetable soysoup, soy-omelette (toufu omelette), toufu salad with peanut sauce, soy maize bread. Appendix: Average chemical composition of soybeans. Address: RTI, Amsterdam East, Netherlands.

383. Winarno, F.G.; Fardiaz, Srikandi; Daulay, Djundjung. 1973. Indonesian fermented foods. Bogor: Agricultural University Bogor. 25 p. Originally presented as a lecture by Winarno to Regional Graduate Nutrition Course, SEAMEO, Jakarta, in Jan. 1973. [11 ref]
• ***Summary:*** Also titled "Indonesian Traditional Food Processing." Address: Dep. of Agricultural Product Tech., Bogor Agricultural Univ.

384. Aykroyd, W.R.; Doughty, J. 1973. Anyone for tempeh? A recipe. *Nutrition Today* 8(2):31. March/April. Reprinted from the author's book Legumes in Human Nutrition (1964). Rome: FAO. [1 ref]

385. Bruijn, J. de.; Frost, D.J.; Nugteren, D.H.; Gaudemer, A.; Lijmbach, G.W.M.; Cox, H.C.; Berends, W. 1973. The structure of bongkrekic acid. *Tetrahedron* 29(11):1541-47. June. [19 ref]
• ***Summary:*** From NMR and MS studies, a new structure is proposed for the toxic antibiotic bongkrekic acid (BA), which is given by the formula: 3-carboxymethyl-17 methoxy-6,18,21-trimethyldocosa 2,4,8,12,14,18,20-heptaenedioic acid. Address: 1-3. Unilever Research, Vlaardingen, The Netherlands; 4. Institut de Chimie des Substances Naturelles, Gif-sur-Yvette, France; 5-7. Delft Univ. of Technology.

386. Ho, Coy Choke; Koh, Chong Lek; Chong, C.N. 1973. The *ontjom* fungus, its identification and hybridization with other *Neurospora* species (Abstract). *Genetics* 74(2, Part 2):s116. June. Supplement. Proceedings of the Thirteenth International Congress of Genetics.
• ***Summary:*** The authors use analyses of conidia color and crossing experiments based on meiotic sterility to show that the cultures on okara onchom (*ontjom tahu*) belong to a single species, *Neurospora intermedia.* Address: Dep. of Genetics and Cellular Biology, Univ. of Malaya, Kuala Lampur, Malaysia.

387. Harper, Anne. comp. 1973. Soybean processing and utilization: A partially annotated bibliography. Jakarta, Indonesia: Lembaga Ilmu Pengetahuan Indonesia (Indonesian Inst. of Sciences), Jl. Tjhik Ditiro 43, Jakarta. vi + 56 leaves. 30 cm. [440 ref. Eng]
• ***Summary:*** Contents: Preface (by Prof. Sarwono Prawirohardjo, Chairman, ASEAN Permanent Committee on Science and Technology). Introduction: The soybean (Glycine max), soybean meal and oil, food uses, industrial uses, scope of the bibliography ("excludes references to non-alimentary utilisation of soybeans" and to "references to alimentary utilisation where the harvested plant has not undergone processing by either fermentation or oil extraction"), terminology of soybean processing (soybean meal, soy flours and grits, solvent extraction, miscella, desolventizer-toaster, defatted soy flour, low-fat soy flour, high-fat soy flour, full-fat soy flour, lecithinated soy flour, soy protein concentrates, soy milk, Saridele, yuba, soybean curd [tofu], aburage, koritofu [kori-dofu, dried frozen tofu], soy protein isolate, protein fibre products {spun, spinnerettes}, extrusion-expansion products, fermentation products {ontjom, Neurospora sitophila, soysauce, shoyu, Aspergillus oryzae, koji, moromi, tamari, koikuchi, natto, miso, tempeh, Rhizopus oligosporus, soybean cheese, sufu, Mucor sufu}, Zygosaccharomyces).

General (p. 1). Fermentation products (p. 2-16). Soybean oil, meal, and protein (p. 17-42). Nutrition (p. 43-56). Note: 500 copies were printed. Address: Indonesia.

388. *PAG Bulletin* (*Protein Advisory Group, WHO / FAO / UNICEF*).1973. PAG statement (No. 22) on upgrading human nutrition through the improvement of food legumes. 3(2):1-24. Summer. [106 ref]
• ***Summary:*** Identified research deficiencies in the most prevalent food legume crops and proposes desirable procedures for increasing yield and improving nutritional and food use qualities. "The PAG recommends urgent research attention to six major species of food legumes: dry peas, pigeon peas, cow peas, chick peas, broad beans, and peas; and the two leguminous oilseeds, peanuts and soybeans."

389. György, Paul. 1973. Stabilized edible oil and fat compositions containing oil of tempeh. *U.S. Patent* 3,762,933. Oct. 2. 4 p. Application filed 21 June 1971. [8 ref]
• ***Summary:*** Tempeh oil is extracted from tempeh using a solvent (50% aqueous ethanol solution) and used as an antioxidant for edible fats and oils. The peroxide value (POV) is a measure of the oxidative rancidity of an oil. The larger the POV value, the more rancid is the oil. When 100%

soybean oil was stored for 35 days at 37ºC (98.6ºF) the POV was 118. However if a mixture of 90% soybean oil and 10% tempeh oil was stored under the same conditions, the POV dropped to 55. And when a mixture of 50% soybean oil and 50% tempeh oil was stored under the same conditions, the POV dropped to 8. The same type of stabilizing effect was found with corn oil, cottonseed oil, safflower oil, and lard. Address: 201 Curwen Rd., Rosemont, Pennsylvania 19010.

390. Ilany (Feigenbaum), J. 1973. Soybean food for today and tomorrow. *Gordian* (*Hamburg*) 73(10):390-91. Oct.; 73(11):428-30. Nov.; 73(12):464-65. Dec. [21 ref. Eng; ger]
• ***Summary:*** "This is a short review of what is chiefly known at present of this wonderful bean, which only a few years ago, constituted a strange and exotic food." Contents: Introduction. Composition and nutritional value. Green soybeans. Sprouted soybeans. Soybean flours. Isolated proteins. Soy-food products of the Far East: Kinako, soymilk, yuba, "tofu or curd–soycheese," aburage, natto, Hamanatto, tempeh, miso, shoyu or soy sauce. Soybean oil. Lecithin.

Concerning tofu: Tofu made in the regular way "is called 'Fresh Tofu.' It does not keep long, even under refrigeration, unless it is further processed. For this purpose it may be canned, frozen, fried, smoked, or fermented."

Note: This is the earliest English-language document seen (Aug. 2011) that contains the term "soycheese"; it uses this term to refer to regular tofu.

391. Iljas, N.; Gould, W.A.; Peng, A.C. 1973. New soybean food made from tempeh. *Ohio Report on Research and Development* 58(6):125-26. Nov/Dec.
• ***Summary:*** Eight tempeh-based foods were developed using tomato products as the second ingredient. The most acceptable of these was a sort of tempeh sloppy joe. The recipe is given. Address: Dep. of Agricultural Research and Development Center, Ohio State Univ.

392. Yamamoto, Yukiko. 1973. Hakkô daizu, tenpei no eiyô-ka ni tsuite [The nutritional value of fermented soybeans and tempeh]. *Hyogo Joshi Tandai* No. 6/7. p. 128. [Jap]*

393. Cowan, J.C. 1973. Processing and products [soybeans]. In: B.E. Caldwell, ed. 1973. Soybeans: Improvement, Production, and Uses. Madison, Wisconsin: American Society of Agronomy. xviii + 681 p. See p. 619-64. Chap. 20. [52 ref]
• ***Summary:*** Contents. 1. Introduction. 2. Processing for oil and meal: Preparation of flakes, solvents, extraction, desolventizer-toaster, degumming. 3. Conversion to edible oil products: Refining, bleaching, deodorization, hydrogenation. 4. Edible fat products: Salad and cooking oils, status of flavor stability, shortenings and margarine oils, lecithin. 5. Essential fatty acids and atherosclerosis. 6. Industrial uses of oil. 7. Meal for livestock and poultry: Nutritional aspects, factors affecting use of meals. 8. Edible protein products: Soy flour, concentrates and isolates, textured protein products (textured soy flour or textured soy protein fibers made into "meat analogues" resembling chicken, bacon, etc.). 9. Fermented and specialty foods: Tofu, soybean milk (an intermediate step in the manufacture of tofu), miso, shoyu (tamari, light-colored shoyu), sufu, tempeh, hamanatto, and natto.

Soybeans flow through a crushing plant as follows: First, they are cracked to release or loosen the hull and to break the cotyledon into about 4 parts. Shakers and aspirators separate the hull from the cracked cotyledons and rollers flake them. "Purified petroleum hydrocarbons known as hexane extract the oil from the flakes and the solvent is recovered. Moistened flakes are heated to inactivate the antinutritional factors and are converted to feeds for livestock and poultry. A small proportion of the flakes goes to a wide variety of soybean protein products including flour, isolates, and concentrates."

Tables show: (1) Utilization of soybean in U.S. in million pounds, every 5 years from Oct. 1933 to 1970 (Kromer 1970). (2) Use of soybean meal in the USA for feeding livestock and poultry (million tons). In 1969, the estimated amounts used were as follows: Cattle 3.43. Hogs 1.69. Other livestock 1.73. Total livestock: 6.85. Broilers 3.07. Hens and pullets 1.28. Other poultry 1.10. Total poultry 5.45. Total livestock + poultry 12.30. Note that cattle are the single biggest users. (3) Bleaching soybean oil (process, % clay and type, change in Lovibond color rating). (4) Effect of bleaching, citric acid, and light exposure on soybean salad oil. (5) Specifications for soybean oil. (6) Effect of linolenate content on flavor of soybean oil at elevated temperatures. (7) Composition of certain edible oil products from soybean oil and related products (salad oil, hydrogenated-winterized soybean salad oil, hydrogenated soybean oil liquid shortening, plastic shortening types I and II). (8) Changes in iron and copper content of soybean oil in commercial refining. (9) Properties of all-purpose and high-stability shortenings from all-hydrogenated vegetable oils and blends of animal fat and/or vegetable oil (iodine value, melting point, % linoleic acid, solid fat index {% solid at temperatures indicated}). (10) Typical analyses for mellorine and cookie and confectioner's fat. (11) Analytical data for typical margarine oils low and high in polyunsaturates (iodine value, melting point, % linoleic acid, solid fat index {% solid at temperatures indicated}). (12) NSPA–tentative lecithin specifications (NSPA, 1969-1970). (13) Composition of soybean lecithins. (14). Approximate composition of soybeans and meal products (whole bean, cotyledon, hull, hypocotyl, meal {cake–extruded, flakes–solvent extracted, dehulled flakes–extracted, mill feed–separated hulls, mill run–separated hulls}). (15) Amino acid analysis of soybean meal (44% protein and 49% protein {dehulled}) and corn.

(16) Amino acid analysis of blends of soy flour with cereals and milk (Inglett 1968; Corn soy milk {CSM}, Millet soy milk, Wheat soy milk, etc.). (17) Partial formulas for young swine and boiler rations in percent total rations. (18) Partial formulas for dairy feeds (14% protein). A supplement to forage or roughage. (19) Soybean grits and flour–screensize. (20) Composition of soy flour. (21) Composition of 4 types of soy protein concentrates. (22) Uses for high-protein soy products (protein 70 [concentrates] and protein 90 [isolates]). Note: This is the earliest English-language document seen (Dec. 2004) that uses the term "protein 90" to refer to a soy protein isolate. (23) Amino acid analysis of fractions derived from dehulled extracted flakes (Rackis et. 1961, 1970). (24) Effect of cooking in salt solutions on texture of structured granules. (25) Composition and use (1,000 metric tons in 1964 and 1967) of soybeans for traditional foods in Japan (Use of whole soybeans in 1967 in 1,000 metric tons: Miso 169. Shoyu 15. Natto 47. Tofu 329. Total 642. Use of defatted flakes or grits in 1967 in 1,000 metric tons: Miso 8. Shoyu 154. Natto 0. Tofu 77. Total 284).

Figures show: (1) Flowchart: Processing of soybeans to oil and meal using hexane extraction. (2) Illustration: A modern soybean processing facility (aerial view, Central Soya, Inc.). (3) Schematic diagram / flowchart: Manufacture of edible soybean oil products (salad oil, salad and cooking oil, shortenings, margarines, liquid shortening). (4) Illustration: A continuous deodorizer for soybean oil. (5) Graph: Effect of prolonged storage at 100ºF on flavor score of hydrogenated-winterized soybean oil or soybean salad oil (nitrogen packed, air packed). (6) Illustration: Continuous chilling and working equipment for margarine production (Votator Div., Chemetron Corp.). (7) Flow diagram; Conversion of emulsions of margarine oils and ripened milk to conventional stick, whipped stick, and tub margarines (Votator Div.) (8) Chemical structure of prostaglandin-E_2, a fatty acid with hormone activity. (9) Diagram: Vapor-desolventizer- deodorizer for soybean flakes (Blaw-Knox Co.). (10) Flowchart and diagram: Operations with extruder-cooker. (11) Flow diagram: Manufacture of protein 70 [soy protein concentrate]. (12) Schematic diagram: Manufacture of soy protein isolate (Protein 90). (13) Photo: Chicken-simulated soy protein "meat" in three forms (Swift Edible Oil Co.). (14) Photo: Protein tow containing 16,000 monofilaments spread apart to show its fibrous nature; other tows in background (General Mills, Inc.). Address: NRRL, Peoria, Illinois.

394. Hermana, -; Roedjito, S.W.; Karyadi, Darwin. 1973. Advances in the preparation of tempe. II. Preparation of tempe mold inoculum and observation of its activity during storage. *Gizi Indonesia, J. of the Indonesian Nutrition Association* 5(1-2):2-7. Presented initially at the 4th International Fermentation Symposium. Held 19-25 March 1972 at Kyoto, Japan. 9 p. [5 ref]

• ***Summary:*** "Tempeh mold inoculum can be made by growing mold on rice or steamed cassava flour. The mold culture is then dried in the sun when the spores have fully matured. It is then ground to a powder. The spores may also be taken off from the dried culture by rubbing them off with wheat flour. Rice flour or tapioca flour may be used as substitutes for wheat flour. The flours are also used to dilute the concentration of the spores in the inoculum.

"Another type of tempeh mold inoculum can be made by grinding dried tempeh into powder.

"Inoculum made by growing tempeh mold on rice is the best of the three, is easily prepared and is inexpensive. The shelf life is at least 6 months when stored in a closed container at room temperature (25ºC)." Address: 1. Research Associate, Nutrition Research Inst., Bogor; 2. Dep. of Botany, Bogor Agricultural Univ., Bogor; 3. Director, Nutrition Research Inst., Bogor, Indonesia.

395. Hermana, -. 1973. Tempe: An Indonesian fermented soybean food. In: W.R. Stanton, ed. 1972. Waste Recovery by Microorganisms: Selected Papers for the UNESCO/ ICRO Work Study held at the University of Malaya. Kuala Lumpur: Ministry of Education, Malaysia... 221 p. See p. 55-62. Held 1-18 May 1972 at Kuala Lumpur, Malaysia. Illust, Maps. 27 cm. [34 ref]

• ***Summary:*** An excellent early summary. Contents: Introduction. Methods of preparation: Dehulling, packaging. The mold (*Rhizopus* species): Characteristics desirable for a strain of mold used to manufacture tempe, requirements for mold growth. The inoculum: Methods used to prepare it. Nutritive value: Changes in protein (soluble nitrogen, changes in amino acids and free amino acids), changes in lipids (strong lipolytic activity, changes in fatty acid composition, changes in linolenic acid, acid number and pH), changes in carbohydrates, changes in B vitamins, changes in solids (and soluble solids), changes in nutritive value of protein (changes in PER). Uses of tempe (keeping quality, extending shelf life by sun drying or deep frying).

A table (p. 60) shows the nutritive value of tempe per 100 gm.

Note: This is the earliest document seen (Sept. 2011) that describes commercial production of tempeh. Address: Bandung, Indonesia.

396. Hudayah, Haryati. 1973. Mampelajari kemungkinan penggantian proses pengupasan kulit biji kedele dengan perlakuan bahan kimia pada pembuatan tempe [The possibility of chemical treatment as an alternative to soybean dehulling in tempeh processing]. Thesis (Skripsi), Fakultas Teknologi Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia. 23 p. [Ind]*
Address: Yogyakarta, Indonesia.

397. Hunter, Beatrice Trum. 1973. Fermented foods and

beverages. New Canaan, Connecticut: Keats Publishing Co. 116 p. Index. 18 cm. [38 ref]
• ***Summary:*** In the chapter titled "Soybeans" (p. 31-49), the author discusses tofu (and how to make it at home with or without fermentation), meitauza (fermented okara), hakko tofu (a newly developed high protein food; fermented soybean curd), sufu (Vietnamese call it Chao), shoyu, miso, ketjap (thick Indonesian soy sauce [probably ketjap manis]), tempeh, Hamanatto, natto, Tao-cho from Malaysia, and Tao-si from the Philippines.

Note: The author has collected her information (both correct and incorrect) for a number of sources, which she does not cite directly, although she does have a bibliography.

398. Iljas, Nasruddin; Peng, A.C.; Gould, W.A. 1973. Tempeh: An Indonesian fermented soybean food. Wooster, OH: Ohio Agricultural Research and Development Center, Dept. of Horticulture. 36 p. Horticulture Series No. 394. [134 ref]
• ***Summary:*** An excellent review of the literature with a large bibliography. Contents: Introduction. Production and consumption of soybeans (worldwide). Nutritive value. Deficiencies inherent in soybeans: Amino acid, beany flavor, antinutritional factors. Tempeh: The tempeh mold, methods of preparation, Changes in chemical composition (proteins and amino acids, lipids, carbohydrates, vitamins, minerals), nutritive value, preservation, acceptance and potential use.

Footnote (p. 1): "Part of the review was from a Ph.D. dissertation by the senior author at The Ohio State University. Present address: Fakultas Pertanian, Universitas Negeri Seriwidjaja, Djl. Bukit Besar, Palembang, Indonesia." Address: Ohio State Univ.

399. van Veen, A.G. 1973. Toxic properties of certain unusual foods. In: National Academy of Sciences, National Research Council, Food and Nutrition Board, Food Protection Committee. 1973. Toxicants Occurring Naturally in Foods, 2nd ed. Washington, DC: National Academy of Sciences. vii + 624 p. See p. 464-76. Chap. 21. [47 ref]
• ***Summary:*** Includes discussions of *Leucaena glauca,* and bongkrek (incl. bongkrek acid and mimosine). The literature is reviewed through 1970. Address: Graduate School of Nutrition, Cornell Univ., Ithaca, New York 14850.

400. Saono, Susono; Gandjar, Indrawati; Basuki, Triadi; Karsono, Herry. 1974. Microflora of ragi and some other traditional fermented foods of Indonesia. *Annales Bogorienses* 5(4):187-204. Feb. [14 ref]
• ***Summary:*** "Studies have been conducted on the microflora of samples of 'ragi", 'tapé ketéla' [tapeh ketela, from cassava] or 'peuyeum', 'tapé ketan hitam' [from black glutinous rice], 'oncom hitam' [onchom from peanut presscake or cassava presscake], and 'oncom mérah' [onchom merah] or 'oncom beureum' [from peanut presscake or okara; both terms mean "red onchom"] from various places in West Java. Genera found in ragi include *Candida, Mucor* and *Rhizopus* species.

Appendix I, titled "Fermented products of Indonesia" lists 26 different traditional fermented products. Those made from soybeans and related products include: Kécap–Soy sauce made from black soybeans. Oncom mérah–Okara onchom. Témpé kedelé–Tempeh made from soybeans. Témpé bengook–Tempeh made from the ripe seeds of *Mucuna pruriens* var. *utilis.* Témpé lamtoro–Tempeh made from the seeds of Leuceuna leucocephala. Témpé gembus–Okara tempeh. Témpé bongkrék–Tempeh made from the solid refuse of coconut meat. Many of these foods are prepared with the help of a starter called "ragi," a small, slightly flattened dry ball consisting of rice powder, spices, and microorganisms. Ragi témpé, for example, is the type of ragi used to make tempeh.

Appendix II, titled "Methods of preparation of 'ragi,' 'tapé ketela, 'tapé ketan,' 'oncom hitam,' and 'oncom merah' in West Java" contains 1-2 paragraphs on each. On pages 200-204 are detailed illustrations showing the morphology of 14 species and varieties of yeast.

Note 1. The Treub Laboratory was named after Dr. Treub, who was associated with the founding of the Buitenzorg Botanical Gardens in the 1880s. He was there in the mid-1890s.

Note 2. This is the earliest document seen (March 2010) that contains the word "oncom" (spelled in that way). Address: 1,3-4. Treub Lab., National Biological Inst., Bogor; 2. Nutrition Research Inst., Dep. of Health, Bogor.

401. Steinkraus, Keith H. 1974. Research on traditional Oriental and Indian fermented foods. *Current Science and Technology, Special Report* No. 16. p. 10-13. April. (Cornell University). [13 ref]
• ***Summary:*** Discusses tempeh, ontjom, idli, Ecuadorian "yellow" rice, Indonesian tape (tapeh, tapé), fermented soy milks, and fish paste, including their nutritive value, digestibility (apparent digestion coefficient), vitamins, and acceptability, plus thoughts on the wholesomeness of fermented foods. Address: Prof. of Microbiology, Dep. of Food Science & Technology, New York State Agric. Exp. Station, Geneva, New York.

402. Kay, Theodore. 1974. Soybeans in the Nigerian diet. *Samaru Agricultural Newsletter* 16(1):18-22. May. [Eng]
• ***Summary:*** Contents: Introduction. Nutritional value of the soya bean. Daily amino acid requirements for men, women, and children. Suggested methods of incorporating soya bean into the Nigerian diet: Soya bean paste (soaked, uncooked soya beans, with the hulls on, ground to a white paste) and whole beans (not dehulled). Utilization of the paste: Directly for kosei (akara ball) and panke (puff-puff), for preparation of soya bean milk, which can be used to make protein-

enriched pap, fu-fu, bean curd (to-fu), awara or wara. Use of the residue from preparation of soy bean milk [okara]: In Alele (moin-moin), or biscuits. Utilization of whole soya beans: baked, sweet baked powder, stew. Discussion: Why do we need soya bean in Nigeria? Five reasons are given. Acknowledgments to many co-workers.

The soya bean has been cultivated in the Far East since about 2800 B.C. It has [been] the main source of protein for all of East Asia, particularly for the vegetarian Buddhist. It has been used as bean curd (To-fu) and soya sauce in most parts of the Far East from Indonesia up to the Northern end of Japan, as soya bean milk in China, as soya paste (mi-so) in Japan, and as a fermented product (Tempe) in Indonesia.

The crop is well established in Benue Plateau State south of Makurdi, in the North-Western State around Abuja and in the southern part of North-Central State. However, it has been very difficult to cook the beans in a traditional West African way so it has never become popular in this country. Most of the soya bean produced in Nigeria has been exported as a cash crop, except a little for animal consumption. Address: Inst. for Agricultural Research, Samaru, Ahmadu Bello Univ., PMB 1044, Zaria, Nigeria.

403. Wang, H.L.; Vespa, J.B.; Hesseltine, C.W. 1974. Acid protease production by fungi used in soybean food fermentation. *Applied Microbiology* 27(5):906-11. May. [17 ref]
• ***Summary:*** The authors investigated growth conditions for maximum protease production by *Rhizopus oligosporus, Mucor dispersus,* and *Actinomucor elegans.* In East Asia, the first of these three molds is used to make tempeh, and the latter two are used to make sufu. Enzyme yields for all 3 were higher in solid substrate fermentations than in submerged culture. Of the 3 substrates tested–wheat bran, wheat, and soybeans–wheat bran was the best for enzyme production. The optimal conditions for maximum enzyme production were as follows: *Rhizopus oligosporus,* 50% moisture at 25ºC for 3-4 days; *Mucor dispersus,* 50 to 63% moisture at 25ºC for 3-4 days; *Actinomucor elegans,* 50 to 63% moisture at 20ºC for 3 days. Address: NRRL, Peoria, Illinois.

404. Beuchat, Larry R.; Worthington, R.E. 1974. Changes in the lipid content of fermented peanuts. *J. of Agricultural and Food Chemistry* 22(3):509-12. May/June. [28 ref]
• ***Summary:*** "Full-fat peanuts were fermented with *Neurospora sitophila, Aspergillus oryzae, A. Niger, Rhizopus oligosporus,* and *R. delemar.* Total lipids, total fatty acids, and free fatty acids (FFA) were measured at incubation times ranging up to 116 hr" [hours]. Address: Dep. of Food Science, Univ. of Georgia, Experiment, GA 30212.

405. Ellis, John J.; Wang, H.L.; Hesseltine, C.W. 1974. *Rhizopus* and *Chlamydomucor* strains surveyed for milk-clotting, amylolytic, and antibiotic activities. *Mycologia* 66(4):593-99. July/Aug. [11 ref]
• ***Summary:*** "Nine strains of *Chlamydomucor oryzae* and 347 strains of *Rhizopus,* representing 10 species, were grown in rice flour and wheat flour media. When grown on wheat flour medium, nearly all strains exhibited amylolytic activity and more than 300 strains showed milk-clotting activity. Almost all strains of *R. arrhizus* exhibited antibiotic activity against NRRL B-765 *Bacillus subtilis.* The 23 strains of *R. stolonifer* showed none of these activities. Renninlike proteinases from microorganisms have attracted interest in the past few years as possible substitutes for rennin in making cheese." Address: NRRL, Peoria, Illinois.

406. Gandjar, Indrawati; Steinkraus, K.H. 1974. Biochemical, nutritional, and organoleptic changes occurring during production of indigenous fermented foods. In: UNESCO/ICRN/ITB Training Course on Indigenous Fermented Foods. 25 p. Held 12-31 Aug. 1974 at Bandung, Indonesia. *
• ***Summary:*** Discusses kecap ([pronounced kechap], soy sauce), tauco ([taucho] Indonesian-style miso), tempeh, idli, tapeh ketan, and terasi.

Note: This is the earliest English-language document seen (March. 2009) uses the word "tauco" (spelled in that way) to refer to Indonesian-style miso.

407. György, Paul; Murata, K.; Sugimoto, Y. 1974. Studies on antioxidant activity of tempeh oil. *J. of the American Oil Chemists' Society* 51(8):377-79. Aug. [4 ref]
• ***Summary:*** A powerful water-soluble antioxidant has been isolated from tempeh and recognized as 6, 7, 4'-trihydroxyisoflavone. Crude oil extracted from dried tempeh (with 2 parts hexane and 1 part alcohol and recovered by evaporation of the solvents) contains this antioxidant, and when small amounts of this oil are added to typical vegetable oils or lard it protects them from autoxidation, i.e. prevents the typical rise in their peroxide value, even after exposure to air and at temperatures of up to 60ºC for many weeks. "This mixture appears to be, at present, the best natural way of preserving various kinds of oil in fresh condition for long periods of time. Soy oil, which under ordinary commercial conditions (in bottles without complete elimination of air), develops undesirable flavor within a few months, retains, for an almost indefinite period of time when mixed with a small amount of tempeh oil, its normal physical, chemical, and gustatory qualities."

The tempeh isoflavone, however, did not show any protective antioxidant effect when it was added to soybean powder or soybean oil. Address: 1. Dep. of Pediatric Research, Philadelphia General Hospital, Philadelphia, Pennsylvania 19104; 2-3. Faculty of Science of Living, Osaka City Univ., Osaka, Japan.

408. Robinson, Robert J.; Kao, Chuan. 1974. Fermented foods from chickpea, horse bean, and soybean (Abstract). *Cereal Science Today* 19(9):397. Abst. #94. Sept.
• ***Summary:*** The authors made soybean tempeh, chickpea tempeh, and horse bean tempeh from dehulled 0.2 to 0.4 cm diameter grits. The soybean tempeh had the best flavor, texture, and color.

They also made soybean miso, chickpea miso, and horse bean miso from the grits. Compared with soybean miso, chickpea miso's color was darker, while horse bean miso's is lighter.

Note: This is the earliest document seen (Sept. 2002) concerning miso made without soybeans; chickpeas and horse beans were used instead. Address: Kansas State Univ., Manhattan, Kansas.

409. Rusmin, Simon; Ko Swan Djien. 1974. Rice-grown *Rhizopus oligosporus* inoculum for tempeh fermentation. *Applied Microbiology* 28(3):347-50. Sept. [15 ref]
• ***Summary:*** A method of growing tempeh starter culture on cooked rice is described and evaluated. The spores of *Rhizopus oligosporus* survived best at low temperature (4ºC) and intermediate humidity (50% relative humidity). "The activity of the rice-grown inoculum to ferment soybeans into tempeh did not decrease appreciably when stored desiccated for one year at 4ºC or room temperature. Bacterial contaminants as high as 100 million counts per gram of cooked soybeans did not seem to affect the fermentation."

In Indonesia, tempeh starter is sometimes grown on the crushed leaves of *Musa* [banana] species, *Kothrina* species, *Hibiscus similis,* or *Tectona grandis,* which are placed inside the package of inoculated soybeans. The leaves, which become covered with mycelium during fermentation, are sun-dried and stored for inoculum.

Present addresses: Rusmin: School of Biological Sciences, University of Kentucky, Lexington, KY 40506. Ko: Food Science Dep., Agricultural University, Wageningen, The Netherlands. Address: Laboratorium Mikrobiologi, Institut Teknologi Bandung, Bandung, Indonesia.

410. *Soybean Digest.*1974. Soybean research from ancient to ultramodern. Nov. p. 24-25.
• ***Summary:*** About the research work of Dr. H.L. (Hwa Li) Wang and her husband Dr. Li Chuan Wang, both of the USDA's Northern Regional Research Lab., Peoria, Illinois. Mrs. Wang, a biochemist, is studying tempeh. Her husband researches soy protein yields. Describes how to make tempeh and tempeh starter.

Photos show: (1) Dr. H.L. Wang holding a packet of freeze-dried tempeh starter. On the table is a sausage-shaped roll of tempeh "for easy slicing and deep-fat frying." (2) Dr. L.C. Huang. (3) The two PhDs together holding a basket of mold cultures in test tubes.

411. György, Paul. 1974. Oil of tempeh. *U.S. Patent* 3,855,256. Dec. 17. 4 p. Application filed 27 June 1973. [2 ref]
• ***Summary:*** Tempeh oil is extracted from tempeh using a solvent and used as an antioxidant for edible fats and oils. See also the inventor's U.S. Patent 3,762,933 of 2 Aug. 1973. Address: 201 Curwen Rd., Rosemont, Pennsylvania 19010.

412. *Today's Living.*1974. How can you use soybeans? Let us count the ways. Dec. p. 20-23, 46, 48.
• ***Summary:*** A good introduction to tempeh and to food uses of soybean with 4 photos and recipes for Soy stuffed peppers (with ¼ cup soy grits) and Baked soybeans (with 2 cups dry soybeans).

It begins: "In the orient soybeans are used in 400 different ways, according to Charles B. Heiser in *Seed to Civilization."* "Soy protein is of very high quality, its amino acid content almost equalling that of eggs and meat."

Tempeh is a staple food throughout Indonesia with its 100 million people; it is made in hundreds of thousands of homes and in many small tempeh shops. "More than half of Indonesia's annual soybean crop is used for making tempeh." Gives a brief description of how Indonesians make tempeh.

413. Worthington, R.E.; Beuchat, L.R. 1974. Alpha-galactosidase activity of fungi on intestinal gas-forming peanut oligosaccharides. *J. of Agricultural and Food Chemistry* 22(6):1063-66. Nov/Dec. [26 ref]
• ***Summary:*** *Neurospora sitophila* and *Rhizopus oligosporus,* were examined for their ability to utilize sucrose, raffinose, and stachyose in peanuts. *N. sitophila,* showed definite □-galactosidase activity with a decrease in raffinose and stachyose content of ferments. *R. oligosporus* and 3 other strains did not utilize these sugars or utilized them only slowly. Address: Dep. of Food Science, Univ. of Georgia Agric. Exp. Station, Experiment, GA 30212.

414. Central Bureau of Statistics (CBS), Indonesia. 1974. [Industrial census]. Indonesia. [Ind]*
• ***Summary:*** Contains early statistics on commercial production of tempeh, tofu, Indonesian soy sauce (*kecap*), and Indonesian miso (*tauco*) in Indonesia. Producers are divided into 2 groups by size: Home industry (1-4 workers) and small scale industry (5 or more workers). The amount of soybeans processed in tonnes/year is as follows for home industry/small-scale industry: tempeh (1.8/12.3), tofu (3.8/15.2), soy sauce (0.8/3.7), and miso (4.7/6.3).

Note: This is the 2nd earliest document seen (Sept. 2011) that gives industry or market statistics for tempeh, or for tempeh in Indonesia.

415. Hermana, -. 1974. Saving the protein waste from processing of legumes in Indonesia. Bogor, Indonesia: Ministry of Agriculture, Nutrition Research Institute.

ASEAN 7FA/Wrks. GL1/Wop-13.
• ***Summary:*** See Hermana. 1976. "Saving the protein waste from processing of legumes in Indonesia." Address: Bogor, Indonesia.

416. P'ng, H.A.; Ho, Coy Choke. 1974. Analysis of protein, ribonucleic acid and carbohydrate contents for nutritional studies in the food fungus, *Neurospora intermedia* (Abstract). In: Proceedings of the First Malaysian Biochemical Society Conference. See p. 11. *
Address: Dep. of Genetics and Cellular Biology, Univ. of Malaya, Kuala Lampur, Malaysia.

417. Brackman, Agnes de Keijzer. 1974. Art of Indonesian cooking: The ABC's. Singapore: Asia Pacific Press. 127 p. 23 cm. First published in 1970.
• ***Summary:*** This recipe book, with a long introduction to each chapter, contains numerous soy-related recipes: Soya fish (Ikan ketjap, p. 24; Ketjap is "sweet soya sauce" [probably ketjap manis]). Soya fish, large (Ikan ketjap besar, p. 25). Soya chicken (Ajam ketjap, p. 38). Braised soya duck (Bebek smor ketjap, p. 48). Spicy soya sauce (Sambal ketjap, p. 74). Fermented soya beans (Sambal goreng tempe, p. 77; a must for the rijsttafel [rice table]). Peppered bean cakes [with tofu] (Sambal goreng tahoe, p. 82). Indonesian salad [with tofu] (Gado-gado, p. 85). Spiced soya (Sambal ketjap, p. 106).

The back matter notes that the best source of Indonesian ingredients is the Dutch company Conimex, in Baarn, Netherlands. There is a page of ideas for ingredient substitutes in the West (for sweet soya sauce substitute "equal amounts of Chinese or Japanese soya sauce and molasses"), and a 3-page Indonesian-English kitchen glossary. Address: Brookfield Center, Connecticut.

418. Hunter, Beatrice Trum. 1974. Favorite natural foods: Adapted from a series of programs on WGBH, Boston. New York, NY: Simon and Schuster. 219 p. Index. 21 cm. [154 ref]
• ***Summary:*** Contents: Foreword. 1. Vegetables, vegetables. 2. Perking up the salad bowl. 3. Sprouts (incl. legume seeds {alfalfa, chick pea, lentil, mung bean, peanut, pinto bean, soybean}, grain seeds, vegetable seeds, herb seeds, weed seeds, oil seeds {flax, safflower, sesame, sunflower}). 4. Whole grains. 5. The Cornell mix [for bread; Dr. Clive McCay]. 6. Sourdough. 7. Sauerkraut. 8. Yogurt. 9. Soybeans. 10. Satisfying that sweet tooth: Dried fruit desserts, confections, snacks. 11. Of special concern: Baby foods, brown-bagging, party fare, making good foods even better. Appendix.

Contents of chapter 9, Soybeans: Introduction. Soybean sprouts. Fresh green soybeans as a vegetable: Freezing, canning, drying. Recipes for whole dry soybeans (2). Making soybean pulp (put cooked, drained soybeans through a meat grinder; recipe for green peppers stuffed with soybean pulp). Roasting dry soybeans (soak, drain, and dry roast). Making soybean milk (recipes for spiced soybean milk, brown rice pudding with soybean milk). Making soybean curd (also called "soybean cheese" or "tofu." From soybean milk, from fermented soybean milk, from soybean flour, from soybeans). Using soybean flours (three types: high-fat or full-fat, low-fat or medium-fat, minimum-fat or fat-free). 100% soybean flour cookies (grain-free). Other soybean products you can buy: Soybean grits and soybean flakes (with 1 recipe). Soybean lecithin (with 2 recipes). Tamari, miso. The soybean and you: Meat alternatives, tempeh, textured vegetable protein products (inferior), fabricated soy foods in school lunch programs ("a nutritional crime"). Avoid mock foods.

About the author: She is the author of numerous books and winner of the French Company's Tastemakers Award. She and her husband, John, live in New Hampshire. Nationally known for her lectures and demonstrations on natural foods, she is a member of the Price-Pottenger Nutrition Foundation and twice a speaker for the Martha Jones Lectures in Nutrition at the Ashbury Theological Seminary in Kentucky. She holds a B.A. from Brooklyn College and a Master's degree from Columbia University. She has done graduate work at State Teachers College in Buffalo, New York, and at Harvard University. A small photo of Beatrice Trum Hunter appears on the front dust jacket of the hardcover edition. Address: New Hampshire.

419. Kao, Chuan. 1974. Fermented foods from chickpea, horsebean, and soybean. PhD thesis, Kansas State University. 143 p. Page 2250 in volume 35/05-B of Dissertation Abstracts International. *
Address: Kansas State Univ; PrAlBeBr.

420. Ko Swan Djien. 1974. Self-protection of fermented foods against aflatoxin. In: 1974. Proceedings Fourth International Congress Food Science and Technology. Madrid, Spain: International Union of Food Science & Technology. 6 vols. See vol. 3, p. 244-53. [7 ref]
• ***Summary:*** When making tempeh or onchom, the ability of *Aspergillus flavus* to produce aflatoxin B-1 was considerably suppressed when grown together with *Neurospora* species on a peanut substrate, or when it was grown together with *Rhizopus oligosporus* on soybeans. Large amounts of the aflatoxin mold (10 to 100 times normal levels) were used during inoculation, yet little or no aflatoxin was detected during the first 3 days of incubation at 30ºC. Therefore accumulation of aflatoxin during traditional fermentation of tempeh or onchom is unlikely when a natural contamination with *A. flavus* occurs. Address: Lab. of Food Microbiology & Hygiene, Dep. of Food Science, Agricultural Univ., Wageningen, The Netherlands.

421. Moosdean, Fardian. 1974. Diteksi dan evaluasi jamur penghasil antibiotika yang tumbuh pada makanan tradisi Indonesia yang difermentasikan [Detection and evaluation of antibiotic producing fungi on traditional Indonesia fermented foods]. Thesis (Skripsi), Bagian Biologi, Institut Teknologi Bandung, Bandung, Indonesia (PBITB. Biology Dep., Inst. of Technology at Bandung). 50 p. [Ind]*
• ***Summary:*** Discusses tapai (tapeh; fermented cassava), onchom, and tempeh. Address: Bandung, Indonesia.

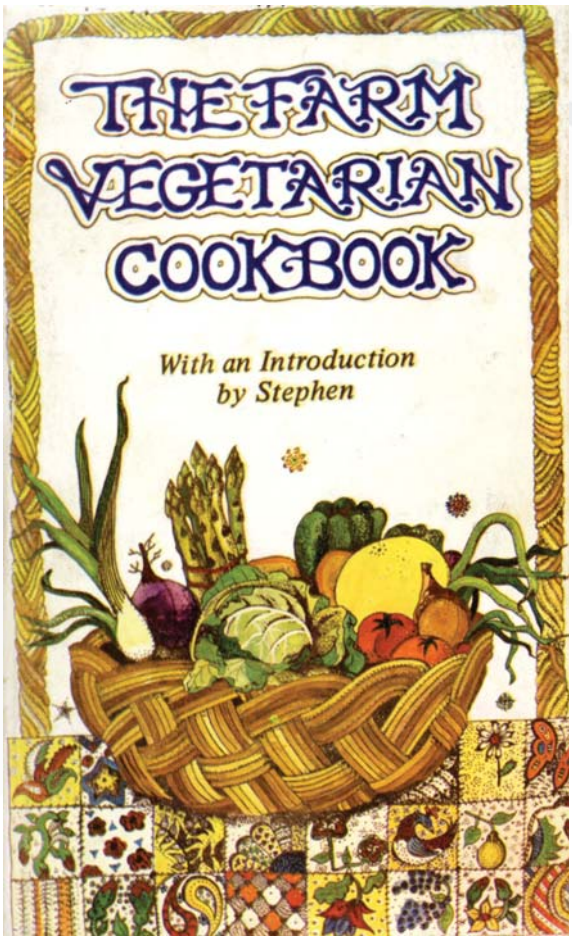
422. Rachie, K.O.; Roberts, L.M. 1974. Grain legumes of the lowland tropics. *Advances in Agronomy* 26:1-132. See p. 83-85. [493 ref]
• ***Summary:*** The main plants discussed are peanuts, pigeon peas, cowpeas, and mung beans. However under "Humid Tropics" (p. 83-85) is a rather long discussion of soybeans, which "has been extensively grown for a long time as a basic food crop of the low elevations in southeastern Asia (Indonesia, Philippines, Malaysia). More recently, investigations in India, the West Indies, and both East and West Africa have demonstrated that soybeans can be very successfully grown in the lowland tropics under favorable conditions. At present there is no other species that can so consistently produce on a hectare per day basis both high yields of good quality protein and oil. The main deterrent to increasing production of this species in many tropical regions is lack of markets and understanding of its cultivation and utilization." Discusses: Adaptation and problems. Utilization ("green beans (vegetable)," split, sprouted, soy milk, soy sauce, tofu, tempeh). Recent investigations.

"Perhaps the most successful campaign to introduce soybeans and find solutions to production and utilization problems has been in India with assistance from a USAID-sponsored contract with the University of Illinois. In Africa, French-sponsored research organizations have centered their activities mainly in Madagascar with testing and management experiments in the Cameroons [Cameroon] and Centralafrique [central Africa]." In English-speaking Africa, breeding programs are in place in Tanzania and Nigeria. Address: 1. International Inst. of Tropical Agriculture, Ibadan, Nigeria; 1-2. The Rockefeller Foundation, New York, New York.

423. Soewarbo, Sri Lawihana. 1974. Kemungkinan pemakaian usar dari kedelai kuning dalam pembuatan [The possibility of using usar from yellow soybeans in tempeh processing]. Thesis (Skripsi), Fakultas Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia. 29 p. [Ind]*
Address: Yogyakarta, Indonesia.

424. Wahyunto, Winarto Bangun. 1974. Kemungkinan pemakaian jamur murni pada pembuatan tempe [The possibility of using pure-culture molds in tempeh processing]. Thesis (Skripsi), Fakultas Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia. 21 p. [Ind]*
Address: Yogyakarta, Indonesia.

425. Farm, The. 1975. The Farm vegetarian cookbook. Summertown, Tennessee: The Book Publishing Co. 128 p. Illust. Index. 18 cm. Revised edition by L. Hagler. 1978. 223 p.



• ***Summary:*** Expanding on the pioneering "Yay Soybeans!" (1974), this creative and creatively illustrated vegan cookbook contains many extremely innovative and original recipes including: Soybean Stroganoff. Soyburgers. Spaghetti Sauce with TVP. Soysage. Soy fritters. Indonesian fried tempeh. Soymilk. Tofu. Tofu spreads. Soy "yogurt." Soy "cheese." Soy "butter" (made with soy flour). "Cream cheese" (made with soymilk). Soy "mayonnaise." Soy "whipped cream." Soy "coffee." "Soy 'nuts.'" Soy pulp granola. Ice Bean [soy ice cream] (Recipes include: Pineapple "sherbert" and "Vanilla ice bean," each made with soy milk instead of dairy milk). Mellowmeal (breakfast cereal containing soy flour). Soy "yogurt" Danish pastry. Soy bread. Soy pulp cookies. Soy "cheese cake." Blintzes (filled with tofu).

Gluten recipes (p. 54-59) include: Basic gluten (feeds 8 generously). Gluten roast. Gluten burritos. Chili gluten.

Oven-fried gluten. Janice's barbeque [barbecue] gluten ribs.

The rear cover states: "We are a large, long-haired spiritual community in Tennessee. We came together through open meetings in San Francisco with Stephen. We have 750 people, including 250 kids, living on 1,750 acres. This cookbook is to help as many people be vegetarians as possible without turning any of them off and making them think its strange or weird and to let people know that it tastes good, is nice, graceful, and it can be a turn-on, that it'd be really neat to eat, and make you look forward to meal-times and make you really happy to eat such good food." The Introduction, by Stephen, begins: "The thing about our cookbook is we don't want to be faddish or cultish or scare people off. We just honestly want them to know how to make it on vegies, even somebody who doesn't particularly have a moral reason for being a vegetarian, but just wants to eat a little cheaper, or somebody who learns to be a vegetarian to loose weight, 'cause you maintain a really healthy natural weight on vegetables... The main thing is that we're absolute vegetarians. We don't do meat or milk or eggs or cheese or fish or fowl."

"You can increase the world's food supply by being a vegetarian. So its good for everybody else, its good for the individual for health, and its good for the soul and the spirit not to be involved in killing. And I understand that vegetables are alive, but like I've said before, I've been to pig stickings, and I've been to rice boilings, and rice boilings have better vibrations than pig stickings."

Photos show: Facing title page: People planting white potatoes at the edge of a large field in front of the woods. The lady in front is Sylvia Tepper, Robert Tepper's wife. Pages: (1) Little Susannah Frohman eating a rolled up soybean tortilla. (3) Stephen Gaskin. (18) Ruth Thomas, making lunch in the kitchen of the only house on the property when Farm folks first came here. It housed The Farm's clinic, school, bank offices, and receptionist for a number of years until other facilities were built for these purposes. Ruth could make a mean soybean burger (which is pictured). (23) Laurie Sythe making potato soup on the other side of the same kitchen Ruth was pictured in. (35) Poblano chili plants. (60-61) Tempeh sliced to be round to fit on buns, resting on a plate (L) and a tray (R). (64). Uncle Bill (age 82, center, surrounded, from left by: Marilyn Keating, Jeffrey Keating, Ruth Thomas, Patrick Thomas, Uncle Bill, Joel Kachinsky, Roberta Kachinsky, Bruce Moore, Roslyn Moore {holding baby Sam}. All at their home on Schoolhouse Ridge. The house, named "Kissingtree," was originally built for Stephen and family, but he declared it "too fancy" for him, and he passed it on to this group {women were mostly schoolteachers in our school}). (67) Janice Hunter making stir fry at the Tower Road House kitchen. (68) John Hurgeton drinking a glass of soymilk on a construction site somewhere. (71) Sue Ellen, who worked in The Farm's soy dairy, holding a glass of soymilk and relaxing. (89) Sour soymilk Danish pastry. (106) Jars of canned goods stored at the Farm's canning facility. Thanks to Cynthia Holzapfel for providing photo captions.

Illustrations appear on almost every page: On the front cover is a color illustration of a basket full of vegetables on a quilt. Many of the pages have illustrated borders or unique illustrations (line drawings) (flowers, plants, leaves, a pot of steaming food, psychedelic designs, native American motifs, etc.) where there would otherwise be empty space. Pages: (10) A Farm member eating, with one hand, a tortilla wrap filled with cooked whole soybeans. (20) A young woman in a kitchen facing the stove. (28-29) Illustrations of two Farm members making pizza. (65) Uncle Bill in a kitchen stirring a pot. (81) A pitcher labeled "Soy Milk." (83) An old-fashion, hand-turned ice cream machine for making Ice Bean. (88) Sour soymilk Danish pastry. (95) A happy man and a woman eating bagels. The man's finger, pointing up, serves as a bagel holder. Yum! (100) Overhead view of a round table with ten people eating. (105) A vase full of kitchen utensils. (113) A lady holding a cake–a very favorite recipe on The Farm. (120) A lady rolling out dough on a table.

Note 1. This book played an important role in introducing soyfoods (especially tempeh and soy ice cream), as well as a vegan diet, to America.

Note 2. This is The Farm's earliest publication that contains a tempeh recipe.

Note 3. This is the earliest document seen (Oct. 2008) that contains the word "vegies" (one of two documents).

Note 4. This is also the earliest document seen (Oct. 2008) that uses the word "barbeque" or "barbequed" rather than the standard "barbecue." Address: Summertown, Tennessee.

426. **Product Name:** Tempeh [Soy, or Wheat-Soy].
Manufacturer's Name: Indonesian Tempeh Co.
Manufacturer's Address: R.R. 1, Unadilla, NE 68454. Phone: 402-780-5934.
Date of Introduction: 1975. February.
New Product–Documentation: Order from Gale Randall, Indonesian Tempeh Company, RR#1, Unadilla, Nebraska 68454. 1976. Oct. He orders The Book of Tofu, Vol. 2 (later renamed Tofu & Soymilk Production) and a catalog of tofu-making equipment.

Shurtleff & Aoyagi. 1977, Jan. What is Tempeh? p. 5.

Rodale, Robert. 1977. "Tempeh, a new health food opportunity." *Prevention* (Emmaus, Pennsylvania). July. p. 25-32. "Gale Randall of Unadilla, Nebraska, is the first commercial tempeh-maker in the United States.... Randall works in the Lincoln, Nebraska, post office at night and operates his tempeh-making operation during the day."

Letter from Gale Randall of Unadilla, Nebraska. 1978. Jan. 27. Describes how to make Wheat-Soy Tempeh at home. The wheat should be cracked as coarsely as possible in a hand mill.

Letter from Gale Randall. 1978. Aug. 28. "The Indonesian Tempeh Company has moved to somewhat larger quarters. We now make soy milk and tofu as well as a variety of tempeh products. The new address is Route 1, Box 146, Palmyra, Nebraska 68418.

Letter from Gale Randall. 1979. Undated. Gives a detailed, typewritten description of his process for making tempeh and the construction of his incubator. Shurtleff & Aoyagi. The Book of Tempeh. 1979 (July). p. 148. Owner: Mr. Gale Randall.

Visit to Gale Randall's tempeh shop in Palmyra, Nebraska. 1980. Summer. He now dehulls his soybeans wet, using a grist mill with coarse steel burrs that he got from a Sears catalog. He makes 50 to 100 eight-ounce packets of tempeh a day; he could make 300 to 1,000 if he had more equipment and time or labor. He has 2 incubators and each holds 50 packages. He built his own incubator from 4 by 8 sheets of pressed wood. It is 5-6 feet high. Between the pressed wood he sandwiched 3/4 inch Styrofoam. The shelves are 1/8 inch thick pegboard, with each supported by several boards to keep them from sagging. Heat is from 2 light bulbs, about 100 watts each, connected to a regular home thermostat. He now makes pinto bean tempeh and uses it unfried in soups. His tempeh now retails for $0.91 to $0.99 per 8 oz. cake.

Talk with Gale Randall. 1981. March 30. He started making tempeh commercially in the winter of 1975. A former high school teacher, he retired in 1971 and moved his family to the farm in Unadilla where he had grown up. Looking for alternative ways of securing his basic life needs (food, shelter, and clothing), he got interested in algae and single cell proteins (CSP). In about 1974 he happened to read about tempeh the proceedings of an international conference on SCP held in Kyoto in about 1971. He read of it again in the December 1974 issue of *Today's Living* (p. 20), a popular health food magazine published in New York. He contacted Dr. Wang at the USDA/NRRC in Peoria, Illinois, for starter and instructions. "She did everything possible to help me get started. She was wonderful." He made tempeh for his family for roughly 6-12 months, then built a tempeh shop in the basement of his home and began selling the product commercially. At night he worked in the post office in Lincoln, Nebraska.

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 49. This was America's first commercial Caucasian-run tempeh company, started by Mr. Gale Randall.

427. Wang, Hwa L.; Swain, E.W.; Hesseltine, C.W. 1975. Mass production of *Rhizopus oligosporus* spores and their application in tempeh fermentation. *J. of Food Science* 40(1):168-70. Jan/Feb. [8 ref]

• ***Summary:*** The authors recommend making *Rhizopus oligosporus* spores on a substrate of either rice, rice:wheat bran (4:1), or wheat:wheat bran (4:1) at a substrate to water ratio of 10:6 for 4-5 days at 32ºC. The fermented mass is then immediately freeze dried, ground into a fine powder, and stored in closed plastic bags, ideally at 4ºC.

Soybeans are not recommended for use as a substrate for spore production since, after extended fermentation with *Rhizopus oligosporus,* an unpleasant odor often resulted.

For inoculation, the authors suggest using 1 million viable spores per 100 gm of cooked soybeans or wheat. A rice-based substrate with 40% moisture will contain about 100 million viable spores per gram of starter. Tempeh was also made successfully from okara whose water content had been reduced to less than 80% by drying at 100ºC. It is then fermented at 32ºC for 20 hours. Address: NRRL, Peoria, Illinois.

428. Mustam, Muhammad. 1975. How to make tempeh at home and prepare Indonesian-style recipes using it (Interview). Conducted by William Shurtleff in Tokyo, Japan, March. 1 p. transcript.

• ***Summary:*** Note: William Shurtleff and Akiko Aoyagi, living in Tokyo, were first introduced to tempeh in March 1975, when friends at The Farm, a large spiritual community in Tennessee, sent them *The Farm Vegetarian Cookbook,* which had just been published. They read the section on tempeh with great interest. That same week, on an introduction from the Indonesian Embassy, they visited

Mr. Muhammad Mustam, a former tempeh maker living in Tokyo. He and his wife showed Shurtleff and Aoyagi how to make tempeh on a home scale; they were surprised at how quick and easy the process was. Two days later the Mustams invited Shurtleff and Aoyagi back to their home and used the freshly-made tempeh to prepare a feast of their favorite tempeh recipes. Their guests later wrote in the preface to their *Book of Tempeh:* Such appealing textures and savory flavors we had rarely tasted before. We were so impressed that we included the Mustams' tempeh making method and five recipes in our *Book of Tofu* that was just going to press."

In Indonesia, typical tempeh makers use 10 liters of soybeans at a time, and they prepare the tempeh in their own home. They soak the beans for 24 hours, then tread them underfoot in tightly woven bamboo baskets that are about 50 cm deep and 3 feet in diameter; the water drains out slowly due to the tight weave.

At home, rub soaked soybeans with one hand to remove the hulls, then float them off with running water. It is okay if the beans are split lengthwise into halves (two cotyledons), but try not to break the beans into small pieces. Then simmer the dehulled beans for 45 minutes over low heat and allow them to stand in the cooking water overnight; this causes a mild acid to form. Rinse and drain 5-6 times to give a milder, finer flavor. Add fresh water and cook over low heat for 15 minutes (the beans are still quite firm), then pour into a strainer and allow to cool to room temperature. Wash hands. Crumble 1½ teaspoons ragi (Indonesian tempeh starter cake, which looks like a tan cake of pressed sawdust) over the beans and mix it in. Spread the inoculated soybeans on a piece of aluminum foul (7 by 9 inches). Fold over all 4 sides to form a cake 4 by 3 by ½ inch thick. Seal the packet. Allow to stand at room temperature for 48 hours. The Mustams prepared the following recipes: Tempeh Goreng, Tempeh Kemul, Tempeh Bacham, Tempeh Kering. Address: Former Indonesian tempeh maker, living in Tokyo, Japan.

429. Steinkraus, Keith H. 1975. Exotic fermented foods for Americans. *New York's Food and Life Sciences Quarterly* 8(1):8-11. Jan/March.
• ***Summary:*** "Nearly all of us are familiar with soy sauce, the *shoyu* of Japan and China, since this is an exotic food that has become a part of our diet. Few Americans, however, know the flavor and aroma of genuine, fermented soy sauce or are aware of how the product is manufactured. Actually, much of the soy sauce available today is produced by hydrolyzing (digesting) soybeans with hydrochloric acid. This acid splits the proteins and lipids and other soybean components, yielding, when neutralized, a salty, tasty liquid that imparts a meatlike flavor to bland foods."

Describes how fermented shoyu is made. Then gives a brief introduction to miso, nuoc-mam and other fish sauces, fish pastes, tempeh kedele, ontjom (made from peanut presscake), bongkrek (made from coconut presscake), tapé, and idli.

Photos show: (1) A round tray of koji to be used for making soy sauce. (2) A man holding a tray on which are several large pieces of tempeh wrapped in banana leaves. (3) A deep tray filled with fresh, white tempeh, made at the New York State Agricultural Experiment Station. Address: Dep. of Food Science and Technology, New York State Agric. Exp. Station, Geneva, New York.

430. Kozaki, Michio. 1975. Tônan Ajia no hakkô shokuhin [Southeast Asian fermented foods]. In: Nippon Shokuhin Kogyo Gakkai (Japanese Society for Food Science and Technology). 1975. 22nd Convention: Special Lectures and Symposium. See p. 12-20. [Jap]
Address: Tokyo Nogyo Daigaku, Sakuraoka 1-1-1, Setagaya-ku, Tokyo, Japan.

431. Pusponegoro, Puspita. 1975. Makanan hasil proses fermentasi [Fermented foods]. Presented at Lembaga Kimia Nasional LIPI (National Chemistry Institute). Held 26 May 1975 at Bandung. [Ind]*

432. Girija Bai, R.; Prabha, T.N.; Ramachandra Rao, T.N.; Sreedhara, V.P.; Sreedhara, N. 1975. Studies on tempeh. I. Processing and nutritional evaluation of tempeh from a mixture of soybean and groundnut. *J. of Food Science and Technology* (*Mysore, India*) 12(3):135-38. May/June. [22 ref]
• ***Summary:*** A good tempeh-like product was prepared using a mixture of equal parts soybeans and partially defatted peanuts. This tempeh had a better quality than soy tempeh; all samples tested had PER values above 2.0, with a high of 2.84. Address: Central Food Technological Research Inst. (CFTRI), Mysore, India.

433. Quinn, M.R.; Beuchat, L.R.; Miller, J.; Young, C.T.; Worthington, R.E. 1975. Fungal fermentation of peanut flour: Effects on chemical composition and nutritive value. *J. of Food Science* 40(3):470-74. May/June. [39 ref]
• ***Summary:*** Ontjom was made from solvent-defatted peanut flour using *Actinomucor elegans, Aspergillus oryzae, Mucor hiemalis, Neurospora sitophila,* and *Rhizopus oligosporus.* Address: Dep. of Food Science, Univ. of Georgia Agric. Exp. Station, GA 30212.

434. Fukuyama, M.; Hirai, K.; Murata, K. 1975. Hakkô daizu, tenpe no kôsan kasei kôyô ketsu-sei inshi no shosei-shitsu [Properties of antioxidative and antihemolytic factor isolated from tempeh, fermented soybeans]. *Seikagaku* (*Biochemistry*) 47(8):771. Aug. Presented at the 48th Annual Meeting of the Japanese Biochemical Society. [1 ref. Jap]

435. Wang, Hwa L.; Swain, E.W.; Wallen, L.L.; Hesseltine, C.W. 1975. Free fatty acids identified as antitryptic factor in soybeans fermented by *Rhizopus oligosporus. J. of Nutrition*

105(10):1351-55. Oct. [16 ref]
• ***Summary:*** The trypsin inhibitory activity in tempeh comes from free fatty acids. "Oleic, linoleic, and linolenic acids are primarily responsible for the increased trypsin-inhibiting activity of cooked soybeans after fermentation. The free fatty acids are liberated from oil in the soybeans by fungal lipase, and they differ from other reported soybean trypsin inhibitors that are protein in nature." Address: NRRL, Peoria, Illinois.

436. Bates, Cynthia; Bates, Albert. 1975. Re: Making tempeh spores commercially. How to make okara tempe. Design of a community-scale tempe incubator. Letter to William Shurtleff, undated. 2 p. Handwritten.
• ***Summary:*** "Dear Bill, You must not have received our last letter. I wrote that I felt that we didn't have it together yet to offer tempe spores for sale in Japan right now. We will eventually though, I hope, but we have bitten off a big chunk already. Thank you for your generous offer though. Dr. Hesseltine's recipe is ½ teaspoon per pound (2½ cups) of semi-cooked beans. He sent me a packet of spores once with the directions. He also sent us our original culture and several reprints on tempeh.

"Your recipe for Homemade Tempeh looks fine. Am I correct that the '1 cup dry soybeans, washed and soaked' is 1 cup of dry beans? On second look, I'm sure that's what you meant, seems obvious. I've never cooked tempeh beans in a cooker before–always soaked them overnight. I find using freshly split beans makes it easier to get the hulls off. That's hard to do using whole beans. One way is to get them split by a miller for large quantity. Or do it yourself in a Corona mill. Another way is to soak the beans overnight then run them through a Corona mill on coarse setting so the beans are halved. The hulls come right off and can be poured off. It's important to get the hulls off because the mold can't penetrate the hull so there's a chance that an un-dehulled bean could spoil inside.

"To make okara tempe the okara must be somewhat cooked or the mold won't grow. For example, okara from the milk method on pg. 68 in the *Farm Vegetarian Cookbook* doesn't tempe because it's not cooked enough. Must be cooked in excess water (which it would be in [soy] milk making) about 15-20 minutes at above 195 [ºF]. This is a guess because I'm not experienced with more than 3 kinds of okara, but I feel it's pretty close. The okara must be coarse enough to allow free passage of air into the mass."

Note 1. A small illustration shows this with grits and rice. Note 2. The creative use of the word "tempe" as a verb.

"The recipe goes: 2½ cups well pressed okara. 2/3 tablespoon vinegar. 1 tablespoon dried spores (or ½ teaspoon Dr. Hesseltine's spores. His are more concentrated).

"The okara should be so dry you can squeeze a handful hard and not have any milk appear between your fingers except for a drop down between your fingers where they hook onto your hand. Squeezing a handful should leave your hand dry, not moist. Spread in a layer ½-inch deep in aluminum (not rust) window screen and cover with wax paper, plastic with holes punched in every ¼ to ½ inch.

"We have two incubators, one working and one being set up. The one [working] now is a plywood box with screen trays. Its heated by a turned down dryer heater, and also has a blower for air circulation. Trays are put in so that they are alternately in front or rear of the box so air circulation will be even. [A small illustration shows a side view of the box / incubator, with blower and stagger-stacked trays]. This box works well, but its not a sealed environment, so other microorganisms can get in. Plywood isn't very groovy for a large incubator–too wet and hard to clean. Our new box is a 3 door refrigerator. Shelves are food grade plastic PVC pipe and trays are food grade plastic sheets with 1/8 inch holes drilled every ½ inch.

Three small illustrations show: (1) Incubator tray. (2) Side view of shelves, showing where trays slide in. (3) Top view of inside of incubator showing trays, dehumidifier, furnace pipe, and fan inside.

"Its still in the experimental stages–dehumidifier is being put on. When the mold grows it gives of water–if it gets too wet in the incubator box, the mold won't grow.

"We like tempi a lot in sandwiches with just about anything–fried eggplant, onions, sauerkraut, tartar sauce.

"I talked with Stephen's wife Margaret, the Farm nutritionist, and she doesn't want you to put in the method of making [soy] milk from dry beans as the Farm's method because we don't like it and are changing our process. She would dig it if you would put in the one in the *Farm Vegetarian Cookbook,* page 68. I hope this doesn't inconvenience you too much. I'm really sorry. I should have figured that out in the first place.

"Oh, also we've made tempi on the farm by hanging a plastic 'sausage' in the rafters of our tent above the pipe on the woodstove. Works good, but may take 3 or 4 days depending on how often your stove is run.

Two small illustrations show: (1) Plastic bag made into a tube like a sausage, holes pinched in every 1 to 1½ inches. (2) Tempeh hanging from ridge pole above wood stove in tent.

"We are going to do a tempeh brochure soon. Spores are being tested in a lab for contaminants–will send them as soon as possible.

Wow, all those tofu recipes you sent are really gonna help us out, especially like the tofu mayonnaise. We don't use much oil because the price has gone high, but we really dig sandwich spreads and sauces. We really dig the reverence you feel for your work. We feel feeding folks is a holy duty. As Stephen says, 'The purpose of eating is to maintain that psychedelic experience we call life.'

"Love you, Albert & Cynthia."

Note. The Farm made the first okara tempeh in the Western world. Address: 156 Drakes Lane, Summertown,

Tennessee 38483.

437. Tovar Galvez, Luis Raul. 1975. Productos derivados del frijol soya tecnologias tradicionales en el Lejano Oriente [Traditional technology soy products in the Far East]. In: American Soybean Assoc., ed. 1975. Memorias: Primera Conferencia Latinoamericana Sobre la Proteina de Soya. Mexico City. 232 p. See p. 185-93. [14 ref. Spa]
• ***Summary:*** Descriptions of and flow sheets for the production of the following basic soyfoods are given: Miso, shoyu (*salsa de soya*), natto, tempeh, sufu (fermented tofu), and soy yogurt. A table shows the nutritional composition of each of these foods as well as yuba and kori-tôfu (dried-frozen tofu).

Note 1. This is the earliest Spanish-language document seen (Sept. 2011) that mentions tempeh, which it calls "tempeh."

Note 2. This is the earliest Spanish-language document seen (Feb. 2004) that uses the term "kori-tôfu" to refer to dried-frozen tofu. Address: Faculdad de Quimica, UNAM, Mexico.

438. Autumn Press, Inc. 1975. Imagine... (Ad for The Book of Tofu by Shurtleff and Aoyagi). *Macrobiotic* (*The*) (*Chico, California*) No. 111. p. 61. Dec. [1 ref]
• ***Summary:*** "Imagine... How strange it would seem if in the world's greatest wheat-producing country most of the people had never tasted bread. Yet no less unusual is the present situation in America, the world's greatest producer of soybeans, where the majority of people have not yet tasted, seen or even heard of tofu."

The Book of Tofu is 8½ x 11. 336 pages and has over 300 illustrations, $6.95.

"A family of foods developed over thousands of years in China and Japan, tofu is East Asia's way of using soy protein to complement a diet low on the food chain. Now available commercially across America in over 10 different forms, tofu can also be made at home–for pennies! Quick-and-easy to use in almost every conceivable type of Western-style preparation ranging from dips to desserts, these time-tested natural foods open new vistas of creative, healthful menu-planning–while offering a revolutionary approach to meeting the world's critical food requirements.

"*The Book of Tofu* contains: Over 500 recipes culled from East and West. Easy-to-follow instructions for making 7 varieties of tofu (plus soymilk, yuba and tempeh) at home and on a community scale. An illustrated description of the art of making tofu in a traditional Japanese shop. The most detailed glossary of Japanese foods ever compiled in English. And much, much more."

Note: This is the earliest advertisement seen that mentions tofu. Address: P.O. Box 469, Soquel, California 95073.

439. Shurtleff, William; Aoyagi, Akiko. 1975. The book of tofu: Food for mankind. Hayama-shi, Kanagawa-ken, Japan: Autumn Press. 336 p. Illust. by Akiko Aoyagi. Index. Dec. 28 cm. Rev. ed. 1977 Autumn Press, Brookline, MA. [53 ref]
• ***Summary:*** This pioneering work started the "tofu revolution" in America. Contents: Preface. Acknowledgements. Part I. Tofu: Food for mankind. 1. Protein East and West. 2. Tofu as a food: Introduction, rich in high quality protein (NPU, biological value, protein score, amino acid content), high protein complementarity (tofu contains an abundance of lysine, an essential amino acid that is deficient in many cereal grains; increase usable protein by combining tofu with wheat, rice, corn, etc.), easy to digest, an ideal diet food, low in saturated fats and free of cholesterol, rich in vitamins and minerals, a health-giving natural food, backbone of the meatless / vegetarian diet, free of chemical toxins, low in cost, easily made at home, quick & easy to use, versatile.

3. Getting started: Introduction, buying and storing tofu, basic ingredients (whole-wheat flour, miso {rice-, barley, and soybean miso, special Japanese miso, Chinese chiang}, oil, brown rice, salt, shoyu {natural shoyu, shoyu, Chinese soy sauce, synthetic or chemical soy sauce}, sugar, vinegar, monosodium glutamate {MSG}), Japanese kitchen tools (each illustrated), preparatory techniques (salt rubbing, rinsing and pressing leeks and onions, soaking burdock root, reconstituting dried sea vegetables {dried hijiki, wakame, agar}, wheat gluten and kampyo [kanpyo], parboiling, cutting tofu and vegetables, using sesame seeds, toasting nori, preparing a steamer), basic recipes (soup stocks and broths {dashi}, basic shoyu dipping sauces {*tsuke-jiru*}, miso toppings {sweet simmered miso / *nerimiso,* miso sauté / *abura miso,* special miso toppings and dipping sauces, finger lickin' miso, and regular miso}, miso salad dressings, nut and seed butter toppings, spreads and dressings, basic sauces, rice, noodles and other basic preparations).

Our favorite tofu recipes (lists about 80 recipe names for each of the different types of tofu, plus soymilk, yuba, whole soybeans, gô, okara, and curds; very favorites that are also quick and easy to prepare are preceded by an asterisk).

Part II. Cooking with tofu: Recipes from East and West (500 recipes). 4. Soybeans: History of soybeans and "soybean foods," cooking with whole dry soybeans, roasted soybeans (*iri-mame*), fresh green soybeans (*edamame,* incl. a recipe for "Sweet emerald bean paste {*Jinda*}*),"* kinako (roasted full-fat soy flour, incl. Japanese health food treats such as *kinako amé, gokabo, kokusen, kankanbo,* and *abekawa mochi*), soybean sprouts (*daizu no moyashi*), natto ("sticky fermented whole soybeans," with "gossamer threads"), tempeh (fermented soybean cakes), Hamanatto and Daitokuji natto (raisin-like natto), modern western soybean foods (natural soy flour [full-fat], soy granules, defatted soy flour and grits, soy protein concentrates, soy protein isolates, spun protein fibers, textured vegetable

protein {TVP}, soy oil products). 5. Gô (a thick white puree of well-soaked uncooked soybeans). 6. Okara or Unohana. 7. Curds and whey. 8. Tofu (includes history, and preparatory techniques: Parboiling, draining, pressing {towel and fridge method, slanting press method, sliced tofu method}, squeezing, scrambling, reshaping, crumbling, grinding, homemade tofu, tofu quick and easy {incl. Chilled tofu–Hiya-yakko}, tofu dressings, spreads, dips and hors d'oeuvre {incl. Tofu mayonnaise dressing, Tofu tartare sauce, Tofu cream cheese, Tofu sour cream, Tofu cottage cheese, Tofu guacamole}, tofu in salads {Western style and Japanese style salads incl. Shira-ae}, tofu with sandwiches and toast, tofu in soups {Western style and Japanese style soups, incl. miso soup}, tofu in sauces, tofu in breakfast egg dishes, tofu baked, tofu sautéed, stir-fried or topped with sauces {incl. Mabo-dofu [Ma Po doufu]}, deep-fried tofu, tofu with grains, tofu broiled {incl. Tofu dengaku}, tofu simmered in one-pot cookery and seasoned broths, tofu steamed, tofu desserts).

9. Deep-fried tofu: Thick agé or nama agé or atsu agé, ganmo or ganmodoki (incl. *hiryozu / hirosu*), agé or aburagé (incl. "Smoked tofu," p. 197). 10. Soymilk. 11. Kinugoshi ("*Kinu* means 'silk'; *kosu* means 'to strain'; well named, kinugoshi tofu has a texture so smooth that it seems to have been strained through silk." It is made from concentrated soymilk). 12. Grilled tofu (incl. sukiyaki). 13. Frozen and dried-frozen tofu. 14. Yuba (incl. many meat alternatives such as Yuba mock broiled eels, Buddha's chicken, Buddha's ham, sausage). 15. Tofu and yuba in China, Taiwan, and Korea (incl. Savory tofu {*wu-hsiang kan*}; see p. 258 for illustrations of many meat alternatives, incl. Buddha's fish, chicken, drumsticks, and duck, plus vegetarian liver and tripe, molded pig's head, and molded ham). One type of Korean soybean miso is called *kotsu jang* [sic, *kochu jang*]. When tofu is served with miso [Korean-style, *Tenjang*] as the dominant seasoning, and with rice, "it becomes the popular *Tenjang Chige Pekpem"* (p. 262). 16. Special tofu.

Note: This is the earliest (and only) English-language document seen (March 2009) that uses the word "Tenjang" to refer to Korean-style soybean jang (miso).

Part III–Japanese farmhouse tofu: Making tofu for more and more people. 17. The quest. 18. Making community tofu. 19. The traditional craftsman. 20. Making tofu in the traditional way.

Appendices: A. Tofu restaurants in Japan; many are vegetarian: In Tokyo: Sasa-no-yuki / Sasanoyuki, Goemon, Hisago, Sanko-in, Shinoda-zushi, Dengaku (south of Tokyo in Kamakura). In Kyoto: Nakamura-ro, Okutan, Takocho, Izusen, Junsei, Nishiki, Hakuun-an, Rengetsu, Sagano, Sorin-an. Tea ceremony cuisine (*Kaiseki ryori*), Zen temple cookery or Buddhist vegetarian cookery (*Shojin ryori*), Tea ceremony cookery from China (*Fucha ryori*), Wild gathered cookery (*Sansai ryori*). A directory of these and others, with addresses and phone numbers, is given (p. 312).

B. Tofu shops in the West (Directory of 43 shops in the USA, 3 in Europe, and 3-7 in Latin America {Mexico City, Rio de Janeiro and Sao Paolo, Brazil}). C. People and institutions connected with tofu. D. Table of equivalents. Bibliography. Glossary. Index. About the authors (autobiographical sketches; a photo shows Shurtleff and Aoyagi, and gives their address as New-Age Foods Study Center, 278-28 Higashi Oizumi, Nerima-ku, Tokyo, Japan 177). Sending tofu in the four directions.

Pudding recipes include: Rice pudding with gô and apple (p. 76, incl. 2 cups soymilk). Tofu chawan-mushi (p. 147; Steamed egg-vegetable custard with tofu). Tofu fruit whips (p. 148). Tofu rice pudding (p. 150, incl. 1 cup soymilk). Tofu custard pudding (p. 152). Soymilk custard pudding (p. 208). Brown rice pudding (p. 208, with 2 cups soymilk). Soymilk chawan-mushi (p. 209). Chawan-mushi with yuba (p. 249).

Dessert recipes include: Tofu whipped cream or yogurt (p. 148; resembles a pudding or parfait). Tofu ice cream (p. 149, with chilled tofu, honey, vanilla extract and salt). Banana-tofu milkshake (p. 149). Tofu cream cheese dessert balls (p. 149). Tofu icing (for cake, p. 149). Tofu cheesecake (p. 150). Tofu-pineapple sherbet (p. 151). Also: Soymilk yogurt (cultured, p. 205). Healthy banana milkshake (p. 206). On p. 160 is a recipe for "Mock tuna salad with deep fried tofu."

Note 1. This is the earliest English-language document seen (March 2007) that uses the term "Tofu ice cream" to refer to soy ice cream or that contains a recipe for "Tofu ice cream."

Note 2. This is the earliest English-language document seen (March 2000) that uses the term "Tofu Cheesecake" and the first to give a recipe for a tofu cheesecake.

Note 3. This is the earliest English-language document seen (May 2000) that uses the term "Tofu Sour Cream" (p. 109) or that contains a recipe for "Tofu Sour Cream."

Note 4. This is the earliest English-language document seen (Dec. 2003) that uses the term "tofu milkshake" or that gives a recipe for a shake made with tofu.

Note 5. This is the earliest English-language document seen (Feb. 2004) that uses the word "stringy" to refer to natto.

Note 6. This is the earliest English-language document seen (Feb. 2004) that uses the term "dried-frozen tofu."

Note 7. This is the earliest English-language document seen (March 2004) that describes preparatory techniques for tofu (p. 96-98).

Note 8. This is also the earliest English-language document seen (March 2004) that contains the term "smoked tofu."

Note 9. This is also the earliest English-language document seen (March 2004) that uses the term "kinugoshi tofu" to refer to silken tofu.

Note 10. As of March 2007, the various English-

language editions of this book have sold more than 616,000 copies.

Note 11. This is the earliest English-language document seen (June 2011) that uses the term "tofu lees" to refer to okara (see p. 22, 77).

Note 12. This is the earliest English-language document seen (Aug. 2011) that contains the term "Modern Western soybean foods" (see p. 69), a term that Shurtleff would soon (by 1983) replace by the more accurate "Modern soy protein products."Address: c/o Aoyagi, 278-28 Higashi Oizumi, Nerima-ku, Tokyo 177, Japan. Phone: (03) 925-4974.

440. Shurtleff, William; Aoyagi, Akiko. 1975. Tempeh (fermented soybean cakes) (Document part). In: W. Shurtleff and A. Aoyagi. 1975. The Book of Tofu. Hayama-shi, Kanagawa-ken, Japan: Autumn Press. 336 p. See p. 68-69.
• ***Summary:*** "These cakes of cooked soybeans, bound together by a fragrant, white mycelium of *Rhizopus* mold, have a delectable flavor: fried or deep-fried, they taste remarkably like fried chicken or veal cutlets. Rich in protein (18.3% fresh or 48.7% dried), tempeh is also highly digestible, and *Rhizopus* serves as an effective deactivator of trypsin inhibitor (p. 70). Like other fermented soy products (miso, shoyu, natto) and sea vegetables, tempeh is one of only a few non-meat sources of vitamin B12.

"For centuries prepared daily on a cottage scale throughout Indonesia (where it is a basic food for millions of people and makes use of more than 50 percent of the country's soybean crop), tempeh is also an important staple in New Guinea and Surinam, and is eaten on a small scale in Malaysia and Holland. Its adaptability to household industries and its low cost should make it, like tofu, a food of worldwide commercial interest during the coming decades.

"Tempeh can be prepared without difficulty in any Western kitchen using either whole soybeans, okara (p. 81), or cooked grains (wheat, rice, barley, or rye) fermented alone or mixed with soybeans. In Indonesia, ½ cup portions of partially cooked, inoculated soybeans are wrapped in banana leaves, tied, and fermented. For larger scale preparation, use (stainless steel) trays with 1/8-inch holes every 2 inches throughout the top and bottom, or similarly-perforated, sausage-shaped plastic bags 1½ inches in diameter. Be sure that all containers are well washed since even small amounts of oil or salt hinder mold growth.

"The starter is available from the U.S. Department of Agriculture, Northern Regional Research Lab., 1815 N. University Ave., Peoria, Illinois 61604. The Farm (p. 316) is now making up a brochure on tempeh preparation which will soon be available with the starter.

"To prepare new starter, carefully scrape darkened (sporulated) mycelium from the surface of freshly fermented cakes or from the wrapper or tray in which tempeh was fermented. Mix with 1 teaspoon (sterile) water and use in place of commercial starter.

"Homemade Tempeh: Makes 6 cakes.

"1 cup soybeans, washed and soaked for 18 hours in a mixture of 1 quart water and 1 teaspoon vinegar or lactic acid.

"½ teaspoon tempeh starter (*Rhizopus oligosporus* mold spores).

"Squeeze beans firmly and repeatedly with one hand in soaking water to remove all seed coats, then carefully pour off water and coats. Refill soaking container with water and repeat until all coats are removed. Combine drained beans and 4 cups water in a pot, bring to a boil, and simmer for 60 minutes. Drain beans, rinse 4 to 5 times under water, then drain well. Allow to cool to body temperature, then mix in starter. Divide inoculated beans into 6 equal portions, placing each at the center of a 7 by 9 inch piece of aluminum foil.

"Fold over sides, then ends of foil, sealing tightly, to form a 4- by 3- by ½-inch thick 'package.' Place packages in a warm clean place or incubator and allow to stand for 24 hours at 88º (or as long as 30 hours at 78º), or until beans are bound together into a cake by a fragrant white mycelium. For best flavor, serve these fresh tempeh cakes as soon as possible, cooked in any of the following ways:

"Deep-fried or Fried: Deep-fry cakes (or pan-fry on both sides) until crisp and golden brown. Serve topped with shoyu, ketchup, Worcestershire, or any of the following Basic Sauces (pp. 48 to 49): Onion, Mushroom, Sweet & Sour, Ketchup-Worcestershire, or Tomato & Cheese. Also delicious in sandwiches and soups.

"Tempeh Goreng (Savory Cutlets): Score both surfaces of 3 fresh tempeh cakes to a depth of 1/8 inch. Combine 3 tablespoons water, ½ teaspoon salt, ½ clove of crushed garlic, and ¼ teaspoon coriander. Add tempeh, marinate for 5 minutes, and drain well. Deep-fry in (coconut) oil (p. 130). Serve as an accompaniment for rice dishes, topped with red-pepper sauce (*sambal*) if desired.

"Tempeh Kemul (Crisp Chips): Cut 3 tempeh cakes horizontally into paper-thin slices; sun-dry for 5 minutes if desired. Combine 6 tablespoons (rice) flour, 1 clove of crushed garlic, ½ teaspoon salt, and ¼ teaspoon coriander. Mix in enough (coconut) milk to form a fairly thin batter, then add tempeh slices and allow to stand briefly. Deep-fry until crisp, and serve like potato chips. For variety use a well-salted tempura batter.

"Tempeh Bacham [Bachem] (Rich Fillets): Combine in a skillet ¼ grated onion, ½ teaspoon salt, 3 to 4 tablespoons brown sugar, and 1½ cups water. Add 3 tempeh cakes (cut crosswise into fourths), bring to a boil, and simmer until all liquid has evaporated. Deep-fry cakes and serve as for Tempeh Goreng.

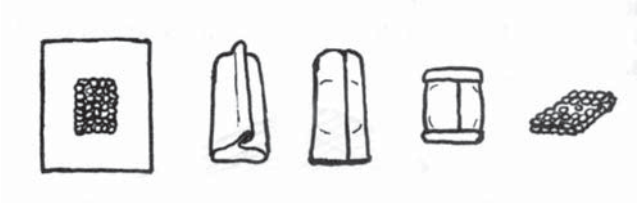
"Tempeh Kering (Fiery Sauté): Cut 3 tempeh cakes into paper-thin ½-inch squares; sun-dry for 1 to 2 hours if desired. Deep-fry and drain well. Sauté ½ clove of crushed garlic and ½ minced onion in 3 tablespoons oil for 5 minutes. Add 2 tablespoons each brown sugar and water, 1 to 2

minced red peppers, ½ teaspoon salt, and spices (*salam, laos, asam*) to taste: sauté for 2 minutes more. Add tempeh slices and sauté for 4 more minutes. Scoop out tempeh with a slotted spoon or spatula, drain briefly over wok or skillet, and serve as a topping for cooked rice.

"In Soups: Add diced fresh tempeh to soups and simmer for 30 minutes. Season with salt, miso, or shoyu.

"Baked or Roasted: Bake at 350º for about 20 minutes, or until nicely browned and fragrant. If desired, use as the basis for a pizza-type preparation, or serve topped with any of the sauces mentioned above."

Illustrations show: (1) Small round and square cakes of tempeh. (2) How to fold inoculated, cooked soybeans a small packet when making Indonesian-style homemade tempeh.



Note 1. This is the earliest published document seen (Oct. 2011) that describes how to make tempeh at home. The process was learned from an Indonesian couple, Mr. and Mrs. Mustam, in Tokyo, Japan, in March 1975.

Note 2. On 1 Sept. 1975 Shurtleff (in Tokyo) sent a copy of this entire section on "Tempeh" (typeset galley proofs) to Cynthia Bates at The Farm (Summertown, Tennessee) and requested her comments.

Address: Lafayette, California.

441. Shurtleff, William; Aoyagi, Akiko. 1975. The book of tofu: Food for mankind (Illustrations–line drawings). Hayama-shi, Kanagawa-ken, Japan: Autumn Press. 336 p. Illust. by Akiko Aoyagi. Index. Dec. 28 cm. Rev. ed. 1977 Autumn Press, Brookline, MA. [53 ref]

• ***Summary:*** Continued: Illustrations (line drawings, both numbered and unnumbered) show: A hearth in a traditional Japanese farmhouse with tofu dengaku roasting around a bed of coals in a sunken open-hearth fireplace. An old Japanese plum tree blossoming in winter. Three pieces of skewered tofu dengaku with a sansho leaf atop each in a special serving box. A sprig of sansho with berries. Stylized top of a soybean plant in a circle. Fig. (4) Tofu products available in the West (tofu, dofu, kinugoshi, thick agé triangles, cubes, and cake, agé and age puffs, hollow agé cubes, soymilk, tofu pudding, doufu-ru {white and red}, ganmo {patties, small balls, and treasure balls}, grilled tofu, dried-frozen tofu, instant powdered tofu, okara, dried yuba, soymilk curds, pressed tofu, savory tofu). A wooden cutting board and Japanese broad-bladed vegetable knife (nagiri-bôcho) with vegetables and tofu on a woven bamboo tray. (8) A wooden keg of red miso and a plastic bag of barley miso. (9) Shoyu in a metal can, wooden keg, glass bottle, and table-top dispenser. Traditional Japanese kitchen tools: *Miso-koshi* (woven bamboo strainer used in making miso soup). cutting board, Japanese vegetable knife, wooden spatula, bamboo rice paddle (*shamoji*) and spoon, woven bamboo colander or tray (*zaru*), suribachi, Japanese grater (*oroshi-gané*), sudaré (bamboo mat), pressing sack for tofu or soymilk, serrated tofu-slicing knife, tawashi scrub-brush (made of natural palm fiber), wok with draining rack and wooden lid, stir-frying ladle and spatula, long cooking-chopsticks, mesh skimmer, deep-frying thermometer, Chinese bamboo steamer (*seiro*), charcoal brazier (*konro, shichirin*), broiling screen. Covered pot steamer. Small lidded pottery pot. More kitchen tools (p. 50-51). (10) A soybean measuring box (*isshô-bako*). (11) The soybean plant. Two views of a soybean seed with seed coat, hilum, and hypocotyl labeled. A bag full of soybean. Roasted soybeans in a woven bamboo tray (*zaru*). Edamamé in the pods. Three shapes of kinako treats. Soybean sprouts. Natto on a bamboo mat (*sudare*). Natto wrapped in rice straw as it ferments. A hand holding chopsticks that lift natto up from a bowl of natto–connected by gossamer threads. Tempeh (round and square pieces). Wrapping a small packet of inoculated soybeans to make tempeh. (15) Two Japanese women in traditional clothing using hand-turned grinding stones (quern) to grind soaked soybeans when making tofu. (16) Push-pull grinding stones. (17) Motor-driven grinding stones. (18) Water-powered millstones. (19) Wind-powered millstones. (20) Unohana. (21) A tofu maker sitting on a traditional lever press that presses soymilk from the okara in a pressing sack on a rack. A heavy iron skillet. (22) Folding okara omelet pouches. Okara doughnuts. (23) A bamboo colander. (24) A tofu maker weighting a colander with a brick so that whey will collect in it. (25) Ladling whey from curds; it foams! (27) A horse drinking whey from a wooden vat. Soymilk curds in a bamboo mat. (28) Ladling curds for Awayuki. (29) Fresh tofu in a plastic tub. (30) A tofu maker placing a weight on pressing lids as tofu is pressed in settling boxes (forming boxes). Transferring tofu-filled settling box to sing. Cutting a block of tofu into cakes under water. Eggplant halves in a yin-yang dance. Preparatory techniques used with tofu (slanting press, sliced tofu, squeezing, scrambling, reshaping, crumbling). (32) Utensils for making tofu at home. (33) Three designs for a homemade settling container. (34) Preparing homemade tofu (a-l). (35) Removing tofu from a farmhouse-style settling container (forming box). (36) Chilled tofu. Iceberg chilled tofu. A hot, moist, white towelette (*o-shibori*) is used to wipe the face and hands before (or occasionally after) a meal. Tofu salads

in three Japanese pottery dishes. Japanese soups in three types of containers. (37) Chrysanthemum tofu. (38) Tofu poached egg. Tofu-stuffed green peppers. A wok. (39) Filling a wok with oil. (40) testing oil temperature in a wok. (41) Deep-frying tofu tempura–and (42) Serving it in a shallow bamboo basket. (43) Making *Kaki-agé.* (44) Dengaku Hoshi (from *Tofu Hyaku Chin*). (45) Skewered Tofu dengaku. Preparing Tofu dengaku in old Japan (from Hokusai's sketchbooks). (46) A variety of skewers. (47) Chinese firepots. (48) A Simmering Tofu wooden serving container heated by coals from within. (49) Miso oden. (50) Tofu wrapped in rice straw. (51) Nanzenji wrapped tofu. (52) Gisei-dofu. (53) Serving freshly deep-fried agé. (54) The deep-frying area of a traditional tofu shop. (55) Deep-frying tools. (56) Wooden bamboo tray with raised sides. Chinese cleaver. (57) Nori-wrapped sushi with agé (making and serving; six drawings). Eating noodles from old Japan (from Hokusai's sketchbook). (58) Preparing homemade noodles. (59) The Oden man on a winter's eve. A potter bowl of Oden. Kombu rolls. (60) Making konnyaku twists. (61) Nishime in a multi-layered lacquerware box. (61) Pressing tofu for thick agé in a tofu shop. (62) Deep-frying tofu for thick agé. (63) A tofu maker with deep-fried thick agé triangles on screen trays. (64) Stuffing thick agé. (65) Thick agé stuffed with onions. (66) Pressing tofu for ganmo. (67) Adding seeds and vegetables. (68) Deep-frying ganmo. (69) A farmhouse open-hearth fireplace with nabe kettle. (70) Preparing homemade ganmo. Ganmo balls in a draining tray. Ganmo cheeseburger. (71) Cutting tofu to make agé slices (*kiji*). (72) Deep frying agé. (73) Opening agé into pouches. Agé treasure pouches. (74) Agé pouches sealed with foodpicks. Inari shrine with Shinto torii. (75) Kampyo-tied pouches [kanpyo]. (76) Making rolled agé hors d'oeuvre. (77) Tofu maker ladling gô (fresh soy puree) into a cauldron. (78) Stirring down the gô. Pressing soymilk from okara with a hand-turned screw press. (79) Serving fresh soymilk in a tofu shop. Six Japanese commercial soymilk products. Little girl at The Farm (Summertown, Tennessee) seated on a small chair drinking a cup of soymilk. Chinese breakfast soymilk soup with deep-fried crullers (*Siento-chiang with yu-chiao tsao pi*). (80) Takigawa-dofu. (81) Tofu maker pouring the soymilk for kinugoshi tofu. (82) Adding solidifier. (83) Trimming kinugoshi from sides of box. (84) Modern lactone kinugoshi (with GDL). (85) Modern kinugoshi factory. (86) Sasa-no-Yuki's Gisei-dofu container. (87) Kinugoshi with ankake sauce. The entrance way to a traditional Japanese restaurant featuring tofu. Traditional metal skewer for making grilled tofu. (88) Traditional tofu maker grilling tofu over a charcoal brazier (*hibachi*). Grilling tofu in a traditional open hearth. (89) An early method of elaborate grilling. Pieces of tofu on different types of skewers. Farmhouse sukiyaki with grilled tofu. (90) Tying frozen tofu with rice straw. (91) Drying farmhouse frozen tofu. (92) Pressing frozen tofu at home. (93) Deep-fried frozen tofu with cheese. (94) Making deep-fried frozen tofu sandwiches (*Hakata-agé*). (95) Frozen tofu wrapped in kombu. (96) Steaming table in a yuba shop. Ten different types / shapes of yuba. (97) Lifting yuba away from soymilk. (98) Yuba sashimi. (99) Yuba envelopes. (100) Deep-fried yuba dengaku. (101) Folding yuba into bundles. Trimming half-dried yuba from a skewer. (102-113) Tofu and yuba in Taiwan, China, and Korea (see separate record). Sesame tofu in pottery bowl. (114) Traditional farmhouse tofu, tied into a package with rice straw rope. (115) Shirakawa-go farmhouses with water-powered rise-husker in foreground. (116) Making seawater tofu at Suwanose. Mortar and pestle for pounding mochi. Making community tofu: Western metal hand mill, hand-turned stone mill apparatus, faces of upper and lower stones, colander and cloth, two shapes of cooking pots, Japanese farmhouse earthen cooking stove, cooking pot set on cut-off oil drum, ladle, two wooden paddles, pressing rack, pressing okara, lever press, pressing sack, wooden settling [forming] container with cloths. (117) Making nigari with salt in bamboo colander, a traditional "salt boat" for refining salt of nigari. (119) Country farmhouse tofu (5 illust.). (121) Morning shopping at a tofu shop. (122) Diagram of a tofu-shop floor plan. (123) Modern pressure with hydraulic press. (124) Modern centrifuge with 3 soymilk barrels. Thirty-one unnumbered illustrations showing every step in making and selling tofu in a traditional Japanese shop (p. 299-306). (125) Cutting tofu for Dengaku (from *Tofu Hyaku Chin*). (126) Ladies busy making dengaku (from *Tofu Hyaku Chin*). (127) Hearth at Nakamura-ro. (128) The garden at Okutan. Six types of Japanese sea vegetables: Hijiki, aonori, wakame, agar, nori, kombu. (129) Japanese vegetables (27 illustrations). Address: c/o Aoyagi, 278-28 Higashi Oizumi, Nerima-ku, Tokyo 177, Japan. Phone: (03) 925-4974.

442. *Soybean Digest.*1975. Process for simulating meat. Dec. p. 31. Summarized in Cereal Industry Newsletter. 1976. Jan. p. 1-2.
• ***Summary:*** Describes a sesame-soy tempeh developed by James Liggett of Foundation Foods, Inc.

443. Gandjar, Indrawati. 1975-1976. The fermentation of *Mucuna pruriens* seeds. Parts I-III. Bogor: Sub-division Microbiology, Div. of Food Science, Nutrition Research and Development Centre, Dep. of Health, Republic of Indonesia. 43 p. Research report. *
• ***Summary:*** Part I: Velvet bean tempe (1975, 10 p.). Part II: The microorganism involved and treatment of the seeds (1975, 16 p.). Part III. Fermentation process (1976, 17 p.). Address: Dep. of Biology, Faculty of Mathematics and Natural Sciences, Univ. of Indonesia, Jakarta.

444. Balai Penelitian Kimia Semarang. 1975. Perbaikan mutu tempe gembus [Improvement in the quality of okara tempeh]. Semarang: Balai Penelitian Kimia, Departemen

Perindustrian (Chemical Research Administration, Ministry of Industries). 29 p. Research report. [Ind]*

445. Balai Penelitian Kimia Semarang. 1975. Percobaan perbaikan mutu tempe gembus dengan mikroorganisme *trichodrema.* [Experiment on improving the quality of okara tempeh using *Trichoderma* microorganisms]. Semarang: Balai Penelitian Kimia, Departemen Perindustrian (Chemical Research Administration, Ministry of Industries). [Ind]*
• ***Summary:*** Note: Trichoderma is a mold, now also called the "compost fungus" and used in composting (especially in the Philippines) to accelerate the breakdown of the substrate into soil.

446. **Product Name:** Tempeh (Soya Beans Cake).
Manufacturer's Name: Bali Foods.
Manufacturer's Address: 4219 Alderson Ave., Unit B, Baldwin Park (Los Angeles area), CA 91706. Phone: 213-338-7178.
Date of Introduction: 1975.
Ingredients: Soya beans, water, yeast.
Wt/Vol., Packaging, Price: 11 oz.
How Stored: Frozen.
New Product–Documentation: Shurtleff and Aoyagi visited this fairly modern tempeh factory in Jan. 1977. They met Mr. Henoch Khoe and included the company in a list of tempeh shops in North America in the 1977 edition of "What is Tempeh?"

Shurtleff & Aoyagi. The Book of Tempeh. 1979 (July). p. 148. Owner: Mr. Henoch Khoe. Rose Dosti. 1980. Los Angeles Times. July 31. Part VII. p. 1. Part VIII. p. 16, 18. Janto M. Khoe is the Filipino owner of Bali Foods (4219-B Alderson Ave., Baldwin Park, California). It took him 4 years to develop a method which produces the firm tempeh that Indonesians prize. A photo shows Khoe and his wife. Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Mr. Henoch Khoe. Tempo. 1981. June 13. p. 50. Shows label. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 39. America's 2nd earliest tempeh shop.

447. Kozaki, Michio. 1975. Tônan Ajia no hakkô shokuhin [Southeast Asian fermented foods (Abstract)]. *Proceedings of the 22nd Annual Meeting of the Japanese Society of Food Science & Technology.* p. 29. [Jap]
Address: Tokyo Nôgaku Daigaku.

448. Staron, T. 1975. Obtention des protéines à partir des graines oléagineuses par des méthodes microbiologiques [Obtaining protein from oilseeds using microbiological methods]. *Revue Francaise des Corps Gras* (*Paris*) 22(11-12):579-89. [40 ref. Fre]*
• ***Summary:*** Discusses some important East Asian fermented foods, including miso, shoyu, and tempeh. Note: This is the earliest record on soyfoods in the IALINE database from CDIUPA. Address: INRA, Stat. Antibiotiques Bioconversions, Chartres, France.

449. Suriawira, Unus. 1975. Diteksi dan pengukuran bakteri patogen penghasil racun beberapa jenis makanan fermentasi Indonesia dan faktor lingkungan yang mempengaruhinya [Detection and counting of pathogenic bacteria in several Indonesian fermented foods, and the causative environmental factors]. Bandung: Badan Research Institut Teknologi Bandung. 42 p. Research report. [Ind]*
Address: Bandung, Indonesia.

450. Circle, S.J.; Smith, A.K. 1975. Soybeans: processing and products. In: N.W. Pirie, ed. 1975. Food Protein Sources. Cambridge, London, New York, Melbourne: Cambridge University Press. xx + 260 p. See p. 47-64. [88 ref]
• ***Summary:*** Contents: Introduction. Agronomy: Varieties, cultivation, yields. Soybean composition. Protein nutritional value. Traditional processing into nonfermented foods: Soybeans as a table vegetable (green soybeans), soy milk, tofu (soybean curd), yuba, kinako, salted soybeans, soybean sprouts. Traditional processing into fermented foods: Miso and shoyu, tempeh. Others include: natto, hamanatto, sufu (soy cheese), tao-tjo, kochu chang, ketjap, ontjom, and yogurt-like products.

Contemporary processing without defatting: 'Debittering' by aqueous treatment, whole bean processing, full-fat flour, soy milk and curd. Contemporary defatting processes: Defatting by aqueous processing, defatting with organic solvents, composite flour, soy flours, protein concentrates, protein isolates and textured soy products (recipes for using soy protein products in foods are available from several publications). Address: Anderson Clayton Foods, W.L. Clayton Research Center, 3333 Central Expressway, Richardson, Texas 75080.

451. Muljokusumo, E. Sudigdo. 1975. Tempe dan oncom. Cetakan ke 3 [Tempeh and onchom. Revised ed.]. Bandung: Penerbit Tarate. 40 p. Kita Membuat Sendiri (2) (methode science). Author's name now written as Mulyokusumo. 40 p. [Ind]
• ***Summary:*** Describes (with many illustrations) how to make tempeh and oncom on a commercial scale. This booklet is for use in secondary school science classes. Also discusses *benguk* [velvet bean tempeh] and *dage.* Address: Indonesia.

452. Noor, Muhammad; Wahab, Abdul. 1975. Proses pembuatan tempe [Tempeh production]. Thesis, Biology Dep., ITB, Bandung, Indonesia. Contains numerous photographs. [Ind]*
Address: ITB, Bandung, Indonesia.

453. Nurhajati, Siti; Winarno, F.G.; Sri Laksmi, B. 1975.

Studies of the affect of *Rhizopus oligosporus* and *R. oryzae,* and fermentation time on the quality of tauco. In: Dept. of Agricultural Product Technology, Faculty of Agricultural Engineering and Product Technology, Bogor Agricultural University. 1975. Research on Tauco: Phase One. 35 p. See p. C-1–C-12. [11 ref]
• ***Summary:*** Tauco is Indonesian-style miso. Address: Bogor, Indonesia.

454. Shuib, Zaidah. 1975. Insiden kehadiran bakteri patogen penghasil racun pada proses pembuatan oncom dan tempe, dan faktor-faktor yang mempengaruhinya [Factors affecting the incidence of bacterial pathogens during onchom and tempeh processing]. Thesis (Skripsi), Bagian Biologi Institut Teknologi Bandung, Bandung, Indonesia. 48 p. PBITB. [Ind]*
Address: Bandung, Indonesia.

455. Silverstein, Alvin; Silverstein, Virginia B. 1975. Beans: All about them. Englewood Cliffs, New Jersey: Prentice-Hall, Inc. 86 p. Illust. by Shirley Chan. Index. 22 cm. Summarized in Soybean Digest, Sept. 1975, p. 43. [7 ref]
• ***Summary:*** This excellent book for children discusses beans in legend and history, how to grow them, and their future as a low-cost protein supplement. Includes experiments, bean recipes, and games.

Contents: Beans. The story of beans. The history of beans. Beans in legend and lore. The life story of the bean. Kinds of beans. Beans in the garden and the marketplace. Beans for the future. Fun with beans. Beans for good eating.

Page 2: "Kuan Yu, a great war god in Chinese folktales, was a bean curd [tofu] seller in his youth."

Pages 12-13, a brief (and partially accurate) history of the soybean, begin: "Soybeans are native to eastern Asia. The oldest written records of them date back to 2838 B.C. [sic], when Emperor Shen Nung of China wrote a description of the plant." Also mentions: The five sacred grains, soybean "milk," tofu, yuba, [soy] sauces, soybean paste, soybean sprouts, soybean oil, Engelbert Kaempfer, first introduced "to the United States around 1800 when a ship brought some to Philadelphia [Pennsylvania], Commodore Perry (1854), USDA tested about 10,000 different kinds. Now soybeans are the number one U.S. cash crop, accounting for more then 75% of the world's soybean supply. Soybeans are used as foods for humans (in the form of oil, flour, soy sauce, "milk substitutes, and meat substitutes and 'extenders'") and feeds for animals. They are also used in the manufacture of more than 250 industrial products, including paints, soaps, lubricants, adhesives, and fertilizer.

Page 16: "In China, beans were a good luck symbol. A person who wore a string of soybeans hidden around his neck was believed to possess magic powers to do amazing feats. Three dark soybeans soaked in sesame oil for three days were used to foretell the future."

The chapter "The life story of the bean" (p. 18-29) gives (with illustrations) a simple and accurate description of the bean seed and how it grows, discussing the hilum or seed scar, the micropyle or tiny hole at one end of the hilum, the seed coat, the two cotyledons in which food for the young growing plant are stored, the embryo nestled (a plant in miniature) between the cotyledons, with its two tiny leaves (the plumule), a little root (the radicle), and a stemlike part connecting them (the hypocotyl). When the seed is planted, and it germinates or sprouts, the "embryo root pokes its tip out through the micropyle and grows out into the soil. Tiny root hairs form along the growing root. They take in moisture and dissolved minerals from the soil." The hypocotyl grows until it "suddenly pushes up out of the soil–the first part of the seedling to emerge. It is bent over, for the cotyledons are still buried in the soil." The hypocotyl continues to grow. In a day or so the seed coat splits, then the top of the plant pops up out of the soil. "The empty seed coat is left behind, buried beneath the surface." Now the young bean seedling is growing straight up. The two seed leaves at the top unfold and grow quickly. Below them on the stem are the two cotyledons. As sun shines on the growing plant, its leaves, cotyledons, and stem begin to turn green–a turning point in the life of the plant.

For a while, the growing plant takes the food it needs from the reserves stored in the two cotyledons. But as these reserves are used up, they shrivel and finally fall off. Now the young plant must create its own food using chlorophyll and photosynthesis.

Chlorophyll traps energy from the sun. When examined under a magnifying glass, one can see that the surface of a plant leaf contains many tiny openings called stomates, which are usually open during the day and closed at night. "When the stomates are open, gases from the air pass freely in and out." Air is about 80% nitrogen, 20% oxygen, plus smaller amounts of carbon dioxide, water vapors, and others gases. In the leaves, "carbon dioxide and water are combined, using the sunlight energy trapped by chlorophyll, into sugar, starches, and other complicated chemicals. Scientists call this process photosynthesis (photo means light, and synthesis means a putting together)." The by-product, oxygen, passes out into the air through the stomates; it is the gas that humans and other mammals need to breathe.

Describes the underground activities related to plant growth, nodules, bacteria that live symbiotically in the roots and fix ammonia and nitrogen. Also describes the bean flower, its parts, self-pollination, the key role of bees, and how the seeds are formed from the flower.

The chapter "The soybean–Number one" (p. 36-39) describes the current status of the soybean in the USA. The chapter "Beans for the future" discusses modern developments such as CSM, soyfoods such as sufu, tempeh, miso, spun soy protein fibers, soybean meat analogs, textured vegetable protein (TVP).

When a bean seed sprouts, how does it know which way is "up"? "Could you ever get a seedling with its roots pointing up in the air and its shoot poking down into the soil?" Supposing you cut off all sunlight? No, plants have a built-in gravity sense which scientists call "geotropism." A plant hormone called an auxin causes the plant to bend upward–and toward the light (heliotropism). In 1888, the symbiotic partnership between legumes and nitrogen fixing bacteria was first discovered by Hellriegel and Wilfarth. There are short-day plants, long-day plants, and day-neutral plants; flowering will not begin until the length of days and nights is just right (p. 54-59). Bean recipes (p. 70-75). Address: 1. Prof. of Biology, Staten Island Community College, New York City; 2. Translator of Russian scientific materials.

456. Sudargo, Lestari D. 1975. Penelitian waktu pembusukan pada tempe kedelai dan tempe gembus [Research on putrefaction time of soy tempeh and okara tempeh]. Thesis (Skripsi), Akademi Gizi, Jakarta. 33 p. [Ind]*
Address: Jakarta, Indonesia.

457. Sudarmadji, Slamet. 1975. Certain chemical and nutritional aspects of soybean tempe. PhD thesis, Dep. of Food Science, Michigan State University. ix + 151 leaves. Page 4371 in volume 36/09-B of Dissertation Abstracts International. Illust. 29 cm.
• ***Summary:*** Discusses: Changes in fatty acid content and profile of tempeh during fermentation. Total free fatty acids produced by tempeh during 100 hours of fermentation (The most rapid production occurs during the first 28 hours). Total bacterial count in tempeh during fermentation (This increases most rapidly during the first 18 hours). The temperature of tempeh at ambient temperatures of 25ºC and 32ºC. (At 32ºC the temperature in the tempeh rises rapidly from the 15th hour until the 27th hour, reaching a peak of about 43.5ºC). Rats fed fried soy tempeh gained weight more slowly than rats fed cooked and fried unfermented whole soybeans.

Note: Slamet Sudarmadji was born in 1941. Address: Michigan State Univ.

458. Thio, Goan Loo. 1975. Small-scale and home processing of soya beans with applications and recipes. *Royal Tropical Institute* (*Amsterdam*)*, Dept. of Agric. Research. Communication* No. 64. vii + 51 p. Illust. Third ed., revised and enlarged. 1978. No. 64a. 59 p. 24 cm. [26 ref]
• ***Summary:*** Contents: 1. Introduction: History, botany, cultivation, pests and diseases, harvesting, yield and storage. 2. Chemical composition. 3. Nutritive value: Supplementation, trypsin inhibitor, hemagglutinins. 4. Small-scale and home processing methods: Soya milk, yogurt of soya milk, toufu (Soya bean curd), soya-bean sprouts, soya steak (Tempeh). 5. Applications of soya beans and soya-bean products: Fried soya beans, cooked, young whole soy beans [green vegetable soybeans], flavoured soya milk, fried toufu, fried soya steak, dried sliced toufu (toufu crisp/crisps), soya flour (including soya-milk-residue flour [ground okara]). 6. Recipes based on soya bean products: soups with soya bean products, flavoured soya milk, soya yogurt with fruits, toufu bread/cake, toufu dishes, modified Zambian recipes, recipes with soya flour, soya shashlick (tofu kebab), and soya [tofu] spring roll. 7. Discussion. References. Note: Toufu = Tofu.

Note: This is the earliest English-language document seen (Feb. 2000) that uses the term "soya-bean sprouts" to refer to these sprouts. Address: Dep. of Agricultural Research, Royal Tropical Inst., Amsterdam.

459. Wolf, W.J.; Cowan, J.C. 1975. Soybeans as a food source. Revised ed. Cleveland, Ohio: CRC Press. 101 p. Illust. Index. 26 cm. CRC Monotopic Series. [416 ref]
• ***Summary:*** Contents: Introduction. Seed structure and composition. Soybean production: Early history, areas of production, production, importance of varieties. Disposal of the crop: Grading standards, disposition. Processing soybeans into oil and meal: Storage, preparation of beans, extraction, desolventizing, degummed oil and lecithin separation. Conversion to edible oil products: Alkali refining, bleaching, hydrogenation, deodorization. Soybean oil products: Salad and cooking oils, shortening and margarine oils, flavor stability of soybean oil, soybean lecithin–products and use. Food uses of soybean proteins: Physical and chemical properties (solubility as function of pH, molecular size, reactions of the 7S and 11S globulins, solubility of isolates, denaturation, amino acid composition), forms of soy proteins (whole soybeans, processed soybean protein products), selling prices and production estimates, functional properties (emulsification, fat absorption, water absorption, texture, dough formation, adhesion, cohesion, and elasticity, film formation, color control, aeration), nutritional properties (antinutritional properties, protein quality of soybean products), foods containing soy proteins (Oriental foods [tofu, kori-tofu, miso, natto, shoyu, tempeh], domestic foods [baked goods, meat products, simulated meats, breakfast cereals, infant foods, beverages, dietary foods, snack foods, miscellaneous uses]), problem areas. Conclusions.

Addendum. Introduction: Origin of soybeans, soybean situation–future, recent sources of information, soybean organizations. Production: Short-term situation, storage and exports, soybean varieties, yield barrier, varieties and antinutritional factors, aflatoxin in soybeans. Edible oil products: Deodorization, an antioxidant for soybean oil, flavor stability of soybean oil, oil from field-damaged beans, flavor components in soybean oil. Conversion to edible protein products: Production and producers, new processes (full-fat products, defatted flakes and related products, concentrates, isolates, textured protein products). Properties of soy proteins: Functional properties (solubility, water

absorption and swelling, viscosity, emulsification, film formation, texture), nutritional and physiological properties (trypsin inhibitors, soybean proteins in blended foods, nutritional value of textured soybean proteins, soybean proteins in infant formulas, effect of alkali treatment on soy protein), flavor studies on soy proteins (organoleptic evaluation of commercial protein products, origin of flavor compounds). Food uses of soybean proteins: Baked goods, meat products and analogs, instant breakfast items, snack foods, legal and regulatory aspects. References.

An excellent source of information on soy flour and modern soy protein products, this book contains a surprisingly small amount of information (about 1 page total) about traditional soyfoods such as tofu, miso, natto, shoyu, tempeh, etc. even though a number of the latter foods are much more widely used worldwide. Soy beverage (soymilk) is not even mentioned. The extensive bibliography would be greatly improved by the inclusion of the titles of the articles.

Table 26, titled "Selling prices and production estimates (in 1970) for soybean proteins" (p. 42) states: Defatted flour and grits sell for 7-8 cents/lb ex factory and estimated annual production in 1970 was 232-237 million lb. Soy concentrates (18-26 cents/pound, 20-35 million lb). Soy isolates (35-45 cents/pound, 25-50 million lb). Address: 1. Research Leader, Meal Products, Oilseed Crops Lab., USDA NRRL, Peoria, Illinois; 2. Adjunct Prof. of Chemistry, Bradley Univ., Peoria, Illinois 61606 (Formerly Chief, Oilseed Crops Lab., NRRl, Peoria).

460. Lyon, Alexander. 1975? Tempeh instructions. Summertown, Tennessee: The Farm. 3 p. Undated. Unpublished manuscript.
• ***Summary:*** Begins with a basic introduction to tempeh, "a traditional Indonesian food made from soybeans."

"Making good tempeh is like making good yogurt. You are working with a living creature in both cases. You must pay attention and take good care of your cultures; it's like gardening, except the plants are microscopic in size. The cultures need the right conditions to grow well, and must be kept free of bacteria and other molds… they are the microscopic weeds.

"We will send you some spores to start your culture. They are a dry, grey powder that looks like cement. Once your culture is alive and growing you can propagate it by saving a good healthy piece from each batch to use as starter for the next day. If you want to stop making tempeh for awhile, but don't want to lose your culture, just freeze the starter. Thaw it and use it when you're ready to go again. If you do lose your culture of if it becomes too contaminated to use, write us for more spores.

"You can make tempeh from soybeans alone, bean and grain combinations, and from soypulp (the residue left over from making soymilk). We also print a free soybean recipe booklet, which has other soybean recipes, including our soymilk recipe.

Then describes how to make tempeh on a home scale from soybeans, from cracked grains (wheat and rice work best), from grain-bean combinations (try using about 1 part grain to 1 part beans) and from soypulp [okara]. You must squeeze the soypulp "as dry as possible to be sure it is loose and fluffy in the package so the mold can breathe. Add 1 teaspoon vinegar to each quart of soypulp when inoculating to prevent bacterial spoilage (you can do this with other kinds of tempeh to if you have a spoilage problem). Making tempeh from soypulp is an excellent way to turn it into something that tastes good. The soypulp has a fair amount of good quality protein and should not be wasted.

"The best way to cook tempeh is to slice it fairly thin, dip each piece in salty water, and lightly fry in a hot pan barely coated with oil. It has a rich meaty flavor. Different people have said it tastes like bacon, pork chops, fish, chicken, and liver!... It is a good vegetarian way to add meaty tastes to your diet... We made delicious vegetarian pizza at our Wisconsin Farm by layering tomato sauce, chopped onions, good tasting nutritional yeast gravy, and topping with sliced tempeh. It tasted like pepperoni. Let us know if you come up with any winners."

Note 1. The date this document appeared was estimated by Alexander Lyon (many years later) as late 1975 or early 1976.

Note 2. This is the 2nd earliest document seen (Oct. 2011) that describes how to make tempeh at home.

Note 3. This is the earliest document seen (Sept. 2011) that lists The Farm as a source of tempeh starter.

Note 4. The Farm made the first okara tempeh in the Western world. Address: Summertown, Tennessee.

461. Autumn Press, Inc. 1976. Imagine... (Ad for The Book of Tofu by Shurtleff and Aoyagi). *Mother Earth News* No. 37. Jan. p. 153. [1 ref]
• ***Summary:*** This exact same ad first appeared in Dec. 1975 in *Macrobiotic* (The) (Chico, California), No. 111. p. 61. Address: P.O. Box 469, Soquel, California 95073.

462. *Cereal Foods World.*1976. Simulating meat: A new process has been developed for preparing simulated meat, fish and dairy products. 21(1):31-32. Jan. [1 ref]
• ***Summary:*** This is a summary of an article in *Soybean Digest* (Dec. 1975) about James Liggett of Foundation Foods Inc. and his work with tempeh. The article is technically in *Cereal Industry Newsletter* 6(1):1-2. Jan. 1976–inside *Cereal Foods World.*

463. Ho, Coy Choke; Koh, Chong Lek. 1976. Microbiology of soybean-based fermented food in South-East Asia. Paper presented at the Third INTSOY Regional Soybean Conference. 7 p. Held 23-27 Feb. 1976 at Chiang Mai, Thailand. Unpublished manuscript. [17 ref]

• ***Summary:*** The relatively well-studied soy-based fermented foods in South-east Asia are tempe, sufu (soy cheese), ontjom tahu [okara tempeh], tau chiow ([tauco, taucho], soybean paste), soy sauce, and thua-nao (natto). These are shown in Table 1, with the microorganisms responsible for fermentation, substrates, uses, and principal references given for each. "It can be noted that only a very limited range of genera of fungi are involved in these fermentations, namely *Rhizopus, Aspergillus, Neurospora, Actinomucor* and *Saccharomyces.* Furthermore, within a genus only a very limited number of species are actually utilized, for example *Aspergillus sojae* in soy sauce fermentation, and *Neurospora intermedia* in ontjom tahu fermentation.

"Regarding ontjom tahu fermentation, the fungus used was formerly erroneously listed as *Neurospora sitophila* (Dwidjoseputro, 1961)."

The authors then use analyses of conidia color and crossing experiments based on meiotic sterility to show that the cultures on okara tempeh (ontjom tahu) belong to a single species, *Neurospora intermedia.*

Note: This is the earliest English-language document seen (March 2009) that uses the word "tau chiow" to refer to Indonesian-style miso. Address: Dep. of Genetics and Cellular Biology, Univ. of Malaya, Kuala Lampur, Malaysia.

464. Kozaki, Michio. 1976. Fermented foods and related microorganisms in Southeast Asia. *Proceedings of the Japanese Association of Mycotoxicology* No. 2. p. 1-9. March 20. [16 ref]
• ***Summary:*** Table 1, "Main fermented foods using molds, yeasts or bacteria in Southeast Asia," contains four columns: Name of fermented food, raw materials, main related microorganisms, and remarks (incl. names in other countries). Fermented foods listed include amazake (tapé / tapeh in Indonesia, with Rhizopus instead of Aspergillus oryzae), tempeh, sufu, ontjom, natto (soy bean fermented with *Bacillus subtilis* var. *natto;* Teranatto is same as original miso, Taosi in Philippines).

Table 2, "Main fermented foods using molds plus bacteria, molds plus yeasts, yeasts plus bacteria and molds, or yeasts plus bacteria in Southeast Asia," contains the same four columns. Fermented foods listed include soy sauce (*Aspergillus oryzae, Saccharomyces rouxii, Pediococcus halophylus;* called Jan [kanjang] in Korea and Thua nao [sic] in Thailand), Miso (same 3 microorganisms as in soy sauce). Address: Tokyo Univ. of Agriculture, Dep. of Agricultural Chemistry, 1-1, Suragaoka, Setagaya-ku, Tokyo.

465. Bortz, Brenda. 1976. The joys of soy. II. Tofu and tempeh. *Organic Gardening and Farming* 23(3):128-31. March. See also Part I: 23:28-30, 32, 34, 36, 38. Feb.
• ***Summary:*** "Two Far Eastern soybean favorites–tofu and tempeh–turn up exciting new menu and nutrition ideas in the OGF Research and Development Group's latest tests...

"At this time, Dr. Schwartz is inviting a limited number of adventurous OGF readers to help him evaluate the ease and dependability of his method and tempeh's potential as a new food for Americans. Readers who would like to join R & D's modest 'Soybean Task Force' should write to Nancy Bailey, R & D Readers' Service, Rodale Press Inc., Emmaus, Pennsylvania, 18049. Those selected will receive soybeans, culture, and complete instructions for making the simple incubator and tempeh itself."

Contains a recipe for Tofu Loaf with Onion and Cheese from *The Book of Tofu* by Shurtleff and Aoyagi.

Note: This is the earliest document seen (March 2003) that mentions tempeh, published by or in connection with Rodale Press.

466. Boucher, Suzanne. 1976. Tempe makers in Yogyakarta. *Indonesia Circle* 9:10-11. March.
• ***Summary:*** Discusses tempeh in the context of family life in Yogyakarta, Java, Indonesia. During the author's stay in Yogyakarta last summer she was introduced to a family of tempe makers. She describes the process of making tempeh. In some cases, after the soybeans are dried but before they are inoculated, they are mixed with coconut gratings (*ampas kelapa*) to make *tempe tidak murni.* During this mixing, there must be no trace of coconut oil on the tempeh maker's hands. During menstruation, women are not allowed to make tempeh.

467. Longacre, Doris Janzen. 1976. More-with-less cookbook. Scottsdale, Pennsylvania: Herald Press. 328 p. April. Illust. Index. 22 cm. Introduction by Mary Emma Showalter Eby. Spiral bound. [30* footnotes]
• ***Summary:*** Commissioned by the Mennonite Central Committee. On the cover: "Suggestions by Mennonites on how to eat better and consume less of the world's limited resources." However, this is not a vegetarian cookbook. Contents: Introduction. Part I: More with less. 1. Less with more: World shortages, North America: Five times as much, overspending money, overeating calories, overeating protein, overeating sugar, overcomplicating our lives. 2. Change–An act of faith: Does it really help anyone if I cut back?, it seemed inadequate, we liked it better the second time. 3. Building a simpler diet: The protein question, what is complete protein?, amino acid teamwork, no-meat, low-meat, and which meat, increasing protein content in foods.

II. Sharing the recipes. Soy-related recipes (all use whole soybeans unless otherwise stated): Nameless soybeans (p. 47). Soybean granola (with roasted soybeans, p. 91). Section of soybean recipes (p. 96-98, 109-15): Savory baked soybeans. Soybean loaf. Soybean hamburger casserole (with ground beef). Soybean casserole. Fresh soybean-cheese casserole (with "fresh green soybeans"). Soybean pie. Refried soybeans. Soybean soufflé. Sweet and sour soybeans. Marinated soybeans. Soybean sandwich spread. Basic

soybean spread or dip. Soybean curd sauté (with bean curd [tofu]). Gather up the fragments. Soy, cheese and meat loaf (with "vegetable-protein meat extender, p. 166). Basic burger mix (p. 166). Quick soybean soup (p. 211). Soybean salad (p. 259). Roasted soybeans (3 recipes, p. 305).

Soy is also mentioned elsewhere: Soybeans contain complete protein (p. 28). Protein complementarity: In Indonesia fermented soybean cakes go with a rice meal. Chinese and Japanese use bean curd [tofu] and bean sprouts with rice (p. 29) Use soybeans or soy flour to increase protein content of foods (p. 31). Table showing protein and calorie content of some common foods (low fat soy flour, dry soybeans, immature cooked soybeans, mature cooked soybeans, p. 34). Table showing comparative costs of protein sources (dry soybeans {the least expensive of all!}, textured vegetable protein meat extender, soybean breakfast sausage, soy flour, p. 37). Soybeans and soy flour (p. 45). Cook large amounts of soybeans and freeze them to save time (p. 48). Soybeans contain fewer calories per gram of protein than common white beans (p. 49). When making granola, add soy flour, soy grits, roasted soybeans, or soaked soybeans (p. 88). Address: Akron, Pennsylvania.

468. Saono, S.; Brotonegoro, S.; Abdulkadir, S.; Basuki, T.; Jutono, -; Badjra, I.G.P. 1976. Microbiological studies of tempe, kecap, and taoco. I. Quantitative estimation and isolation of microorganisms from some products from West Java. In: ASEAN Project on Soybean and Protein Rich Foods, Progress Report on Research Activities, Jan-May, 1976. Appendix 7. *

• ***Summary:*** Note: This is the earliest English-language document seen (March 2009) that uses the word "taoco" to refer to Indonesian-style miso.

469. Shurtleff, William; Aoyagi, Akiko. 1976. Excerpts from *The Book of Tofu:* Cooking with whole dry soybeans. Roasted soybeans, fresh green soybeans, soybean sprouts, and fermented soybean cakes (tempeh). *Mother Earth News* No. 39. May. p. 40-43. [1 ref]

• ***Summary:*** The first in a series of excerpts from this book. Describes how to make each of these foods at home, and gives several recipes for each (including 7 tempeh recipes). A sidebar discusses trypsin inhibitor, and soybean soaking time at various room temperatures.

Mother's introduction to the book reads: "The various food-processing industries (bless 'em) seem to be trying hard to alleviate this overcrowded planet's shortage of animal-derived protein. How? By 'beefing up' our store-bought rations with 'inexpensive' meat substitutes procured from–primarily–the good old soy bean. And as they do so, these self-proclaimed wizards of matters comestible are weaving a web of mystery around the useful bean. But now, for us 'little guys,' there's a book that (1) not only brings the versatile vegetable out of the arcane commercial fog and into our kitchens, but (2) shows and tells us how we all can save grocery money *and* eat more nutritious meals (WHILE we loosen the hold that the doctored-food moguls have on all our lives and diets!). We're proud, then, to present excerpts from... *The Book of Tofu."*

The section on tempeh (and how to make it at home) states: "The starter is available from the U.S. Department of Agriculture, Northern Regional Research Lab., 1815 N. University Ave., Peoria, Illinois 61604. *The Farm* (Rt. 1, Box 156, Summertown, Tennessee 38483) is now making up a brochure on tempeh preparation which will soon be available with the starter."

Note: This information about tempeh starter appears on page 68 of *The Book of Tofu.* Address: c/o Aoyagi, 278-28 Higashi Oizumi, Nerima-ku, Tokyo 177, Japan. Phone: (03) 925-4974.

470. Bates, Cynthia. 1976. Tempe (Leaflet). Summertown, Tennessee: The Farm. 4 panels. Undated. Front and back. Each panel is 22 x 14 cm.

• ***Summary:*** Printed with blue ink on white paper. Describes how to make 5 pounds of tempe. Describes the differences between good and bad tempe. Gives four recipes: Indonesian fried tempe. Tempe burger. German tempe sandwich. Albert's tempe topping. Photos show (1) Close-up of tempe cake. (2) Cross section of tempe cake. Two parts of this cross-section are circled and described: "Not done yet. Mold around beans too sparse." "Well done. Heavy mold around each bean."

Note: This is the earliest document seen (April 2011) that contains the term "tempeh burger" or a tempeh burger recipe. This leaflet was distributed with tempeh starter and "Fermentation Funnies" (cartoons designed to help introduce tempeh). The leaflet was revised as "Tempeh" in 1977, for distribution with Farm Foods' commercial tempeh. Address: Summertown, Tennessee.

471. Podems, Marc. 1976. Comments on Organic Gardening and Farming tempeh questionnaire results. Emmaus, Pennsylvania: Interoffice memo. July 21. 6 p. Unpublished manuscript.

• ***Summary:*** "We received an overwhelming positive reaction to making and eating Tempeh from our specially selected sample of OGF readers. In mid-March questionnaires were sent to 60 OGF readers who were the most enthusiastic about testing tempeh as revealed in their letters to us. 90% have sent back completed questionnaires so far... A majority of the reader/researchers are married with children at home and have been subscribing to OGF for more than 1 year. 87% have eaten soybeans in dried form within the last month... Most enjoyed making tempeh, although more than 50% had difficulties. They said it was new, challenging, and simple. But the majority had trouble either finding the proper materials or maintaining the correct

temperature."

The readers were asked to prepare and evaluate two recipes: Fried Tempeh, and Tomato and Tempeh Casserole. "Both recipes received favorable marks from almost everyone. Many liked tempeh's crunchy texture and good nutty flavor. But others complained about having to deep fry it." A detailed tabulation of the questionnaire results is given. Address: Emmaus, Pennsylvania.

472. Bates, Cynthia; Lyon, Alexander; Sorenson, S.; Keller, B.; Jenkins, Suzy. 1976. Beatnik tempeh making. Summertown, Tennessee: The Farm. 20 p. Undated. 28 cm. Mimeograph. [8 ref]

• ***Summary:*** Contents: Abstract. Introduction. Methods of preparing inoculum: Pure culture propagated on rice (California, Kentucky), dry inoculum (Tennessee), inoculum grown on sweet potatoes (Tennessee), serial transfer (Tennessee).

Methods for making tempeh: Making tempeh at home (5 lb.; soaking the beans, splitting the beans, second boiling, cooling the beans, inoculation, incubation), making tempeh for a large family group (about 4 kg [8.8 lb] per day), community scale production (25 kg [55 lb], Tennessee), commercial production in California (10 kg. [22 lb] per day). soy pulp [okara] tempeh. Quality control. A table compares "good tempeh" with "bad tempeh" in terms of texture, color, odor, uniformity, and taste. Tempeh is a great favorite on the Farm and easily digested.

Recipes for tempeh: Indonesian fried tempeh. Tempeh burger. German tempeh sandwich. Albert's tempeh topping. The great potential of tempeh. Expanding our tempeh operation (on the Tennessee Farm). Some facts about tempeh and food. References. Acknowledgement.

"Introduction: The Farm is a non-denominational religious community of 1,100 men, women and children living in southern Tennessee. We also have a dozen smaller communities living in other parts of the U.S., also in Canada, Europe and Guatemala. We are complete vegetarians: we eat no meat, eggs or dairy products because we found out that, on the average in the U.S., it takes eight pounds of feed protein to produce one pound of meat protein. We believe that by being vegetarians we can utilize our planet's resources more efficiently, and this make more food available for our hungry world.

"Over the last five and one-half years that we've been together, we've developed a tasty, nutritious diet of beans and grains that centers around soybeans as a protein source. We have a soy dairy that produces 120 gallons of soy milk fresh each day to supply our community. The Soy Dairy also makes soy yogurt, soy cheese and Ice Bean (soy milk ice cream) from the soy milk. We love the good tasting, versatile, high protein soybean and one of our favorite ways of eating it is the fermented product, tempeh. At present our communities are making tempeh in Tennessee, California [San Rafael], Colorado, Kentucky, New York, and Louisiana [Houma]."

"We plan to increase tempeh production on the Tennessee Farm to 135 kg. daily for the community, and to introduce it to neighboring towns." "Our Colorado Farm makes solar dehydrated tempeh chips for soup mix, and this operation could be expanded or duplicated."

"Acknowledgement: We would like to thank Don Wilson for the information on the California Farm method of making tempeh and inoculum." Thanks also to Diane Darling, "the Farm Tempeh Crew, and friends who've helped: Debra Heavens, Valerie Epstein, Paul Meltzer, Maureen Hale, Deborah Stevenson, Laurie Sythe, David Handel, JoAnn Else, Paula Denton, and Corey Ford.

Later summarized as "Utilization of Tempeh in North America" in K.H. Steinkraus, ed. 1983. *Handbook of Indigenous Fermented Foods.* New York: Marcel Dekker. p. 48-50. Address: The Farm, Summertown, Tennessee.

473. Farm Food Company. 1976. August. New soyfoods restaurant or deli. 820 B. St., San Rafael, CA 94901.

• ***Summary:*** Shurtleff & Aoyagi. 1976. Sept. Tofu & Miso America Tour Itinerary. Contact: Kathleen Sandler.

Questionnaire filled out by Robert & Constance Dolgin. 1980. Jan. The Farm Food Co. in San Rafael opened its deli in about Aug. 1976, and the same month started making tempeh, tofu and soymilk. Shurtleff & Aoyagi visited in Sept. 1976. A list is given of dishes containing soyfoods served at the deli during its first year in business: Fried tofu sandwiches, tofu salads [like eggless egg salads], tofu salad dressings, and tofu cheesecake; tempeh burger, deep-fried tempeh cutlet, tempeh with creamy tofu topping, and Indonesian delight (tempeh strips with peanut butter and miso sauce over rice); soymilk ice cream, soymilk shakes, soy yogurt, soymilk mayonnaise, and soy whipped creme; soybean stroganoff and burritos; TVP chili; and Vege-Links (canned Loma Linda meatless hot dogs). Also for sale at the food store were packaged tofu, soymilk, tempeh, soy mayo, and Ice Bean [soy ice cream], all made in the same building.

Shurtleff & Aoyagi. 1982. Report on Soyfoods Delis, Cafes & Restaurants. p. 3.

Laurie Sythe Praskin. 1985. "The Farm soy history: An overview." States (p. 3) that it was named "Farm Foods Cafe."

Note 1. This is America's first "soy deli," offering a host of highly creative and delicious recipes, served at a counter or tables.

Note 2. At this deli was developed and made the world's first "Tofu Salad," which would soon (made by various companies, including Farm Foods in San Francisco) become one of America's first popular tofu products, widely called "Eggless Egg Salad" (1977), "Tofu No-Egg Salad" (1978), and "Missing Egg Salad" (1978). Address: San Rafael, California. Phone: 415-454-3797.

474. Jurus, Alan M.; Sundberg, Walter J. 1976. Penetration of *Rhizopus oligosporus* into soybeans in tempeh. *Applied and Environmental Microbiology* 32(2):284-87. Aug. [17 ref]
• ***Summary:*** "Histological observations were made on the penetration of the hyphae of *Rhizopus oligosporus* into soybean cotyledons in tempeh. Hyphal penetrations averaged one per 1,400 square micrometers on the curved (outer) cotyledon surface and one per 1,010 square micrometers on the flat (inner) surface. Hyphae infiltrated to a [maximum] depth of 742 micrometers, or about 25% of the average width of a soybean cotyledon. This previously unreported degree of penetration offers partial explanation for the rapid physical and chemical changes in soybeans during tempeh fermentation." Address: Dep. of Botany, Southern Illinois Univ., Carbondale, Illinois 62901.

475. New-age Foods Study Center. 1976. Publications & materials, 1976 [mail order catalog]. 790 Los Palos Manor, Lafayette, CA 94549. 1 p. Aug.
• ***Summary:*** This single page leaflet, 8½ by 14 inches, printed on one side with black ink on white paper, is the Center's first catalog. In the upper right corner is the Japanese-style logo of waves and a moon in a circle. They sell four books written or published by William Shurtleff and Akiko Aoyagi (the softcover edition of *The Book of Tofu,* published by Autumn Press {336 pages} retails for $6.95), pamphlets, a tempeh brochure, *Diet for a Small Planet* by Lappe, a tofu box and tofu making kit. They offer free of charge catalogs of tofu making equipment and koji starter. Coming soon are *The Book of Kudzu* and *The Book of Sea Vegetables.* Address: Lafayette, California. Phone: 415-283-3161.

476. Ohlund, Tim. 1976. Re: Work with miso and koji in Sweden. Letter to William Shurtleff at New-Age Foods Study Center, Aug. 2 p. Handwritten.
• ***Summary:*** "Dear friend. I have been very impressed with your articles on tofu and tempeh in such magazines as *East West Journal* and *Mother Earth News.* I have been working in this area on a very small scale since about 5 years ago, when I got into macrobiotics in Japan under Nahum Stiskin. Since then I have been living in Sweden studying Japanese and Chinese at Uppsala University as well as managing a truck garden (biodynamic) during the summers."

He has been growing Japanese vegetables in Sweden–with good results. "I've also been working with a new variety of soybean suited for this northern climate. This year I have a very good crop of them. The last two winters I've been making up batches of miso just to see how it would go and gain some experience at it. It is not yet as I would like it, but that will take some time. What I really need at this time is some good literature on the subject. My friend and I have combed the library at the university here and found much important information on tofu, tempeh, and lactic acid fermentation in *Applied Microbiology* and *Journal of Food Science,* etc." He requests more information and contact people. He may make another trip to Japan in the next year or shortly thereafter to do research. Address: Box 559A, 19063 Örsundsbro, Sweden.

477. Nelson, A.I.; Singh, B.P.N.; Singh, S. Assignors to University of Illinois Foundation. 1976. Apparatus for the preparation of a soybean beverage base [low tech soybean dehuller]. *U.S. Patent* 3,981,234. Sept. 21. [8 ref]*
• ***Summary:*** For a favorable evaluation of this dehuller, see Shyeh, Rooda, and Nelson, 1980. It works well for dehulling soybeans when making tempeh or soymilk. Address: Univ. of Illinois, Urbana, Illinois.

478. Wilson, Don. 1976. Method of making tempeh and tempeh starter at the Farm Food Company in San Rafael, California (Interview). Conducted by William Shurtleff of New-Age Foods Study Center, Sept. 29. 2 p. transcript.
• ***Summary:*** Contains detailed descriptions (based on Shurtleff observing Wilson at work in San Rafael) of how to make: (1) 22 lb of soy tempeh on a community scale; (2) 20 petri dishes full of tempeh starter from freeze dried spores; (3) Tempeh starter from sporulated rice tempeh starter.

On September 29-30, 1976, Akiko Aoyagi and William Shurtleff visited Farm Food Company (also called the California Farm), which is a branch of The Farm (Summertown, Tennessee) as the first stop on our 4-month Tofu & Miso America Tour (29 Sept. 1976 to 3 Feb. 1977). Don Wilson, the tempeh maker, kindly let us observe and record his method and equipment for making tempeh and tempeh starter. He started with 10 pounds of dry soybeans and ended up with 22 pounds of excellent tempeh, which was sold at the Farm Food Co. retail store in San Rafael.

The description of Don's process appeared first in 1976 as a typewritten leaflet, then was later published in our book *Tempeh Production* (1980). Address: Farm Food Company, 820 "B" Street, San Rafael, California 94901. Phone: 415-454-3797.

479. Beuchat, L.R. 1976. Fungal fermentation of peanut press cake. *Economic Botany* 30(3):227-34. Sept. [40 ref]
• ***Summary:*** Discusses the preparation of ontjom and gives a detailed analysis of its composition. Address: Dep. of Food Science, Univ. of Georgia, Georgia Agric. Exp. Station, Experiment, Georgia 30212.

480. **Product Name:** Tempeh.
Manufacturer's Name: Farm Food Co.
Manufacturer's Address: 820 B St., San Rafael, CA 94901.
Date of Introduction: 1976. September.
New Product–Documentation: Shurtleff & Aoyagi. 1976.

What is Tempeh? p. 5. Attn: Lewis Headrick. This is a natural food store and soy dairy that makes and sells fresh, fried, and frozen tempeh. Shurtleff, W. 1976. Sept. Don Wilson's method of making tempeh at Farm Food Co. in San Rafael. 2 p. Unpublished manuscript. Shurtleff and Aoyagi visited this small tempeh shop in Sept. 1976.

481. Revelle, Roger. 1976. The resources available for agriculture: The physical resources of earth, air, fire (energy) and water are large but essentially fixed. The biological and social resources, however, are far from being pressed to the limit. *Scientific American* 235(3):164-68, 170, 172-74, 177-78. Sept.
• ***Summary:*** Pages 170 and 172 discuss the importance of microorganisms and fermentation. "The fermentation process not only adds distinctive flavors, which are prized in their own right, but also often augments the content of riboflavin and other vitamins. Sauerkraut and yogurt are familiar fermentation products in American diets; tempeh, ragi, sufu, shoyu, ang-kak, tea fungus and mizo [sic, miso] are among those eaten in Asian countries." Address: Director, Center for Population Studies, Harvard Univ., Massachusetts.

482. Shurtleff, William; Aoyagi, Akiko. 1976. Tofu & Miso America Tour: 29 Sept. 1976 to 3 Feb. 1977 [Itinerary with two maps]. Lafayette, California: New-Age Foods Study Center. Unpublished manuscript.
• ***Summary:*** On 13 Sept. 1976 the authors bought a large, white 1975 Dodge Tradesman 300 van (used, with 40,000 miles on it). On one side Akiko painted in large, bold letters "Tofu and Miso America Tour 1976-77." Their *Book of Tofu* had been published in December 1975 and *Book of Miso* on 23 Sept. 1976. On Sept. 29 they packed the van full to the ceiling with their books on tofu and miso, plus Larry Needleman's tofu kits–and departed.

This trip had four main purposes: (1) To introduce tofu and miso to America; (2) To introduce people to the many benefits of a meatless/vegetarian diet; (3) To encourage people to start soyfoods companies, especially tofu shops; and (4) To promote the authors' newly-published *Book of Tofu* and *Book of Miso.*

This itinerary includes the name and address of 64 people and organizations visited. Many of these were pioneers in the soyfoods and natural foods movements: Sept. 29–David and Kathleen Sandler, Robert Dolgin, Don Wilson, Farm Food Co. (San Rafael, California; we observed and recorded in detail how Don Wilson made tempeh and tempeh starter / inoculum at Farm Food Co.). Oct. 1–Petaluma, California. Oct. 2–Josephine County Food Center, Grants Pass, Oregon. Oct. 3. Heliotrope Natural Foods (Salem, OR). Oct. 4–West Bank Cafe (Corvallis, OR). Oct. 5. Visit Linda Shurtleff (McMinville, OR). Visit *Rain Magazine* (Portland, Oregon). They do an interview which is published in their Nov. 1976 issue. Oct. 6. Blake Rankin and Janus Natural Foods (Seattle, Washington). Oct. 7. Janus. Oct. 8–Luke Lukoskie and Sylvia Nogaki of Island Spring (Vashon, Washington). Oct. 10–Jack Grady, a macrobiotic (Spokane, WA). Oct. 13–Univ. of Minnesota. Oct. 14–Georgie Yiannias of Wedge Food Co-op and Ananda Marga (Minneapolis, Minnesota). Our largest class with 300 people. Oct. 15–Barbara ("Bobbie") Reinhardt Shurtleff dies of colon cancer at Alta Bates Hospital, Berkeley, CA. Oct. 15. Famine Food Co-op (Winona, Minnesota). Oct. 16–Bonnie Maroney of The Wisconsin Farm (Ettrick, WI). Oct. 19–Visit George Strayer and Larry Krueger of the American Soybean Assoc. (Hudson, Iowa). Visit David and Ann Tucker (Iowa City, Iowa). Oct. 20. Outpost Natural Foods (Milwaukee, WI). Visit Bountiful Bean Co-op. Oct. 21. Visit Dr. Danji Fukushima and Kikkoman Foods (Walworth, Wisconsin). Oct. 22–Visit Drs. Hesseltine, Wang, Wolf, Mustakas, Cowan at Northern Regional Research Center (Peoria, Illinois). Oct. 23–Morning class on commercial production for Les Karplus and 5 people at Vegetarian Incorporated (Urbana, Illinois). Oct. 23-24. Side trip to visit ADM and Staley (Decatur, IL). Oct. 24–Les and Debbie Karplus of Vegetarian Inc. (Urbana, IL). Oct. 25–Visit Dr. L.S. Wei of the Univ. of Illinois Dept. of Food Science (Urbana, Illinois). Evening program for Karplus in Urbana. Oct. 26. Purdue University (Indiana). Oct. 27–Chris Steele (Lansing, Michigan). Oct. 28–Mike Potter and Louis Howie of Eden Foods (4601 Platt Rd., Ann Arbor, Michigan). Oct. 29–Calico Market (Erie, Pennsylvania). Oct. 30–Visit Greg Weaver and Jay Thompson of Rochester Zen Center (Rochester, New York; Later Northern Soy). Visit Genesee Co-op. Oct. 31–Alternative Health Education Center (Rochester).

Nov. 1–Visit Arnold Karmody at Empty Cloud (Canandaigua, New York). Meet Dr. Keith Steinkraus (Geneva, New York). Nov. 2–Visit with Dr. Steinkraus at New York Agric. Exp. Station (Geneva, NY). Lunch together with his wife, Maxine. Nov. 3–Tom MacDonald at Hannibal, New York. Nov. 4–Ira and Kathy Leviton of Corncreek Bakery (South Deerfield, Massachusetts). Visit Laughing Grasshopper tofu shop just before it begins operation. Nov. 5–Fritz Hewitt of Common Ground Restaurant (Brattleboro, Vermont). Visit Tom Timmins of Llama, Toucan & Crow (Brattleboro). Nov. 6. Shep Erhard (Franklin, Maine). Nov. 7–Ann S. Johnson at Univ. of Maine (Orono, ME). Nov. 8–Visit Marine Colloids (Rockland, Maine). Nov. 10–Drive to Boston, stay with Nahum & Beverly Stiskin (Brookline). Nov. 13–Tofu & Miso program in Boston. Visit Erewhon Natural Foods (33 Farnsworth St., Boston, Massachusetts), Martha Trundy, Jeffrey & Gretchen Broadbent. Nov. 14–Visit to shops in Boston's Chinatown. Michio and Aveline Kushi give a big party in our honor at their home at 62 Buckminster Rd., Brookline, then take us out to dinner at the Seventh Inn. Nov. 15–Tofu-making class at a home in Boston. Nov. 17–Visit offices of *East West Journal.* Sherman Goldman conducts long interview, later published in Jan. 1977 issue.

Misomaking class at home of Ken Burns. Nov. 18–Visit Joel Wollner in Cape Cod. Nov. 19–Radio show then program for Joel. Nov. 20–Peter Smith at Quaker group in Pennsylvania. Nov. 22–Visit Woods Hole, Massachusetts to study sea vegetables. Evening program at New Bedford, MA. Nov. 23–Stay with Seung Sahn, Sa Nim at Providence, Rhode Island Zen Center. Meditate and show students how to make tofu. Evening at Insight Meditation Center, Barre, MA, a Vipassana center in a former Catholic seminary, co-founded in 1976 by Jack Kornfield, Joseph Goldstein and 3 others. We have dinner, meditate with the sangha, and hear Jack talk about Vipassana. Nov. 24 Sit morning zazen with master and students at Providence zendo. Nov. 25–Thanksgiving. Akiko and I stay alone in a house near Hartford, Connecticut and taste a good tofu pumpkin pie. I read about seaweeds. We take a long walk in the countryside. Nov. 26–Program for Erewhon Natural Foods in Hartford (stay with Maria Orefice, owner of Garden of Eating restaurant in Hartford). Article in *The Hartford Courant* (Dec. 1). Nov. 27–Long River Food Coop in Connecticut. Nov. 28–Stay with Susan and Kirk Gershuny of Snowflower (Tivoli, New York). They plan to make soy ice cream soon. Nov. 29–Drive in Deep snow to the New York Farm in Franklin, New York. Stay in a big house they built. Nov. 30–Carl Bethage of the East West Center in Gardiner, New York. Also did a radio program.

1976 Dec. 1–Visit Frances Moore Lappé at her upstairs office in Hudson-on-Hastings, New York. Then visit her large home on the hillside. Dec. 1-5–We missed a program for Annemarie Colbin in New York City (partly because we feared our van would be burglarized on the street) so we stayed Dec. 1-5 at the luxurious home of Leo S. Nikora (Niki; Bobbie's friend). I work on writing *The Book of Kudzu.* Dec. 6-7. Program for 40 people (Hosts: Nancy N. Bailey and Robert Rodale) at Rodale Press (Emmaus, Pennsylvania); I am surprised they serve white sugar on their dining tables. Dec. 8–Tim Snyder of Ecology Co-op in Philadelphia. Dec. 9–Stay at home of Sylvia Anderson in Pleasantville, New Jersey and do a program upstairs in a modern university. Study magnificent photos of Native Americans by Edward S. Curtis. Dec. 10–Visit Jay and Freya Dinshah of the North American Vegetarian Society (Malaga, New Jersey); their poor vegan child has bowed legs. Dec. 12–Cindy Blouse in Dallastown, Pennsylvania. Dec. 13–Visit Laurelbrook Foods, a natural foods distributor in Forest Hill, Maryland. We meet Rod and Margie Coates. Dec. 14–Big program hosted by Ella May Stoneburner and Seventh-day Adventists near Washington, DC. Dec. 15–Michael Rosoff (who ran the East West Center in Washington, DC) planned to host a class in a DC church. After we witness a robbery, we are afraid to leave our van on the street. So we do a scaled-down program in the home of Murray and Pam Snyder, which was the East West Center in Baltimore, Maryland. Visit Laurelbrook Foods Warehouse #2 in Durham / Chapel Hill. Dec. 16–Roanoke Food Co-op in Copper Hill, Virginia. Dec. 17-18–John Shuttleworth and Jim Morgans of *Mother Earth News* (Hendersonville, North Carolina). They do a long interview and take photos. Program at night. Note: An audio tape of Bill's talk at this program is filed with Soyfoods Center documents for 1976. Dec. 19–Chandler Barrett in Atlanta, Georgia.

Note 1. This is the earliest document seen (April 2001) concerning the work of Ira Leviton or Tom Timmins with soy. One evening, before Shurtleff was scheduled to speak at Leviton's Corncreek Bakery, Leviton drove Shurtleff to see the Laughing Grasshopper Tofu Shop which was under construction on the second story of an old wooden building in the nearby town of Millers Falls, Massachusetts. Much of the equipment was made out of wood–including wooden curding vats and a wooden cider press. The company opened in Jan. 1977.

Note 2. This is the earliest document seen (April 2006) concerning Llama, Toucan & Crow in Brattleboro, Vermont.

Note 3. This is the earliest document seen (May 2006) concerning the forerunners of United Natural Foods, Inc. (INFI)–in the form of Llama, Toucan & Crow. Address: 790 Los Palos Manor, Lafayette, California 94549. Phone: 283-3161.

483. Shurtleff, William. 1976. New-Age Foods Study Center: Basic purposes and activities (Leaflet). Lafayette, California. 1 p. Single sided. Sept. 28 cm.

• ***Summary:*** "1. To work toward creative, low-cost solutions to the present world food/protein crisis by doing basic research and writing books... Our special interests include soybean products (tofu, miso, tempeh, shoyu, etc.), sea vegetables, whole-grain bread, and kuzu.

"2. To aid in the spread of the ideas found in our writings by regularly responding to invitations from any part of the world to do lecture/demonstrations and cooking classes."

3. To encourage the adoption of meatless and vegetarian diets which help make the best use of the planet's precious food resources, are low in cost, conducive to the development of a healthy body and clear mind, kind to animals, and ecologically sound.

"4. To encourage people in the West to begin commercial or community production of tofu, miso, and tempeh...

"5. To provide centers where people can come to learn more about our work and to begin their own study of basic important foods. In Japan, we assist people in studying with tofu- and miso masters..."

"6. To work actively to promote the key concept of food self-sufficiency and simpler, low-cost lifestyles that are harmonious with the needs of the planetary ecosystem. Likewise to encourage deeper understanding of selfless service, and of daily life and work as a spiritual practice.

"7. To provide a catalog of publications and materials

related to our work. We invite you to contact us and we hope we may be of service to you." Address: New-Age Foods Study Center, 790 Los Palos Dr., Lafayette, California 94549. Phone: (415) 283-3161.

484. Shurtleff, William; Aoyagi, Akiko. 1976. Tofu & Miso America Tour: 29 Sept. 1976 to 3 Feb. 1977. Continued from Jan. 1977. [Itinerary with two maps]. Lafayette, California: New-Age Foods Study Center. Unpublished manuscript. • ***Summary:*** Continued: 1976 Dec. 21. Arrive at The Farm in Summertown, Tennessee. Meet Margaret Nofziger and Stephen Gaskin. Stay until 2 Jan. 1977. We stayed most of the time at "Hoot Owl Hollow," a large community owner-built home with many families; our host was Edward Sierra. During the next few weeks we stayed in a parked mobile home (owned by the Sandlers) in a lovely valley about 1 hour drive away. I worked on *The Book of Kudzu* final draft. Heavy confrontation with Farm folks–as I am about to start a program–about how they didn't like my way. Write a 4-page pamphlet titled "What is Tempeh?" jointly with Cynthia Bates. 1976 Dec. 31–This is our first year with significant income ($27,390, mostly from Autumn Press royalties) but no profit. During 1976 thirty articles and book reviews about our work with tofu and miso were published in magazines and newspapers in the USA and Japan.

1977 Jan. 2–Our Tofu & Miso America Tour continues. Jan. 3–Stay in a suburban home with Lynn Delacruz in Meridan, Mississippi. Jan. 4–Program for Atlantis Distributors in New Orleans. That night we stay in a trailer home with John and Katherine Gabriel in Houma, Louisiana. They are from The Farm and make commercial tempeh in their trailer. Jan. 6–Jim Baker (Dallas, Texas). After the program I meet Dr. Ralph Sand who is studying tofu and soy cheeses at Anderson Clayton. We also visit with my cousin, Bob Shurtleff, near Dallas. Jan. 7–Jane Binante in Denton, Texas. Jan. 9–Jim Hemminger of Gregg St. Tofu Co. (started by Thom Leonard) in Fayetteville, Arkansas. His partner is Mary Weingartner. We sleep on the floor of a small house in Fayetteville and the next morning see Jim make tofu in a bathtub. Jan. 10–East Wind in Tecumseh, Missouri. Jan. 12–Stay with Robert Nissenbaum (a fine, humble fellow) in St. Louis, Missouri. I finish typewritten manuscript of "What is Tempeh?" Jan. 13–Program at a restaurant, The Sunshine Inn (St. Louis). Sponsored by The Ethical Society. Stephen Uprichard, Dale Deraps, and Robert Nissenbaum are there.

Jan. 15–Meet David and Danette Briscoe (Kansas City, Missouri; they soon start publishing *Soycraft,* a small periodical on soyfoods), dinner with Thom Leonard at his home in Lawrence, Kansas (we have miso soup with miso that Thom made, then do a big program sponsored by the Mercantile Community Co-op in downtown Lawrence at either the Lawrence Library or Community Center–in a big downstairs room. I tape the lecture. Unbeknownst to me, Ken Bader, CEO-to-be of the American Soybean Assoc., is in attendance). Jan. 16–Visit Bob Amelay of the Omaha Food Co-ops in Omaha, Nebraska. Jan. 17–Drive across Nebraska to Denver. Jan. 18-19–Dave Bolduc and Christie Shurtleff in Boulder, Colorado. The first night we do a big tofu program in the historic Boulder Theater. That afternoon we have an audience with the Karmapa–a high Tibetan spiritual leader, who has diabetes; we give him an inscribed hardcover copy of *The Book of Tofu.* Akiko recalls cooking tofu burgers for him. That evening in a large, packed hall, we witness his Holiness conduct the Black Crown Ceremony. Jan. 20. Jimmy Carter is inaugurated as president. Jan. 24–Program for The Colorado Farm in Hotchkiss, Colorado–way out in the boondocks. Jan. 25–Stay with Andrea Chin in Taos, New Mexico. Visit Lama Foundation high above Taos in the snow (Steve Durkee, teacher). They have many small meditation cubicles around the hillside and have just finished a nice adobe meditation hall. Near Durango, Colorado, we visit Ed Tripp, who looks lonely, sad and desolate, farming a little patch of organically grown wheat and living alone in a bare shack on coffee and cigarettes. Jan. 26. We stay somewhere in New Mexico. Jan. 27–Program at the First Unitarian Church in Albuquerque (79 p.m.) hosted by Michele E. Martin of Jemez Bodhi Mandala Zen Center, Jemez Springs, New Mexico. Sit meditation in their cold Rinzai zendo then soak in the hot springs outside in the snow. Their teacher, Sasaki roshi, is not there. Jan. 28–Susan Berry in Silver City is supposed to host a program. We cannot find her house. At one point along in here we do a program in or near Utah in a remote church up on a little bluff. Dinner before at Frosty Hot Dog place. Jan. 29–Long drive across Arizona to San Diego. Jan. 30–Big program in San Diego for 350 people at the Ocean Beach Community School hosted by David and Barbara Salat, publishers of *Well Being* magazine. Afterwards we stayed overnight on their houseboat in San Diego Bay. Magical. Akiko had a bad cough and was very tired.

In Los Angeles we spend a day (in late January or early February 1977) with Lewis Headrick and Jimmy Silver visiting three small tempeh shops: Bali Foods (in Baldwin Park, run by Mr. Henoch Khoe), Country Store Health Foods (in Sun Valley; Joan Harriman), and Toko Baru (in West Covina; Randy Kohler). One evening we had dinner with Mr. Yamauchi and perhaps Al Jacobson. I gave a presentation on tofu. Afterwards, in the parking lot, Mr. Yamauchi gave me an envelope containing several hundred dollars in bills–his way of saying thank you for the work we were doing on behalf of tofu. Feb. 1. Drive to northern California, then have dinner at the home of Herman and Cornellia Aihara (Oroville, CA). Feb. 2. Last program of the tour for Harold Lockhard of the Sacramento Natural Foods Co-op (Sacramento, California; Program is in a modern college building).

On 3 Feb. 1977 arrive home in Lafayette, California.

On this 4-month tour the Shurtleffs, trying to do for

soyfoods what Johnny Appleseed did for apples, presented 70 public programs attended by about 3,646 people, did many media interviews and appearances, and travelled 15,000 miles. They had a gross income of $18,020 from honoraria and sales of their books (Book of Tofu, Book of Miso), tofu kits, pamphlets, and nigari. Total trip expenses were about $5,361 plus about $7,200 for books from the publisher, leaving a net income of about $5,459. It was a huge, challenging, and exhausting Odyssey that bore abundant fruit in the founding of a new tofu shop almost everywhere they spoke.

1977 Feb. 9–Meeting in Lafayette (790 Los Palos Dr.) with Robert Dolgin and David Sandler (from the Farm and Farm Foods in San Rafael) and Larry Needleman leads to the establishment of Bean Machines, Inc. (BMI). The Farm places a firm order for a Japan tofu system.

1977 Feb. 12–Bill and Akiko leave America and fly to Japan. Air fare paid by Hydrometals. Address: 790 Los Palos Manor, Lafayette, California 94549. Phone: 283-3161.

485. USDA Northern Regional Research Center. 1976. Papers on fermented foods from the Northern Regional Research Center. Peoria, Illinois. 4 p. Sept. 8. [55 ref]
• ***Summary:*** Of the 55 citations listed, the majority are related to soybeans. Address: Peoria, Illinois 61604.

486. Cherry, J.P.; Beuchat, L.R. 1976. Comparative studies of protein and amino acid changes in peanuts infected with *Neurospora sitophila* and *Rhizopus oligosporus. Cereal Chemistry* 53(5):750-61. Sept/Oct. [21 ref]
• ***Summary:*** "The Indonesians prepare a product called 'ontjom' from peanut press cake by fermenting the cake with a reddish-orange mold, *Neurospora sitophila.* Less often, *Rhizopus oligosporus* is used to produce white ontjom. The latter organism is also used to manufacture tempeh from soybeans." Address: Dep. of Food Science, Univ. of Georgia Experiment Station, Experiment, GA 30212.

487. Gunawan, Cecelia. 1976. Percobaan membuat inokulum untuk tempe dan oncom [Experiments on the preparation of inocula for tempeh and onchom]. Paper presented at Lembaga Kimia Nasional–LIPI. 24 p. Held 11 Oct. 1976 at Bandung, Indonesia. [Ind]*

488. Liener, Irvin E. 1976. Nutritional aspects of soy protein products. In: Archer Daniels Midland Co., comp. 1976. Edible Soy Protein Seminar. Decatur, Illinois. 220 p. See p. 13-85. Held in 1976 at Moscow, USSR and Warsaw, Poland. [265 ref]
• ***Summary:*** Contents: Nutritional value of the protein of individual soy products: General considerations, soybeans as a vegetable, soyflour, soybean milk, soybean curd, protein concentrates, protein isolates, fermented products. Blended soy products: Blend with wheat protein, blend with corn protein, blend with rice, vegetable-protein formulations, soy protein as meat extender. Textured meat analogs. Nutritional value of non-protein constituents: Available energy, crude fiber, vitamins (fat-soluble vitamins, water-soluble vitamins), minerals (calcium, phosphorus, zinc, other metals). Antinutritional factors: Heat-labile factors (trypsin inhibitor, hemagglutinins, other heat-labile factors), heat-stable factors (saponins, estrogens, flatulence factors, lysinoalanine). References. Tables.

Concerning lysinoalanine (p. 58-59): "Sternberg et al. (1975) have recently shown lysinoalanine to be widely distributed in cooked foods, commercial food preparations, and food ingredients, many of which had never been subjected to alkaline treatment. Many of these foods had levels of lysinoalanine which were considerably higher than those found in commercial samples of soy protein isolate. The wide distribution of lysinoalanine among commonly cooked foods would tend to indicate that" this is neither a novel protein nor a serious problem, as some humans have long been exposed to proteins containing lysinoalanine with apparent impunity. "Its presence in soy protein can hardly be considered a serious problem for man." Address: Dep. of Biochemistry, Univ. of Minnesota, St. Paul, MN 55108.

489. Nelson, Alvin I.; Ferrier, Les K. 1976. Soybean processing using low level technology. Urbana, IL: University of Illinois. 34 p. Soybean Food Processing Terminal Report. Contract AID/TA/C-1294. 1 April 1976 to 31 Oct. 1976.
• ***Summary:*** The soybeans investigated were whole dry soybeans, soymilk, and tempeh. Address: Dep. of Food Science, Univ. of Illinois, Urbana, Illinois.

490. Bhumiratana, Amara. 1976. Small-scale processing of soybeans for food in Thailand. *INTSOY Series* No. 10. p. 143-46. R.M. Goodman, ed. Expanding the Use of Soybeans (College of Agric., Univ. of Illinois at Urbana-Champaign).
• ***Summary:*** Contents: Introduction. Fermented soybeans. Soymilk. Yuba. Yoghert [Soy yogurt, inoculated with *Lactobacillus bulgaricus* and *L. acidophilus* and incubated at 37ºC for 16-20 hours]. Chinese soya bean dessert (Taow Huey). Tofu (white or yellow). Sufu. Soybean snack (protein crisp; deep-fried sufu). Tempeh. Thai dessert. Kanom ping kaset. Baby food. Kaset noodle. Kaset protein. Note: There is a flowchart and photo of each product.

"The Institute of Food Research and Product Development, Kasetsart University, initiated several soybean utilization pilot projects five or six years ago. Using soybeans alone or combined with other ingredients, we have developed a range of products, such as baby foods, kaset protein, and snacks. Tests indicate that these foods are highly acceptable, being both palatable and nutritious. Some of these products are soon to be manufactured commercially by small-scale industries. This paper is a description of the

soy food processing methods developed by the Institute." Address: Inst. of Food Research and Product Development, Kasetsart Univ., Bangkok, Thailand.

491. Somaatmadja, Sadikin; Guhardja, Edi. 1976. Current status of soybean research and utilization in Indonesia. *INTSOY Series* No. 10. p. 232-35. R.M. Goodman, ed. Expanding the Use of Soybeans (College of Agric., Univ. of Illinois at Urbana-Champaign). [1 ref]
• ***Summary:*** Contents: Introduction. Production: Hectarage and yield. Production techniques: Systems of cultivation, inoculation, harvesting and processing for storage, storage. Factors affecting soybean production in Indonesia: Seed viability and seed supply, pests, diseases, cultural practices, varieties. Consumption and utilization. Marketing. Extension: Training, method used to increase soybean production (expansion of hectarage, intensification, varieties).

"At present soybeans occupy fifth place among the other food crops, after rice, cassava, maize, and sweet potatoes. Research on soybeans is conducted at the Central Research Institute for Agriculture (CRIA) at Bogor and its substations, including Sukamandi and Ujung Pandang; at several universities, such as the Institut Pertanian Bogor, Universitas Gadjah Mada, Jogyakarta, and Brawijaya Malang; and at other research institutes, including Badan Tenaga Atom Nasional, Jakarta, and Lembaga Biologi Nasional, Bogor.

"From 1970 to 1973 the annual harvested hectarage of soybeans averaged 703,878 hectares with a production of 517,199 metric tons and an average yield of 7.34 quintals [1 quintal = 100 kg] per hectare. Approximately 80 to 85 percent of the total soybean hectarage in Indonesia is in Java-Madura...

"Per capita consumption of soybeans in Indonesia reflects the distribution of the crop. In Java the per capita consumption each year is about 5.04 kg; in Sumatra, Kalimantan, Sulawesi, and Maluku/Irian Jaya between 0.10 and 1.04 kg; and in Bali about 3.43 kg.

"Soybeans are not consumed directly, but are processed into a large number of products. Tempeh (fermented soybeans), tahu (soybean curd), tauge (soybean sprouts), kecap (soy sauce), tauco (fermented mixture [Indonesian miso]), and oncom (made from residues of soymilk and tahu) are consumed as side dishes with rice. Roasted beans, tahu chips, and boiled seeds are eaten as snacks, and boiled young pods are prepared as a green vegetable. Soymilk is consumed as a beverage." Address: 1. Sukamandi Research Station, Central Research Inst. for Agriculture, Sukamandi; 2. Bogor Agricultural Univ., Bogor. Both: Indonesia.

492. Winarno, F.G.; Karyadi, Darwin. 1976. Nutrition and processing of soybeans. *INTSOY Series* No. 10. p. 137-42. R.M. Goodman, ed. Expanding the Use of Soybeans (College of Agric., Univ. of Illinois at Urbana-Champaign). [21 ref]
• ***Summary:*** Contents: Introduction. Nutritional status. Soybeans as source of good-quality protein: Chemical composition, nutritive value, other components. Storage of soybeans. Processing and its effects on nutritive value: Effects of heating on nutritive value, effects of heating on flavor, soybean varieties and processing methods. High protein food mixtures: Saridele, Tempeh-fish-rice, soya-rice baby food, soybean residue-fish-rice (with okara), other food mixtures. Conclusion. Discussion.

"In 1952 the Institute of Nutrition started a study of soybean milk. As a result of the study, a factory was set up in Jogyakarta in 1957 with the assistance of FAO and UNICEF. The product, which was called Saridele, was made from soybeans, peanuts, and sesame seeds, and was fortified with minerals and vitamins. The nutrient composition of Saridele compared with that of cow's milk is shown in Table 6. The production of Saridele was discontinued after 1966 because of the irregular supply of soybeans and marketing problems." Address: 1. Agricultural Engineering and Product Technology, Bogor Agricultural Univ., Fate Meta, Jl. Gu Gede; 2. Nutrition Research and Development Centre. Both: Bogor, Indonesia.

493. Saono, S.; Brotonegoro, S.; Abdulkadir, S.; Basuki, T.; Jutono, -; Badjra, I.G.P. 1976. Microbiological studies of tempe, kecap, and taoco. I. The microbial content and its amylolytic, proteolytic, and lipolytic activities. Progress Report Subproject III.b. ASEAN Project for Soybean and Low-Cost High Protein Foods. Jan-Dec. 1976. Unpublished manuscript. *

494. **Product Name:** Tempeh Starter & Instructions (Vacuum Dried–Powdered).
Manufacturer's Name: Farm Foods.
Manufacturer's Address: 156 Drakes Lane, Summertown, TN 38483.
Date of Introduction: 1976.
New Product–Documentation: Label. 1977, dated. 4.5 by 6.5 inches. Brown on white. Makes 6 lb. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center. Farm Foods Products Catalog. 1978. p. 3-4.

Ad in Tom Riker and Richard Roberts. 1979. *The Directory of Natural & Health Foods.* p. 189. "Tempeh starter is cultured on white rice in our laboratory. The spores are dehydrated and dormant when purchased... The tempeh starter is combined with sterile wheat starch to allow for easy mixing and a more even distribution of starter throughout the beans."

Talk with Robert Tepper of Farm Foods. 1984. May 4. In 1975 Cynthia Bates set up a little laboratory and began to make powdered, pure-culture tempeh starter for use on the Farm. By 1976 it was being sent out or sold commercially to interested people.

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 43, 56. "In 1984 Farm Foods had about 60% of the U.S. tempeh starter market, Turtle Island 35-40%, and GEM Cultures 0-5%."

Note: This is the earliest known commercial tempeh starter made in the United States.

495. Jensen, J. Stoumann; Djurtoft, R. 1976. Preparation of tempeh, a fermented food, from whole grain legumes and cereals: A summary of experiments and results obtained 1970-74 in Denmark, Ghana and Nigeria. Lyngby, Denmark: Dept. of Biochemistry and Nutrition, Technical University of Denmark. 50 p. Including 15 color photos, each with a caption. [30 ref]
• ***Summary:*** Discusses tempeh made from broad beans (*Vicia faba*), cowpeas (*Vigna sinensis*), barley and/or wheat, broad beans plus barley or wheat (the best taste was obtained from 2 parts by boiled weight wheat plus 1 part broad beans). Taste tests by Danish judges of broad bean tempeh, wheat + broad bean tempeh, and soybean tempeh, each fried, gave soybean tempeh the highest ratings. Taste tests by 19 African judges from 10 countries showed that fried broad bean tempeh was acceptable to 16 of 19. Danish judges found cowpea tempeh just as acceptable as soybean tempeh.

Jensen made a 3-week trip to Ghana and Nigeria to discuss the tempeh concept with local people and to obtain more information about local legume preparation and consumption. Africans will find it hard to accept uncooked tempeh, since the mold reminds them of a food in the process of deterioration. Moreover, West Africans did not like the taste of cowpea tempeh. Two other problems are obtaining, propagating, and storing the tempeh starter/inoculum, and storage and distribution of the fresh tempeh. Address: Lyngby, Denmark.

496. Muljokusumo, E. Sudigdo. 1976. Témpé dan oncom benguk gage: Kita membuat seri 2 [Tempeh and onchom in the form of dage: Series 2]. Bandung, Indonesia: Penerbit Tarate. [Ind]*

497. Sastroamidjojo, M.S.A. 1976. Proses pertempean sebagai sesuatu jalan untuk mengatasi crisis protein [Tempeh processing as a solution to the protein crisis]. Yogyakarta: Fakultas Pertanian Universitas Gadjah Mada. 4 p. Unpublished manuscript. [Ind]*
Address: Yogyakarta, Indonesia.

498. Sudjana, Rusman. 1976. Pembuatan tempe kedelai bebas minyak dengan alat ekstraktor buatan sendiri [Preparation of fat-free tempeh using a homemade extractor]. Bandung: Lembaga Kimia Nasional–LIPI. 9 p. Unpublished manuscript. [Ind]*
Address: Bandung, Indonesia.

499. Suharni, Th. Tri; Sidemen, I.G. Badjra; Sutariningsih, Edang. 1976. Peranan beberapa bakteri dalam pembentukan growth factor pada fermentasi tempe [The role of several bacteria in growth factor formation during tempeh fermentation]. Yogyakarta: Fakultas Biologi Universitas Gadjah Mada. 16 p. Research report. [Ind]*
Address: Yogyakarta, Indonesia.

500. Tanuwidjaja, Lindayati. 1976. Pembuatan tempe dan makanan sejenisnya dari tepung kedelai [Preparation of tempeh and other foods from soy flour]. Bandung: Lembaga Kimia Nasional LIPI. 15 p. Research report. [Ind]*
• ***Summary:*** Discusses soy flour tempeh. Address: National Inst. of Chemistry, Bandung, Indonesia.

501. Batra, L.R.; Millner, P.D. 1976. Asian fermented foods and beverages. *Developments in Industrial Microbiology* 17:117-28. [53* ref]
• ***Summary:*** "Kenima. This soybean product is known from Nepal, Sikkim, and Darjeeling districts of India. Externally, it resembles Indonesian *tempeh* and is consumed in the same manner: salted, deep-fried, and used as an adjunct to staples such as rice. Soybeans, soaked and dehulled, as described above, are cooked in water for 2-3 hours, presumably inoculated by chance inoculum, and wrapped in leaves of banana or other large leaves. In 24-48 hours at 22-30ºC, and sometimes longer, the beans become mucilaginous. No yeasts or filamentous fungi were recovered consistently from the three samples analyzed from Darjeeling, but two rod-shaped, acid-producing bacteria, present at levels of 1-10 million per gram of wet weight, were recovered. Uncooked *kenima* was unappealing to the western taste but when deep-fried and salted, it had a pleasant, nut-like flavor." A photo shows kinema spread on a mat as sold at market places in northeast India.

Note 1. This is the earliest document seen (Aug. 2010) that uses the word "kenima" to refer to "kinema." It is actually much more closely related to natto than to tempeh in consistency, appearance, and type of fermentation organisms used.

Note 2. In 1986 Batra stated that in this 1976 publication the incubation temperature of "kenima" was erroneously reported as 22-30ºC; it should have been 35-45ºC. Address: ARS, USDA, Beltsville, Maryland 20705.

502. Beuchat, Larry R.; Basha, S.M.M. 1976. Protease production by the ontjom fungus, *Neurospora sitophila. European J. of Applied Microbiology* 2(3):195-203. [12 ref]
• ***Summary:*** "Maximal activity of protease of extracted from 4-day-old cultures occurred at pH 6.5 when an unfractionated peanut (groundnut) protein substrate was used. The greatest protease activity and mycelium production occurred during the first day of the 4-day test period." Address: Dep. of Food Science, Univ. of Georgia Agric. Exp. Station, Experiment,

GA 30212.

503. Directions for tempeh fermentation. 1976. Peoria, Illinois: USDA NRRC. 1 p. Sent to those ordering tempeh starter. Unpublished manuscript.
• ***Summary:*** Steps 1-7 describe how to make tempeh in a typical home. A footnote at the end of step 7 states: "(1) The odor of the fermented product should be pleasant without the odor of ammonia. If this odor is present, then the fermentation has gone too long. (2) Any other unpleasant odor indicates the development of undesirable bacteria."

Step 8 (a basic recipe) states: "This mass of mycelium and beans is then sliced into thin slices about ½ cm. or less in thickness, dipped into salt water, and fried in a vegetable oil. The slices will become a golden brown color and are delicious when hot. One may want to salt to suit one's taste and some like to add soya sauce or ketchup to the hot, crisp slices."

Suggested containers: The tempeh should be fermented in shallow metal trays or perforated plastic bags at 31°C (88°F) for 20-24 hours.

Note: Although no authors' names appear on this sheet, it was written by Dr. H.L. Wang and co-workers. Address: NRRL, Peoria, Illinois.

504. Essen, Berty van. 1976. Vegetarisch kookboek [Vegetarian cookbook]. Bussum, Netherlands: C.A.J. van Dishoeck. 126 p. Illust. 22 cm. Recipe index. [Dut]
• ***Summary:*** Soy-related recipes include: Fried tofu (Gebakken tahoe, p. 38). Soybean dish with vegetables (Sojabonenschotel met groenten, p. 104-05). Fried tempeh (Gebakken tempé, p. 106). Address: Hilversum, Netherlands.

505. Gandjar, I.; Slamet, D.S. 1976. The nutrient content of fermented *Mucuna pruriens* seeds [tempe benguk, or velvet bean tempeh]. In: M.A. Rifai, ed. 1976. ASEAN Grain Legumes. Bogor, Indonesia: Central Research Institute of Agriculture. 225 p. See p. 201-06. [9 ref]
• ***Summary:*** The mature seeds of *Mucuna pruriens* are mostly consumed by people living in Central Java in a fermented form known as 'tempe benguk'. Physically the bean cake, the tempe benguk, resembles tempe from soybeans. It is consumed fried or mixed with vegetables in soups as a side dish with rice. Address: Nutrition Research Inst., Bogor, Indonesia.

506. Hakim, Rusli. 1976. Grain legumes in Indonesia. In: M.A. Rifai, ed. 1976. ASEAN Grain Legumes. Bogor, Indonesia: Central Research Institute of Agriculture. 225 p. See p. 1-7. [3 ref]
• ***Summary:*** Grain legumes have long been grown in Indonesia; traditional uses include bean curd [tofu], tempe [tempeh], oncom [onchom], soysauce, soypaste, and roasted nuts.

Tables show: (1) A ten year average of production, acreage, and yield of soybeans in Indonesia, 1961-1971–by province. The provinces with the highest average production are: East Java (Jawa Timur) 249,651. Central Java (Jawa Tengah) 75,775. West Nusa Tenggara (Nusa Tenggara Barat) 26,659. West Java (Jawa Barat) 18,319. Yogyakarta 11,952.

(3) Per capita consumption of soybeans in Indonesia 1970 (kg per capita per year). West Nusa Tenggara (Nusa Tenggara Barat) 14.14. East Java (Jawa Timur) 5.04. Central Java (Jawa Tengah) 5.04. West Java (Jawa Barat) 5.04. Yogyakarta 5.04. Jakarta 5.04. Bali 3.43. Address: Central Research Inst. for Agriculture, Bogor, Indonesia.

507. Hermana, -. 1976. Saving the protein waste from processing of legumes in Indonesia. In: M.A. Rifai, ed. 1976. ASEAN Grain Legumes. Bogor, Indonesia: Central Research Institute of Agriculture. 225 p. See p. 195-200. [11 ref]
• ***Summary:*** Contents: Introduction. The protein waste: Peanut soybean, mungbean. Utilization of the waste.

Tables show: (1) Food legumes available in Indonesia. The three columns are: Latin name, English name, and Indonesian name. Shows 22 food legumes available in Indonesia, from Ochse (1931) and Aykroyd (1969).

(2) Food legumes usually processed. Discusses hunkwe, made by extracting the starch from the mung bean or kacang ijo (*Vigna radiata,* now *Phaseolus aureus*) with water.

(3) Indonesian fermented foods made from waste products. Include dage (made from oncom), oncom (made from peanut presscake or okara), tempe bongkrek (made from coconut presscake), tempe gembus (okara tempeh), tempe mata kedele (made from the hypocotyl of the soybean).

(4) Nutritive composition of kecap (per cent): Both peanut kecap and soybean kecap. Address: Nutrition Research Inst., Bogor, Indonesia.

508. Hesseltine, C.W.; Swain, E.W.; Wang, H.L. 1976. Production of fungal spores as inocula for Oriental fermented foods. *Developments in Industrial Microbiology* 17:101-15. [25 ref]
• ***Summary:*** Contents: Introduction. Discussion: Inocula for fungi may be prepared in a number of forms or states. Sufu or Chinese cheese. Mold cheese made from milk. Tempeh. Chinese yeast and similar products (incl. ragi and murcha). Koji. Industrial production of *Aspergillus oryzae* spores (*tane koji*).

Six desirable inoculum characteristics are discussed. Address: NRRL, Peoria, Illinois.

509. Khumaidi, M. 1976. Role of soybeans in patterns of Indonesian diets. MSc thesis. 57 p. *

510. Lie, Goan-Hong; Oey, Kam-Nio; Prawiranegara, D.D.; Herlinda, J.; Sihombing, G.; Jus'at, I. 1976. Nutritive value

of various legumes used in the Indonesian diet. In: M.A. Rifai, ed. 1976. ASEAN Grain Legumes. Bogor, Indonesia: Central Research Institute of Agriculture. 225 p. See p. 183-93.
• ***Summary:*** This general overview discusses soybeans (*Kacang kedelai*), tempeh, soy milk, "tahu or soycurd" [tofu], kecap, taoco [Indonesian-style miso], soy milk, residue of soy milk or tahu [okara] which may be fermented and sold as oncom. The average nutritional composition of the first 6 products is given. Address: Nutrition Research Inst., Jakarta, Indonesia.

511. Nippon Torui Kikin Kyokai. 1976. Daizu ni kansuru bunken mokuroku [List of documents on soybeans and soyfoods]. Tokyo: NTKK. Vol. 2, post 1961. 93 p. [Jap] Address: Tokyo, Japan.

512. Owen, Sri. 1976. Indonesian food and cookery. London: Prospect Books, and Jakarta: Indira Reprints. 255 p. Rev. ed. 1980. [20 ref]

513. Quebral, Florendo C.; Cagampang, I.C.; Herrera, W.A.T.; Mendoza, E.R.; Mondragon, R.L.; Payumo, E.M.; Ragus, L.N. 1976. The Philippines recommends for soybean 1976. Los Banos, Laguna, Philippines: PCARR. vi + 68 p. Illust. 24 cm. Reissued in 1978. [50 ref]
• ***Summary:*** Contents. Foreword. Acknowledgment. Introduction. 1. Nutritive value. 2. Utilization. 3. Cost and return analysis of soybean production. 4. Marketing. 5. Cultural management: Selection of varieties, adaptation (soil and climate requirements), land preparation, inoculation, planting, water management, fertilization, crop protection. 6. Post-harvest handling: Threshing, drying, storage. 7. Soybeans in multiple cropping. 8. Seed production. 9. References. Appendices: A. Standardization of soybean. B. Multifarious uses and preparation of soybean and by-products. C. Climate in the Philippines. D. Available inoculants and their distributors. E. Symptoms and first aids for pesticide poisoning. F. Addresses of manufacturers and distributors of pesticides. G. Glossary. Appendix tables. Tables. Figures.

A summary of soybean area, production, and yield in the Philippines, 1959-1975 follows: The number of hectares used for planting soybeans went from 1,690 ha. in 1959 up to 2,200 ha. in 1962, and then decreased annually until it was only 1,240 ha. in 1973. However, a record high of 2,780 ha. was reached in 1974, followed by 2,018 ha. in 1975. Production of soybeans was low in 1959-60, only 571.8 and 981.3 tons, respectively. By 1962, however, production had increased to 2,066.9 tons, but decreased steadily over the years until 1974. In 1974, a maximum of 2,214.0 tons was produced. The corresponding annual yields (tons/ha.) reflect the sharp rise of soybean production in 1961-62 and the ensuing decline of the industry throughout the rest of the 1960s and early 1970s, until 1974, when production soared to new heights. Address: PCARR (Philippine Council for Agriculture and Resources Research), Los Baños, Laguna, Philippines.

514. Rifai, Mien A. ed. 1976. ASEAN grain legumes. Papers presented at the First ASEAN Workshop on Grain Legumes, held at Kopo (Cisarua), Bogor, Indonesia, 15-20 Jan. 1974. Bogor, Indonesia: Central Research Institute of Agriculture. v + 225 p. Illust. 24 cm.
• ***Summary:*** The workshop was sponsored by the Dept. of Agriculture, Republic of Indonesia. Pages 224-25 contain a directory of observers and participants.

Note: ASEAN (Association of Southeast Asian Nations) was established in Aug. 1967 by 5 nations to promote political and economic cooperation among the non-communist states of the region. The 6 members in 1988 were Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand. Address: National Biological Inst., Bogor, Indonesia.

515. Smartt, J. 1976. Tropical pulses. London: Longman. 348 p. Index. [275* ref]
• ***Summary:*** In the chapter on "Pulses in human nutrition," soya beans are mentioned (p. 92-95) under: Germinated seed. Fermented products: Soy sauce, soya bean paste, tempé, natto and Hamanatto. Extracted pulse proteins: Soya bean curd ('tofu'), soya bean 'milk.' Address: PhD, Senior lecturer in Biology, Univ. of Southampton.

516. Wang, H.L.; Mustakas, G.C.; Wolf, W.J.; Wang, L.C.; Hesseltine, C.W.; Bagley, E.B. 1976. An inventory of information on the utilization of unprocessed and simply processed soybeans as human food. Peoria, Illinois: USDA Northern Regional Research Center, Interdepartmental Report. AID AG/TAB-225-12-76. 197 p. AID contract report. Undated. No index. 27 cm. Spiral bound. [65 ref]
• ***Summary:*** Contents: Introduction. Home and village traditional soybean foods by country. 1. Soybean food uses and production in Asia. Soaking dry soybeans. In China: Tou chiang (soybean milk; preparation, ways of serving), tou fu (soybean curd; yen-lu is the Chinese name for nigari), tou fu nao (soft curd), tou fu kan (dry / firm bean curd), chien chang (pressed tofu sheets), yu tou fu (fried tou fu), tung tou fu (frozen tou fu), tou fu pi (protein-lipid film; yuba), huang tou ya (yellow bean sprout or soybean sprout), mao tou (hairy bean, green soybean, or immature soybean), dry soybeans (roasting and frying, stewing and boiling), roasted soybean flour. Fermented soybean foods. Production and consumption of soybeans (China and Taiwan).

Japan: Tofu (soybean curd), kinugoshi tofu, processed tofu products (aburage or age, nama-age and ganmo), kori tofu (dried-frozen tofu), yaki tofu (grill tofu), yuba (protein-lipid film), soybean milk, gô (ground soybean mash), daizu

no moyashi (soybean sprouts), edamame (green vegetable soybeans), whole soybeans, kinako. Fermented soybean foods: Production and consumption.

Korea: Tubu (soybean curd), soybean sprouts, whole soybeans (green soybeans, parched or roasted soybeans, boiled soybeans), soybean flour, soysauce, bean paste [Korean soybean miso], natto (no Korean name is given), production and consumption of soybeans.

Indonesia: Tahu or tahoo (soybean curd), bubuk kedele (soybean powder), tempe kedele, tempe gembus [the name in Central and East Java for okara tempeh], oncom tahu [the name in West Java for okara onchom], other soybean products (soybean sprouts, green soybeans, roasted and boiled soybeans, kecap or soysauce, tauco or bean paste [miso]), food mixtures (Saridele, Tempe-fish-rice or TFR, Soy-rice baby food, soybean residue [okara]-fish-rice), production and consumption of soybeans.

Thailand. Philippines: Soybean sprouts, soybean coffee, soybean cake (made from equal amounts of soybean flour and wheat flour), soybean milk, tou fu and processed tou fu products, production and consumption. Burma. India. Malaysia. Nepal. Singapore. Sri Lanka (Ceylon). Vietnam. West Asia [Middle East; Iran and Turkey]. References–Soybean food uses in Asia.

2. Soybean food uses and production in Africa. Ethiopia: Injera, wots and allichas, kitta, dabbo, dabokolo, porridge. Kenya. Morocco. Nigeria: Whole soybeans, soybean paste, corn-soy mixtures (soy-ogi). Tanzania. Uganda. Production. References–Soybean food uses in Africa.

3. Soybean food uses and production in Europe [both Eastern and Western]. 4. Soybean food uses and production in Latin America. Argentina. Bolivia. Brazil. Chile. Colombia. Ecuador. Guyana. Paraguay. Peru. Uruguay. Venezuela (fried arepas with textured soy). Mexico: New village process, commercial developments of soy-based food products, Gilford Harrison, Ruth Orellana, Seguras Social. Honduras. Costa Rica. Panama. Dominican Republic. Jamaica. Haiti. Trinidad. References–Soybean food uses in Latin America.

5. Soybean food uses and production in North America. United States: Oriental populations, vegetarian communes, The Farm in Tennessee. Canada. References–Soybean food uses in North America. 6. Soybean food uses in Oceania. Australia. New Zealand. 7. Summary of soybean food uses. Traditional soybean foods: Soybean milk, soybean curd and processed soybean curd products, protein-lipid film, soybean sprout, tempe (tempeh), green soybeans, boiled soybeans, roasted soybeans, soybean flour, soysauce, fermented soybean paste, fermented whole soybeans [Toushih, hamanatto], natto, fermented soybean curd. Experimental soybean foods: Whole soybean foods, soybean paste, soy flour, soy beverage. Production and consumption.

8. Recent simple soybean processes, other than traditional. Simple village process for processing whole soybeans: Equipment, process, sanitation requirements, quality of product, evaluation of product in formulas and procedures for family and institutional use in developing countries. NRRC village process. Foods from whole soybeans developed at the University of Illinois (drum dried flakes, canned and homecooked soybeans, soy beverages and beverage products, spreads, snacks).

Ways of cooking and serving soybeans in the American diet. 9. Industrial processes. Industrial production and selling prices of edible soybean protein products. 10. Barriers to acceptability and utilization of soybeans in food and research recommendations: Availability. Cultural and social factors. Texture. Flavor. Nutrition and food safety. Technology development. Technology transfer. Research recommendations [concerning each of the above barriers].

Concerning Morocco: Cereal-soy blends have been used extensively in Morocco; in fiscal year 1974 some 14.7 million lb were shipped to Morocco. Mmbaga (1975) reported that soy flour is being used in making porridge, with 1 part soy flour to 3 parts maize / corn flour.

Tables show: (1) Soybean production and imports in Taiwan, 1962-1975 (tonnes = metric tons, p. 33). Production rose from a 53,000 tonnes in 1962 to a peak of 75,200 tonnes in 1967, then fell to 61,900 tonnes in 1975. Imports skyrocketed from 62,400 tonnes in 1962 to a record 827,300 tonnes in 1975. (2) Consumption of soybean foods in Taiwan, 1964-1974 (kg/capita/year, p. 34). Total soybean foods not including tofu rose from 1.08 kg in 1964 to a peak of 2.61 kg in 1972 then fell to 1.99 kg in 1974. Consumption of tofu (80% water) rose from 18.75 kg in 1964 to a peak of 33.89 kg in 1972, then fell to 32.04 kg in 1974. (3) Supply and disposition of soybeans in Japan, 1971-1974 (p. 49). Total supply is beginning stocks, plus domestic production, and imports. Total disposition is crushing, plus traditional foods and feed. In 1974 imports accounted for 87.5% of the supply, and crushing accounted for 71.0% of the disposition. (4) Whole soybeans used in the production of traditional foods in Japan, 1970-74 (tonnes / metric tons, p. 50). Tofu and others rose from 508,000 in 1970 to 539,000 in 1974. Miso rose from 177,000 in 1970 to 192,000 in 1974. Shoyu rose from 13,000 in 1970 to 14,000 in 1974. (5) Defatted soybean meal used in the production of traditional foods in Japan, 1970-74 (tonnes / metric tons, p. 51). Shoyu rose from 163,000 in 1970 to 176,000 in 1974. Tofu and others was constant at 130,000 from 1971 to 1973. Miso decreased from 4,000 in 1970 to 2,000 in 1974. (6) Production of traditional soybean foods in Japan, 1970-74 (tonnes / metric tons, p. 52). Tofu and others rose from 1,867,800 in 1970 to 2,264,900 in 1973. Shoyu rose from 1,334,1000 in 1970 to 1,455,800 in 1974. Miso rose from 552,200 in 1970 to 587,200 in 1974. (7) Production and food use of beans [various types] and consumption of some soybean products in Korea, 1964-1967 (p. 56-57). In 1967 consumption (in tonnes / metric tons) was: Bean curd 290,000. Bean sprouts 270,000. Bean

sauce 69,700. Bean paste 27,700. Total: 11.6 kg per capita per year. (8) Soybean production in Indonesia, 1960-1974 (p. 65). It rose from 442,862 tons in 1960 to 550,000 tons in 1974. (9) Consumption of soybeans in various parts of Indonesia in 1970 (p. 66). (10) Production of soybean foods in the province of Central Java, 1968-1972 (tons, p. 67). Kecap rose from 914,695 in 1968 to 1,524,000 in 1972. Tahu decreased from 18,570 in 1978 to 17,000 in 1972. Tempe rose from 506 in 1968 to 39,000 in 1972. (11) Area planted to soybeans and total soybean production in Thailand, 1964-1974 (p. 70). Area rose from 213,000 rais (6.25 rais = 1 ha) in 1964 to 1,016,000 rais in 1974. Production (in metric tons) rose from 31,300 in 1964 to 252,400 in 1974. (12) Utilization of soybeans by soybean-consuming countries, 1964-66 (based on FAO 1971 Food Balance Sheets, 1964-66 average, p. 150). The countries leading in per capita consumption (kg/person/year) are: China (PRC) 6.7. Japan 5.1. Korea(s) 5.0. Singapore 4.3. Indonesia 2.8. Malaysia 2.6. Taiwan (ROC) 1.1. (13) Amounts of cereal-soy blends distributed under Title II, Public Law 480 in fiscal year 1974 (p. 152-155). (14) U.S. exports of full-fat soy flour, 1974-75 (p. 156).

Note: This is the earliest English-language document seen (Feb. 2004) that uses the word "tubu" to refer to Korean-style tofu. Address: Northern Regional Research Center, Agricultural Research Service, Department of Agriculture, Peoria, Illinois 61604.

517. Winarno, F.G.; Hardjo, S.; Rumawas, F. 1976. The present status of soybean in Indonesia. Bogor, Indonesia: FATEMETA, Bogor Agriculture University. xxiii + 128 p. 29 cm. [7 ref]

• ***Summary:*** The best and most comprehensive survey up to this time on the subject, it was done as part of the 1974 Industrial Census of the Central Bureau of Statistics. Full of valuable statistics and tables. Contents. Preface. Summary. List of tables. List of figures. I. Introduction. II. Objectives and survey methods: A. Objectives. B. Survey methods. III. Cultivation, product handling and protection: A. Botany of the soybean. B. Varieties. C. Growth requirements. D. Agronomy of soybean. E. Crop Management. F. Harvesting and product handling.

IV. Production: A. Harvested acreage, production and average soybean yield in Indonesia. B. Center production areas. C. Harvested acreage of soybean versus other food crops. D. Factors affecting soybean production. V. Farm management and soybean marketing in Indonesia: A. Farm management. B. Marketing of soybean.

VI. Soybean utilization (p. 52): A. Soybean products: Introduction, yuba, sere (from Bali: cooked whole soybeans, mixed with onions, hot pepper, turmeric, salt, and coconut presscake; molded into patties, sun dried, then deep fried), soybean milk, tofu (coagulated with *biang* or *sioko* {calcium sulphate}), soybean sprouts (*tauge*), soybean powder (soybeans that have been cooked, dried, dehulled, and pounded), soybean mixtures, kecap (Indonesian soy sauce), oncom (fermented soybean product, red or black), tauco (Indonesian-style miso), tempe. B. Soybean utilization: Utilization by farmer (in each of 6 provinces and total), utilization by processor (tempe, tofu, kecap, miscellaneous), census conducted by Central Bureau of Statistics, conversion factor for soybean products. C. Consumption of soybean and its processed products (by province). D. Other components. Appendixes.

Tables in body of text: (1) Brief description of recommended soybean varieties. (2-3). Insecticides used against Agromyza and *Phaedonia inclusa.* (4) Soybean harvest seasons in Indonesia (major harvest months, by province). (5-8) Harvested acreage, production, and average soybean yield during 1950-73, 1960-74, and in Java-Madura (1967-71, 1972, 1973, and 1974). (9) Soybean acreage in Java-Madura. (10) Major production areas in Java-Madura, and average 5-year yield, 1965-69. (11) Harvested acreage of soybeans vs. other crops in Java-Madura, 1971-72. (12) Production cost and value per hectare of soybeans. (13) Major trading and harvest months. (14-15) Percentage of farmer's share and marketing cost of the trade price in various provinces. (16) Percentage of farmer's share of the trade price. (17) Soybean utilization by farmers, 1975-76. (18-21) Production/consumption of tempeh, tofu, kecap, tauco, tauge, yuba, and sere.

(22-29) Raw material utilized by small-scale processors and by soybean home industries in Java and Jakarta. (30-31) Value of raw material and end products of small-scale industries over 3- and 12-month periods. (32) Conversion factor of soybean products to raw material. (33-36) Average daily consumption per capita of soybean and its process products at villages in Lampung, Yogyakarta, East and West Java, and in 4 other provinces. Address: FATEMETA, Bogor Agricultural Univ., Indonesia.

518. Associated Press (AP). 1977. Food poisoning takes 69 lives. *Daily Colonist* (*Victoria, BC, Canada*). Jan. 9. p. 28, col. 5.

• ***Summary:*** "Sixty-nine persons died and 265 others in East Java were in hospital for food poisoning after eating tempe, a local dish made from soy beans, the daily newspaper *Kompas* reports."

Note: The tempeh that killed these people was probably tempe bongkrek, made from shredded coconut presscake rather than from soybeans. There are no known reports of soybean tempeh being toxic, but many reports of coconut presscake being toxic.

519. Shurtleff, William. 1977. Re: Our stay with you at The Farm. Tempeh pamphlet. Letter to Cynthia and Albert Bates, The Farm, Summertown, Tennessee, Jan. 19. 2 p. Typed, without signature (carbon copy).

• ***Summary:*** "We really enjoyed our stay with you and were greatly inspired by what we learned about tempeh. Somehow we got a much clearer vision of its potential in America in communities, homes, and on a commercial level. We especially dug working together with you on the first joint Farm / New Age Foods Study Center publication ["What is Tempeh?"]. The evening of our program in Louisiana, we stayed with John and Katherine Gabriel in Houma and got some good ideas from them to.

"Finally, during five days of being snowed in in Fayetteville [Arkansas] and St. Louis [Missouri], I had a chance to read carefully through all of the literature we have on the subject. The result of all this was a decision to amplify the pamphlet we did with you at the farm. We preserved everything we did together, but added a lot more interesting details to it–such as a history of tempeh, how to make tempeh with grains and soy pulp, names and addresses of people and institutions in America and Indonesia interested in tempeh, etc. We hope you like it. Now, we would very much like to get this information out to people around the world and would like to work with you in doing this. How?" Address: New-age Foods Study Center, Traveling in Boulder, Colorado.

520. **Product Name:** Tempeh.
Manufacturer's Name: Country Store Health Foods.
Manufacturer's Address: 8720 Sunland Blvd., Sun Valley, CA 91352. Phone: 213-768-6373.
Date of Introduction: 1977. January.
New Product–Documentation: Shurtleff and Aoyagi visited this small tempeh shop in Jan. 1977. They met Joan Harriman and included the company in a list of tempeh shops in North America in the 1977 edition of "What is Tempeh?"

Shurtleff & Aoyagi. The Book of Tempeh. 1979 (July). p. 148. Owner: Joan Harriman or Buddy Tjandrawibawa; a natural foods store.

Letter from Joan Harriman, R.D. 1979. Nov. 1. She orders 68 copies of *The Book of Tempeh.* She plans to do a booth on tempeh. Address is the same as shown above.

Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Joan Harriman.

521. Goldman, Sherman. 1977. Charles Atlas versus the Bodhisattva: An interview with Bill Shurtleff and Akiko Aoyagi. *East West Journal.* Jan. p. 32-35.
• ***Summary:*** An in-depth discussion of the work of Shurtleff and Aoyagi with tofu, miso, and tempeh in the USA, Japan, and Indonesia. Photos show: Shurtleff speaking into a microphone. Akiko Aoyagi smiling. Shurtleff and Aoyagi standing next to their white 1975 Dodge Van on the side of which is written: "New-Age Foods Study Center–Tofu & Miso America Tour, 1976-77."

522. Magboul, Bahi El Din I.; Lein, H.T. 1977. Tempeh, a fermented soybean food. *Sudan J. of Food Science and Technology* 9:24-26. Jan. [3 ref]
• ***Summary:*** The authors produced tempeh using different concentrations of *Rhizopus oligosporus.* The best quality was obtained by incubating the inoculated soybeans for 48 hours at 30ºC. Address: Dep. of Food Science, Agricultural Univ. of Wageningen, Netherlands. Magboul moved to the Food Research Centre, Shambat, Sudan.

523. Ruttle, Jack. 1977. Tempeh keeps 'em coming for more soybeans. *Organic Gardening and Farming* 24:103, 106, 108-11. Jan.
• ***Summary:*** Last year OGF R&D food technologist Mark Schwartz began to work with Dr. Hwa Wang of the Northern Regional Research Laboratory at Peoria, Illinois, to develop a simple, inexpensive way to make tempeh at home. Once a good method was developed, Mark, Nancy Bailey and Marc Podems packed cracked soybeans, Dr. Wang's tempeh starter from the NRRL, and detailed instructions, then sent them to 60 readers, who were asked to make tempeh following the instructions and give their comments. The responses were very favorable. Most described tempeh as delectable. Some said it tasted like seafood, others like fried chicken.

The article then describes how to make tempeh at home and gives a nice illustration of the incubator. Contains a recipe for fried tempeh, from *The Book of Tempeh* by Shurtleff and Aoyagi. Cracked soybeans can be ordered from The Farm in Summertown, Tennessee. Tempeh starter can be ordered from Dr. Wang at the NRRL.

524. Shurtleff, William; Aoyagi, Akiko. 1977. What is tempeh? Lafayette, California: New-Age Foods Study Center. 14 p. Unpublished manuscript. Jan. Published as a 4-page tan leaflet later in 1977 with the addition of 4 Los Angeles tempeh shops. Revised, published edition, Oct. 1980. Also reprinted by many tempeh shops under their logo. Unpublished manuscript.
• ***Summary:*** Contents: Introduction. A rich source of nutrients. Tempeh in Indonesia. A brief history of tempeh. Making tempeh at home: Homemade soy tempeh (using 2½ cups soybeans), homemade okara- or coconut press-cake tempeh, homemade grain- or grain & soy tempeh. Storing & preserving tempeh. Favorite tempeh recipes: Deep-fried tempeh. Pan-fried tempeh. Tempeh chips. Tempeh, lettuce & tomato sandwich. Tempeh burger, and 11 others. Soybeans and the world food crisis. Making tempeh starter at home. Making tempeh in a community or commercial shop. People & institutions connected with tempeh: Research scholars and institutes in North America, tempeh shops in America (7), individuals interested in tempeh in America (4), research scholars and institutes in Indonesia and Japan (5). Address: 790 Los Palos Dr., Lafayette, California 94549.

525. Shurtleff, William. 1977. Soy foods: Protein source of

the future–now. Paper presented on 1976-77 Tofu & Miso America Tour. 16 p. transcript. Unpublished manuscript. [5 ref]
• ***Summary:*** This is the transcript of a speech given on 15 Jan. 1977 in Kansas, but a similar speech was given by Shurtleff at 70 public programs throughout the USA. Contents: World hunger and its causes: Population growth, affluence and the feedlot system, land misuses and international food exploitation. Vegetarian diets as a solution to degenerative diseases and food problems. Soybeans in America. Soybeans and soyfoods in East Asia: Tofu, miso, tempeh, shoyu. The future of soybeans on the planet. Address: New-age Foods Study Center, 790 Los Palos Dr., Lafayette, California 94549. Phone: 415-283-3161.

526. Arbianto, Purwo. 1977. Arah-arah baru dalam proses pembuatan tempe [New directions on the tempeh making process]. Presented at Lokakarya Bahan Pangan Berprotein Tinggi (Conference on High Protein Food). Held 22-24 Feb. 1977 at Bandung. [Ind]*

527. Lembaga Kimia Nasional–LIPI (National Chemistry Institution). 1977. Dasar-dasar proses pembuatan tempe [Elements of tempeh processing]. Presented at Lokakarya Manajemen Perusahaan Tempe (Seminar on Management of Tempeh Manufacturing). Held 31 Jan. to 5 Feb. 1977 at Lembaga Kimia Nasional LIPI, Bandung, Indonesia. [Ind]*

528. Muchtadi, Dedi; Rahmat, Ansori; Jenie, Benny S.L.; Bunasor, Tati N.; Oskandar, Rosalie. 1977. Pengaruh varietas kedelai, bahan perendam dan lama perendaman, serta inokulum yang digunakan terhadap mutu tempe [Effects of using different soybean varieties, soaking agents, soaking times, and inocula on the quality of tempeh]. Paper presented at Lokakarya Bahan Pangan Berprotein Tinggi (Conference on High Protein Food). 16 p. Held 22-24 Feb. 1977 at Bandung, Indonesia. [Ind]*

529. Tanuwidjaja, Lindayati. 1977. Pengaruh kadar minyak dan kadar air pada fermentasi tepung kedelai [Effects of oil content and water content on soy flour fermentation]. Paper presented at Lokakarya Bahan Pangan Berprotein Tinggi (Conference on High Protein Foods). 21 p. Held 22-24 Feb. 1977 at Bandung, Indonesia. [Ind]*
• ***Summary:*** Discusses soy flour tempeh.

530. Shurtleff, William. 1977. Re: Bali Foods becoming a commercial supplier of tempeh starter culture. Letter to Mr. Henoch Khoe at Bali Foods, Baldwin Park (Los Angeles area), California 91706, March 6. 1 p. Typed, with signature on letterhead (photocopy).
• ***Summary:*** "I am writing concerning a business proposal... It concerns the possibility of Bali Foods becoming a supplier and producer of *Rhizopus oligosporus,* the starter or inoculum that could be used by people around North America who wish to make their own tempeh. At present there is a great demand for this starter and not one single commercial supplier."

According to a letter from Dr. H.L. Wang of the USDA Northern Regional Research Laboratory in Peoria, Illinois, they are now receiving an average of 30 requests for tempeh starter daily, and have been during the past 3 months. Address: New-Age Foods Study Center, c/o Aoyagi, 278-28 Higashi Oizumi, Nerima-ku, Tokyo 177, Japan. Phone: (03) 925-4974.

531. Shurtleff, William. 1977. What is tempeh? *Macrobiotic* (*The*) (*Chico, California*) No. 118. p. 13-14. March.
• ***Summary:*** Contents: Introduction. A rich source of nutrients. Tempeh in Indonesia. A brief history of tempeh.

Note: This article is continued in the next issue, p. 16-18. Address: c/o Aoyagi, 278-28 Higashi Oizumi, Nerima-ku, Tokyo 177, Japan. Phone: (03) 925-4974.

532. Sudarmadji, Slamet; Markakis, Pericles. 1977. The phytate and phytase of soybean tempeh. *J. of the Science of Food and Agriculture* (*London*) 28(4):381-83. April. [13 ref]
• ***Summary:*** In the process of making tempeh, the "phytic acid content of soybeans was reduced by about one-third as a result of this fermentation, while an equivalent amount of phosphate was released in the tempeh. The reduction of phytic acid was due to phytase elaborated by the mould of the fermentation. The pH optimum of this enzyme was 5.6." Address: Dep. of Food Science and Human Nutrition, Michigan State Univ., East Lansing, Michigan 48824.

533. Gullion, Laurie. 1977. Tofu: High protein food. *Recorder* (*Greenfield, Massachusetts*). May 28. p. 13.
• ***Summary:*** The Laughing Grasshopper Tofu Shop in Millers Falls, Massachusetts, is tucked away beside the Millers Falls Library. "The four-month-old shop in Millers Falls was created by four persons who strongly believe in self-employment and are committed to healthful foods.

"Richard Ira Levitan [sic, Leviton] and Kathy Whelan began the Corncreek Bakery on South Deerfield in 1974, a thriving business which abstains from using any dairy or animal products in its baked goods. Tom Timmons [sic, Timmins] is a past manager of the Yellow Sun Natural Foods Cooperative in Amherst, and Michael Cohen was instrumental in beginning the Equinox Restaurant in Amherst.

"'We want to put cows out of business,' said Leviton. Tofu can be used like dairy products in preparing meals at a much cheaper price, and Leviton said the food staple differs from dairy and beef products in that it is low in calories, free of cholesterol and, thus, helps avoid arteriosclerosis and obesity. Cohen, a vegetarian, believes tofu is an excellent meat substitute...

"The Laughing Grasshopper Tofu Shop produces 600 pounds of tofu in a nine-hour day... They distribute their product to Boston, New York City, Baltimore (Maryland), Vermont and New Hampshire. The tofu is sold locally at Foster's Supermarket."

A photo shows Michael Cohen and Jon Lee flipping a tofu settling box. Leviton's name is misspelled as Levitan throughout the article.

Note 1. This is the earliest article seen (Sept. 2011) about the Laughing Grasshopper Tofu Shop.

Note 2. This is the earliest document seen (Sept. 2011) that mentions Michael Cohen in connection with soyfoods; he was an early partner in Laughing Grasshopper (later New England Soy Dairy) and founder of The Tempeh Works.

534. **Product Name:** The Complete Kit for Making Tempeh (With Soybeans & Starter & Instructions).
Manufacturer's Name: Farm Foods.
Manufacturer's Address: 156 Drakes Lane, Summertown, TN 38483.
Date of Introduction: 1977. May.
Ingredients: Split, dehulled soybeans, tempeh starter, complete instructions and recipes for coking at home.
Wt/Vol., Packaging, Price: 1 or 3 lb.
How Stored: Shelf stable.
New Product–Documentation: Catalog. 1977. "The delicious nutrient-rich soybean food from Indonesia. Makes six pounds." Below that are the words "Farm Foods" with a circular logo between the two words. The logo shows rows of crops (soybeans) in a field converging in the distance at the foot of three mountains. Label. Kit weighs 3 lb.

Farm Foods. 1978. *Products Catalog.* 8 p. See p. 4. "Tempeh kits are available in 1 and 3 lb. display packages, offering starter, instructions, recipes, and conveniently split, dehulled soybeans. Tempeh starter is available separately with instructions and recipe flyer. Split, dehulled soybeans are also available from Farm Foods in bulk quantities." Photos show: (1) The kit, in a brown bag with a large label on the front. (2) The front of the package of "Tempeh Starter & Instructions." (3) A person holding a thin cake of tempeh in both hands. A table shows the nutritional value of 100 gm of tempeh.

Ad in Tom Riker and Richard Roberts. 1979. *The Directory of Natural & Health Foods.* p. 189. A photo shows the label. In Nov. 1979 enough Farm Foods tempeh starter to make 7 lb of tempeh costs $1.35, or $0.225 per pound.

Steinkraus, Keith H.; et al. 1983. *Handbook of Indigenous Fermented Foods.* New York, NY: Marcel Dekker. ix + 671 p. Microbiology Series, Vol. 9. See p. 616 for a photo of this tempeh kit.

535. Shurtleff, William. 1977. Homemade tempeh. *Macrobiotic* (*The*) (*Chico, California*) No. 119. p. 16-18. May.
• ***Summary:*** Describes (without illustrations) how to make 1.5-2.5 lb of tempeh at home. Address: c/o Aoyagi, 278-28 Higashi Oizumi, Nerima-ku, Tokyo 177, Japan. Phone: (03) 925-4974.

536. Shurtleff, William; Aoyagi, Akiko. 1977. Favorite tempeh recipes. *Organic Gardening* 24:112, 114. June.
• ***Summary:*** Contains recipes for: Deep-fried tempeh. Pan-fried tempeh. Tempeh, lettuce and tomato sandwich. Batter-fried tempeh. Tempeh on pizza. Tempeh in tortillas, tacos, or pita. Tempeh in soups and stews. Broiled or barbequed [barbecued] tempeh. Address: c/o New-Age Foods Study Center, 790 Los Palos Dr., Lafayette, California 94549. Phone: 415-283-3161.

537. Wang, Hwa L.; Swain, E.W.; Hesseltine, C.W. 1977. Calling all tempeh lovers. *Organic Gardening and Farming* 24:108-11. June.
• ***Summary:*** "Over 3,000 people have asked us for tempeh starter... since our offer first appeared in the Jan. 1977 issue of *Organic Gardening and Farming.* We sent everyone a packet with just enough to make several batches, but we were just too busy getting the starter in the mail to answer all the questions about making tempeh."

Discusses: How to keep the first batch of tempe going at home–i.e. use the microorganisms from that first tempeh to make more sequential batches. How to make your own tempeh starter on a rice substrate in a mason jar. Making tempeh from other grains such as wheat, oats, rye, barley, or rice, alone or in combination with soybeans (defatted soy grits are not suitable for making tempeh). The NRRC can no longer send out small packets of tempeh starter. Please order it from OGF in Emmaus, Pennsylvania. Address: NRRC, Peoria, Illinois 61604.

538. Wang, Hwa L. 1977. Re: Tempeh starter and questions concerning tempeh. Letter to William Shurtleff at New-Age Foods Study Center, 278-28 Higashi Oizumi, Nerima-ku, Tokyo 177, Japan, July 6. 2 p. Typed, with signature on letterhead.
• ***Summary:*** Dr. Wang encloses a package of tempeh starter which Shurtleff requested in his letter of June 18. She then answers four questions that Shurtleff asked related to tempeh. Address: USDA ARS North Central Region Northern Regional Research Lab., 1815 North University St., Peoria, Illinois 61604.

539. Nofziger, Margaret. 1977. Re: Instructions for making tempeh. Albert and Cynthia Bates. Letter to William Shurtleff, July 11. 2 p. Typed, with signature on letterhead.
• ***Summary:*** The letterhead contains the words "Farm Foods" (in light blue) with a thin outline around each word. Between the two words is a circular logo, which shows rows of crops (soybeans) in a field converging in the distance at the foot of three mountains. Below the logo is the phone number. Address: Farm Foods, 156 Drakes Lane, Summertown, Tennessee 38483. Phone: (615) 964-3575.

540. Mulyadi, Tri Suharni; Sutarto, E.E. Sutariningsih; Sidemen, I.G.P. Badjra. 1977. Protein terlarut pada tempe kedelai yang dicampur dengan bahan berkarbohidrat [Soluble protein in soy tempeh mixed with carbohydrate-containing food]. In: Collected manuscripts (Kumpulan Naskah) from Seminar Biologi V. Held 7-9 July 1977 at Malang, Indonesia. [Ind]*

541. Rodale, Robert. 1977. Tempeh, a new health food opportunity. *Prevention* (*Emmaus, Pennsylvania*). July. p. 25-32.
• ***Summary:*** This outstanding article begins: "Gale Randall of Unadilla, Nebraska, is the first commercial tempeh-maker in the United States... Tempeh is on its way up, Before long, it will be eaten widely and lovingly across this land of ours. Someday there could even be a sign along Highway No. 2 in Southeastern Nebraska pointing to the gravel road that leads to where Gale Randall lives. It might say something like this: 'Here, in 1975, the tempeh revolution got its start.'"

Soybean sprouts and bean curd (tofu) are great foods, but they are side dishes that never occupy center stage. "Tempeh, in contrast, has the potential to be a real main course dish that could lead soybeans to the forefront of the health food advance. It has a firmness, body and flavor that could eventually lead to its acceptance as 'another thing to eat when the family's tired of chicken, beef and fish.'

The section titled "The Nebraska Tempeh Pioneer, notes that Gale Randall works in the Lincoln, Nebraska, post office at night and operates his tempeh-making operation during the day. He discovered tempeh 3 years ago while searching for an inexpensive protein product he could make at home. Randall recalls that Dr. H.L. Wang, of the NRRL in Peoria, Illinois, "did everything possible to help me get started. She was wonderful. I've never had anyone help me like that." She provided Randall with tempeh starter culture and lots of free advice. Photos show Randall with his tempeh incubator and slicing finished tempeh.

The last section, titled "The Coming Soy Boom," talks about that work of C.R. Sirtori and co-workers in Milan, Italy, whose research has showed that soybeans have a powerful ability to reduce cholesterol levels in human beings. Rodale then adds: "The next phase in tempeh development, I feel, will be for more people like Gale Randall to set up small tempeh shops, from which they can supply health food and natural food stores." A sidebar at the end states that the USDA Northern Regional Research

Center has provided Rodale Press "with large amounts of free [tempeh] starter, which we are making available in individual packets to save the scientists a lot of clerical work. In addition, we also have illustrated plans for building an incubator as well as additional printed material on tempeh, including recipes. To receive this material, send your request, along with 50 cents to cover handling, to Prevention Tempeh Starter, 33 E. Minor St., Emmaus, Pennsylvania 18049.

A photo-like illustration (line drawing) shows Robert Rodale.

542. Timotius, K.H. 1977. *Rhizopus* species pertumbuhanya pada berbagai media alami [*Rhizopus* species: Their growth on various natural media]. Presented at Seminar Biologi V. Held 7-9 July 1977 at Malang, Indonesia. [Ind]*

543. Leviton, Richard. 1977. Re: History of and current developments at Laughing Grasshopper Tofu Shop. Letter to William Shurtleff at New-Age Foods Study Center, Aug. 23–in reply to inquiry. 7 p. Typed, with signature.
• ***Summary:*** An excellent letter, full of useful details! The company now produces 700 to 800 lb/day of tofu, 6 days a week. Seven people are employed: four partners, two full-time employees, and one part timer. Summer sales have averaged $8,000/month. They are moving their shop of some 1,000 square feet to a new location of 7,000 square feet for only double the rent. They are importing equipment from Japan. "This winter we intend to commence soymilk production; next spring: tempeh, soy mayonnaise, soy ice cream, and agé. We have potentially a very exciting and massive business on our hands."

Leviton then answers in detail the following questions asked by Shurtleff: How did you obtain equipment and ingredients? How did you learn to set up a shop? What type of equipment did you buy and how much did it cost? What about health inspectors and codes? How did you determine your prices and what are they? How did you choose the best variety of soybean to use? How and from whom do you buy your soybeans? Your nigari? Address: LGTS, 3 Main St., Millers Falls, Massachusetts 01349.

544. Rasmussen, Carol. 1977. Vegetarians straight off the farm: Soy is source of successful diet. *Chicago Tribune.* Sept. 8. p. E3, or p. W_A3, or p. N_83.
• ***Summary:*** This article is about The Farm, from Summertown, Tennessee, and their creative but strict vegetarian diet–that uses no meat, eggs, or dairy products." Margaret Nofziger explains that Farm members are not food faddists; they eat cocoa, sugar, and white flour.

Most of their nutrients comes from soybeans. They grow 250 acres of soybeans a year and turn a significant portion of these into an incredible array of foods such as soy flour and soy milk. The soy milk is made into soy yogurt, mayonnaise, a cheese, tofu, soy ice cream, and tempeh (which is a fermented soy product from Indonesia). The pulp that remains after making soy milk is used to make a meatless sausage; it also add to cakes, cookies, and other baked goods. Also on The Farm, soybeans are roasted to make nuts, and ground to make coffee. They have published recipe booklet titled "Yay soybeans."

The Farm has a great deal of experience in cooking whole soybeans. The best way is to use a pressure cooker for 1 hour at 15 pounds pressure. Or you can cook them for at least 10 hours at atmospheric pressure.

A typical breakfast at The Farm might consist of toast, fried tofu, tea and sugar. Or perhaps fried potatoes and cheese [made from nutritional yeast] and hot soy milk and tea.

A cartoon has this caption: "Soybeans are the base for cheese, ice cream, sausage, and burgers." Address: Food Guide editor.

545. East West Foundation. 1977. Food policy recommendations for the United States: Statement of Michio Kushi, September 21, 1977. 359 Boylston St., Boston, MA 02116. 32 p. 28 cm.
• ***Summary:*** On September 21, 1977, Michio Kushi and several associates, including Dr. Robert Mendelsohn, M.D., met in Washington with members of the White House staff. The meeting, which lasted approximately two hours, began with a 45 minute presentation of a series of recommendations by Michio Kushi, a description of the activities and goals of the East West Foundation (founded 1972), and a history of Erewhon (fiscal 1978 sales estimated at $10 million). An outline of the East West Journal's position on various political, social, and economic applications of the national food policy was also included in the meeting's agenda.

Recommendations for seasoning foods and to aid digestion of grains, was traditional foods such as pickled vegetables and naturally fermented soy bean products (such as soy sauce, miso, tempeh, etc.). Note: Dr. Mendelsohn died in about May 1988. Address: Boston, Massachusetts. Phone: 617-536-3360.

546. Sastroamidjojo, M.S.A. 1977. Re: Design of a wet-process bean dehuller for making tempeh. Letter to William Shurtleff at New-Age Foods Study Center, Oct. 11–in reply to inquiry. 2 p. Typed, with signature.
• ***Summary:*** Discusses the principles of the design. Address: Dr., Solar Energy Research Centre, Faculty of Science, Gadjah Mada Univ., Sekip III, Yogyakarta, Indonesia.

547. Farm, The. 1977. How we make and eat tempeh down on the farm. *Mother Earth News* No. 47. p. 105-08. Sept/Oct.
• ***Summary:*** Most of the article describes how to make tempeh at home, with photos. Then there are sections on "Additional tempeh-checking tips" and "Questions and answers" about making tempeh at home, followed by

recipes: Tempeh burger. Deep-fried tempeh. Tempeh pizza. Cubed fried tempeh. Tempeh and noodles. Cajun tempeh jambalaya. One full page of color photos shows tempeh recipes.

Note: This is the English-language document seen (Jan. 2007) that contains the term "Tempeh burger" (or "Tempeh burgers"). Address: Summertown, Tennessee.

548. Kokke, R. 1977. Improvement of carob pods as feed by solid-substrate fermentation. *J. of Applied Bacteriology* 43(2):303-07. Oct. [23 ref]
• ***Summary:*** Chopped and autoclaved carob pods, were inoculated with *Rhizopus oligosporus* or *Monascus ruber* and incubated at 30ºC for 3 days. The growing mycelium penetrated the particles to form a cake-like structure containing about 7% protein. Tempeh is mentioned briefly 3 times. Address: Lab. of Micorbiology, Delft Univ. of Technology, Julianalaan 67a, Delft, Netherlands.

549. Andersson, R.E.; Ringstedt, L.C.; Snygg, B.G.; Andersson, J.E. 1977. Volatile compounds in tempeh. Lecture presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. *

550. Arbianto, Purwo. 1977. The bongkrek food poisoning in Java. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 68.
• ***Summary:*** "As recently as 1977, 69 deaths were reported in East Java from bongkrek poisoning. The poison consists of two substances: toxoflavin (TA) and bongkrek acid (BA)." Address: Biochemistry Lab., Institut Teknologi, Bandung, Indonesia.

551. Charles, M.; Gavin, J.R. 1977. Engineering studies of solid substrate fermentations. I. Basic considerations and the tempeh fermentation. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 74-87.
• ***Summary:*** Contents: Introduction. Experimental methods: Fermenter design, operation. Results and discussion.

Figures: (34) Assembly diagram of fermenter. (35) Head plate (some details missing) and sample port layout. (36) Overall fermentation system.

(37) Base plate (stainless steel, some details missing) and thermocouple layout. (38) Base plate for forcing air through culture. With ring groover, thermocouple, air inlet, plenum, and support / air distributor. (39) Changes in cell mass, temperature, and pectinase activity, at various distances (radii) from center of the fermented and carbon dioxide evolution (28ºC) (r = radius in inches).

(40) Changes in cell mass, temperature, and pectinase activity, at various distances (radii) from center of the fermented and carbon dioxide evolution (33ºC) (r = radius in inches). (41) Changes in cell mass, temperature, and pectinase activity, at various distances (radii) from center of the fermented and carbon dioxide evolution (38ºC) (r = radius in inches).

(42) Comparison of changes in pH with time at several temperatures (2, 33, and 38ºC). (43) Comparison between average and local (1.5 inches from center) values for cell mass, pectinase activity, and temperature during fermentation. Each of the 3 sets of graphs has one graph each for local values and for average values. Address: Biotechnology Research Center, Lehigh Univ., Bethlehem, Pennsylvania 18015.

552. Curtis, Paul R.; Cullen, R.E.; Steinkraus, K.H. 1977. Identity of a bacterium producing vitamin B-12 activity in tempeh. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 38-40. Original manuscript is 8 p.
Address: 1. Div. of Science & Mathematics, Eisenhower College, Seneca Falls, New York 13148; 3. New York State Agric. Exp. Station, Geneva, NY 14456.

553. Djurtoft, R.; Jensen, J. Stoumann. 1977. Tempe-like foods produced from broad beans (Vicia faba), cowpeas (Vigna sinensis), barley (Hordeum vulgare), wheat (Triticum aestivum), or mixtures thereof. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 59-64. Original manuscript is 23 p. [2 ref]
• ***Summary:*** The goal of this research is to make a tempe-like product using beans grown in Africa. Broad beans (*Vicia faba*) are well known in Africa, where they are used for preparing many dishes. Cowpeas (*Vigna sinensis*) are a familiar food in the countries south of the Sahara Desert. "To improve the nutritional value of the product, tempe made from mixtures of grain legumes and cereal grains was also studied."

Contents: Tempe products from broad beans. Tempe products from cowpeas. Tempe products from cereal grains or from mixtures of legumes and cereal grains.

Tables: (25) Composition of dehulled broad beans. (26) Amino acids in dehulled cowpeas, broad beans, and soybeans. (27) Cowpeas and cowpea tempe products: Essential amino acid analyses and feeding tests. (28) Comparison of new tempe products with soybean tempe, essential amino acid analyses, and feeding tests.

Figures: (26) Flow sheet: Laboratory process for making

broad bean tempe. (27) Flow sheet: Laboratory process for making cowpea tempe. Address: Dep. of Biochemistry and Nutrition, Technical Univ. of Denmark, Building 224, DK-2800 Lyngby, Denmark.

554. Gandjar, I. 1977. Fermentation of winged bean seeds: Tempe kecipir. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 47-48. [12 ref]
• ***Summary:*** Discusses the fermentation process, the changes during fermentation (in pH, total solids, total acidity, amino nitrogen, and soluble carbohydrates), and the composition of raw winged bean seeds and winged bean tempeh. Twenty three recipes were prepared and found acceptable by a taste panel. In Indonesia, the winged bean is popularly known as *kecipir.* Other local names are *kaceper, jaat,* and *botor.* Address: Nutrition Research and Development Centre, Dep. of Health, Indonesia.

555. Gandjar, I.; Slamet, D.S.; Ekasari, I.; Kartosuwondo, D.; Rasyidi, L. 1977. Tempe from the solid waste of a *hunkwe* (mung bean starch) factory. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 56-57.
• ***Summary:*** Contents: Introduction. The fermentation process. Biochemical changes occurring in substrate during fermentation. Address: Dep. of Biology, Faculty of Mathematics and Natural Sciences, Univ. of Indonesia, Jakarta.

556. Gandjar, I. 1977. Tempe benguk [Velvet-bean (*Mucuna pruriens*) tempeh]. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 50-54.
• ***Summary:*** In Central and West Java, the velvet bean is already utilized by the Indonesian people. Grown in less fertile soil or in drier climates than soybeans and other tropical legumes, it sells for about half the price of soybeans. Therefore velvet-bean tempe (*tempe benguk*) is much less expensive than soybean tempe (*tempe kedele*)–and more available to the poor. This tempe is consumed as a side dish.

Tables: (18) Comparison of nutrients of tempe gembus with those of oncom (from peanuts) and other tempes (tempe koro benguk and tempe lamtoro). (19) The protein content of *Mucuna pruriens* seeds in Indonesia. (20) Changes in amino nitrogen and total acid content during the fermentation of tempe benguk with *Rhizopus oryzae* R128 and with *Rhizopus oligosporus* R116. (21) Changes in total amino acids and total essential amino acids of tempe benguk during the fermentation process. (22) The amino acid content of the seeds of *Mucuna pruriens,* tempe benguk, soybean, and soybean tempe. Address: Dep. of Biology, Faculty of Mathematics and Natural Sciences, Univ. of Indonesia, Jakarta.

557. Gandjar, I. 1977. Tempe gembus [okara tempeh]. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 48-50.
• ***Summary:*** During World War II, when food was scarce, the people of Java used okara, the refuse of tahoo / tahu [tofu] factories, to make an acceptable, low-cost tempe. Today this kind of tempeh can be found in every market in Central and East Java, sold at a price that low-income people can afford. It is consumed (like most regular tempe) as a side dish for rice. The traditional fermentation, which is described, takes 2 days. The laboratory process is described in more detail. Address: Dep. of Biology, Faculty of Mathematics and Natural Sciences, Univ. of Indonesia, Jakarta.

558. Hesseltine, C.W.; Wang, H.L. 1977. Contributions of the Western World to knowledge of indigenous fermented foods of the Orient. Paper presented at Fifth International Conference on Global Impacts of Applied Microbiology, Nov. 1977, Bangkok, Thailand. 32 p. In: Steinkraus 1983, p.

607-22. [28 ref]
• ***Summary:*** Contents: Introduction. 1. Training of teachers and technicians. 2. Scientific aspects of the fermentation process. 3. Breeding of microorganisms for strain improvement. 4. Introduction of pure culture strains. 5. Substrate changes caused by enzymes. 6. Studies on the nutritional value of fermented foods. 7. New uses for traditional fermentations. 8. Developing an awareness of the importance of studying indigenous foods. References cited.

Photos show: (1) The interior of a Japanese sake brewery (wood block print, from Atkinson 1881). (2) Dr. Ryoji Nakazawa (previous page) (1878-1974; supplied by

Dr. T. Hasegawa). (3) Dr. K. Saito (below), who discovered the tempeh fungus, *Rhizopus oligosporus* (supplied by Dr. T. Hasegawa). (4) *Rhizopus oligosporus* (Saito 1905). (5) Ragi (Eijkman 1894). (6) Chinese yeast cakes (Eijkman 1894). (7) The complete kit for making tempeh, from Farm Foods, Summertown, Tennessee (shows brown paper ag, with large front and back labels). Address: NRRC, Peoria, Illinois 62604.

559. Kidby, D.K.; McComb, J.R.; Snowdon, R.L.; Garcia-Webb, P.; Gladstones, J.S. 1977. Tempeh production from *Lupinus angustifolius* L. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 54-56.
• ***Summary:*** Tempeh was prepared successfully from sweet lupin. Address: Dep. of Agricultural Microbiology, Univ. of Western Australia, Crawley, Western Australia.

560. Ko Swan Djien; Kelholt, A.J.; Kampelmacher, E.H. 1977. Inhibition of toxin production in tempe bongkrek. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 68. [14 ref]
• ***Summary:*** 0.5% NaCl inhibits production of bongkrek acid. Contains a lengthy bibliography on tempeh bongkrek. Address: Dep. of Food Science, Agricultural Univ., Wageningen, The Netherlands.

561. McComb, John. 1977. A study of the use of sweet lupins in tempeh, an Oriental food fermentation. Bachelor of Agricultural Science thesis, University of Western Australia. xi + 127 p. Nov. Illust. with 9 color photos. No index. 30 cm. [130 ref]
• ***Summary:*** Excellent review of the literature. Contents: List of tables, figures, plates. I. Introduction. II. A literature review: 1. A context for food research. 2. Microbiology of tempeh production. 3. Nutritional characteristics of tempeh. 4. New fermented food products. 5. Food uses of lupins. III. Experiments: 1. Culture preparation and preservation. 2. Preparation of lupins for fermentation and collective observations. 3. Tempeh fermentation: Inoculum potential for lupin tempeh production. 4. Energy content of lupin tempeh. 5. Human feeding test with lupin tempeh. 6. Consumer taste response survey. IV. Conclusions. References. Appendixes: 1. Yeast malt extract agar. 2. Blood and urine analysis. Daily diet. 3. Solids and energy losses during tempeh fermentation procedures. Address: Univ. of Western Australia.

562. Murata, Kiku. 1977. Antioxidants and vitamins in tempeh. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 38-40.
• ***Summary:*** "Murata attributed the improved nutritive value of tempeh to stabilization of the oil by antioxidants produced during the fermentation and synthesis of B vitamins. Stored tempeh does not develop rancidity" because the mold produces an isoflavone (factor 2) which acts as an antioxidant. "The antioxidant is not effective in preventing autoxidation of soybean oil and soybean flours" (p. 40).

Note: Autoxidation is any oxidation that occurs in open air or in presence of oxygen and/or ultraviolet (UV) radiation

and forms peroxides and hydroperoxides. Address: Dep. of Food and Nutrition, Teikoku Women's Univ., 173-6 Thoda-cho, Moriguchi City 570, Japan.

563. Noparatnaraporn, N.; Techa-akrakul, C.; Silapanapaporn, S. 1977. Factors affecting fermentation and vitamin B-12 content in tempeh and tempeh-like products. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 38-40. Original manuscript is 10 p. [9 ref]
Address: Dep. of Microbiology, Kasetsart Univ., Bangkok, Thailand.

564. Steinkraus, Keith H. 1977. Enhancement of food quality by fermentation. *New York State Agricultural Experiment Station, Nutrition Council Report* No. 26. p. 21-25. Nov. [13 ref]
• ***Summary:*** Contents: Introduction. Meat-like flavor from vegetable proteins. Meat-like textures on vegetable substrates. Quick-cooking foods. A method for increasing the protein content of high starch substrates. Utilization of food and agricultural wastes to produce human food. References. Address: Cornell Univ.

565. Tanuwidjaja, Lindayati. 1977. Utilization of defatted soybean flour in tempeh fermentation. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 64-66.
• ***Summary:*** The highest quality tempe is made from whole dehulled soybeans. Lower qualities of tempe are made by adding varying amounts of waste products, such as the waste from tapioca flour processing (*onggok*), young papaya, okara (left over after making tofu or soymilk), and grated coconut after the milk is pressed out. The main reason for adding these waste products is to lower the cost of the tempe. "Even though tempe is considered to be a low-cost, protein-rich food, high-quality tempe is expensive for very low income groups." Moreover, the addition of these low-protein waste products lowers the protein content and nutritional value of the tempe. Therefore the tempeh was made from low-cost, high protein defatted soy flour. The final tempe was a solid cake covered with a white mold mycelium, having typical tempe flavor and texture. Address: National Inst. of Chemistry, Bandung, Indonesia.

566. **Product Name:** Tempeh.
Manufacturer's Name: Tempeh.
Manufacturer's Address: 310 Oxford St., Rochester, NY 14607.
Date of Introduction: 1977. November.
New Product–Documentation: Letter from Earl Lepper to William Shurtleff at New-Age Foods Study Center. 1977. Nov. 21. "Our shop simply called Tempeh is now located in our apartment. We have considered a cooperative shop with The Tofu Shop but overhead expenses prohibit. We are supplying regularly 2 co-ops, 1 health food store, and one branch of a health food chain."

Letter from Earl Lepper. 1978. Jan. 21. "Tempeh is growing slowly but surely. The incubator has a capacity for more than 80 lb of tempeh daily. As of this past week full production is now under way. The hold up has been to make ends meet while supporting a family of five. Now limiting carpentry and painting to tempeh seems more of a possibility. The market seems best for fresh daily at large co-ops and frozen at smaller health food stores and restaurants."

Shurtleff & Aoyagi. The Book of Tempeh. 1979 (July). p. 149. Contact Earl Lepper.

Note: This is the earliest document seen (Sept. 2011) that gives tempeh production statistics for a particular manufacturing company in the United States.

567. Yeoh, Q.L.; Mercian, Z. 1977. Malaysian tempeh. Paper presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. ix + 671 p. See p. 41-42. Original manuscript is 14 p. [7 ref]
• ***Summary:*** Tempe is made as a cottage industry in Malaysia (see Fig. 23, a tempe maker working at home with a child nearby); it is sold in markets wrapped in banana or other leaves. The initial investment is very small–a few cooking utensils, mats, and trays. The main raw material is soybeans; a little wheat flour is sometimes added. The starter / inoculum is from a previous batch of tempe along with spores present on the leaf wrappers, and is thus free of charge. 1 kg of raw soybeans (which costs US$0,60) can be made into an estimated 42 packets (48 gm each) of tempe which are retailed at 3 packets for US$0.10. Thus a gross profit of US$0.80 can be made from each kg of soybeans processed. This does not include the cost of fuel or of any banana leaves that must be purchased. Address: Agricultural Products Research Div., MARDI, Serdang, Selangor, Malaysia.

568. Perkins, David D. 1977. Re: Neurospora, the Neurospora Newsletter, and ontjom. Letter to William Shurtleff at New-Age Foods Study Center, Dec. 19. 1 p.
• ***Summary:*** Dr. Perkins would be glad to review the Appendix on onchom in the forthcoming *Book of Tempeh.* He has checked the 24 *Neurospora Newsletter* issues since it began in 1962. Nothing on ontjom is listed in the indexes. However he has found some early references to ontjom: Beadle (1945), and Moreau-Froment (1956, which includes 2 references to Nishiwaki on "tome-koji" or "kabocha-bana").

Oidium lupuli is one of the early names used for *Neurospora* before the sexual stage was described in 1927. Other early names for the mold are *Monilia sitophila* and *Monilia aurea.* Address: Prof. of Biology, Stanford Univ., Stanford, California 94305.

569. Dwidjoseputro, Dakimah. 1977. Re: The process for making tempeh in Malang. Letter to William Shurtleff at New-Age Foods Study Center, Dec. 26–in reply to inquiry. 2 p. Typed, with signature on letterhead.
• ***Summary:*** Describes the process. Address: Badan Penelitian dan Pengembangan IKIP Malang, Jalan Semarang No. 5, Malang, Indonesia. Phone: 5296.

570. Barrett, Clare. 1977. Tempeh (101 ways to have fun with a soybean). *Vegetarian Times* No. 22. Nov/Dec. p. 55. [1 ref]
• ***Summary:*** An article in praise of soybeans, tempeh, and *The Book of Tofu.* Discusses the work of Dr. H.L. Wang of the NRRC and Robert Rodale of *Organic Gardening and Farming.* Tempeh starter and complete instructions for its preparation are available for $0.50 from Rodale Press, Emmaus, Pennsylvania.

Note: This is the earliest article on soy seen (Aug. 2002) in *Vegetarian Times* magazine. Address: Chicago, Illinois.

571. Liem, Irene T.H.; Steinkraus, K.H.; Cronk, T.C. 1977. Production of vitamin B-12 in tempeh, a fermented soybean food. *Applied and Environmental Microbiology* 34(6):773-76. Dec. [14 ref]
• ***Summary:*** It is believed that the vitamin B-12 in tempeh is synthesized by a *Klebsiella* bacterium, which is a contaminating microorganism rather than one of the microorganisms responsible for the fermentation of the legume substrate. Therefore one may not be able to consider tempeh a reliable, consistent source of this vitamin.

Several varieties of soybeans generally contained less than 1 ng [nanogram] of vitamin B-12 per 100 gm... Pure tempeh molds obtained from different sources did not produce vitamin B-12. It was found that the major source of vitamin B-12 in commercial tempeh purchased in Toronto, Canada [made commercially by Tjing Giok Tan {Mr. Tjeng Giok Tan} of Toronto] was a bacterium that accompanies the mold during fermentation. Reinoculation of pure bacterium onto dehulled, hydrated and sterilized soybeans resulted in the production of 148 ng of vitamin B-12 per gm... Nutritionally significant amounts of vitamin B-12 were also found in the Indonesian fermented food, ontjom."

"Indonesian tempeh, a protein-rich vegetarian food, is one of the world's first meat analogs." Mycelia of *Rhizopus* molds "overgrow hydrated, dehulled, and partially cooked soybeans, knitting them into a firm cake, which can be sliced and deep-fat fried or cut into cubes and used in place of meat in soups."

"Ontjom samples from Indonesia were obtained through the courtesy of A.G. van Veen, Cornell University. Sample 1 was traditional ontjom made from peanut presscake and sample 2 was ontjom [okara tempeh] made from soybean residue."

Table 2 shows the vitamin B-12 content of commercial tempehs made in Toronto (6.3 mcg [micrograms] per 100 gm), Indonesia (sun dried, 1974, 2.9 mcg; oven-dried, 1975, 0.4 mcg), and California (freeze-dried 1.5 mcg per 100 gm).

Note: *Klebsiella pneumoniae* is the microorganism which causes bacterial pneumonia in humans. Address: Cornell Univ., Geneva, New York 14456.

572. *Mother Earth News.*1977. Frank Ford, and Robert Rodale. No. 48. Nov/Dec. p. 60.
• ***Summary:*** Frank Ford has "farmed organically in Deaf Smith County for 25 years [i.e., since 1953]. Besides that, in 1960 he started a company (Arrowhead Mills, Inc.) that became one of the first major distributors of whole grains in this country. In the years since then, he's served on advisory committees to four different U.S. Secretaries of Agriculture. His *The Simpler Life Cookbook* has sold a quarter of a million copies, as has *The Deaf Smith Country Cookbook,* a book co-authorized by his wife, Margie."

Robert Rodale runs Rodale Press, which was started by his father. "The Research and Development Division has a successful tempeh project underway, with over 14,000 packets of starter–and instructions for preparing the fermented soybean food–already distributed to readers of *Organic Gardening and Farming."* Photos show Robert Rodale and Frank Ford.

573. Robinson, R.J.; Kao, C. 1977. Tempeh and miso from chickpea, horse bean, and soybean. *Cereal Chemistry* 54(6):1192-97. Nov/Dec. [6 ref]
• ***Summary:*** The authors made soybean tempeh, chickpea tempeh, and horse bean tempeh from 0.2 to 0.4 cm diameter grits. The soybean tempeh had the best flavor, texture, and color.

They also made soybean miso, chickpea miso, and horse bean miso. Compared with soybean miso, chickpea miso's color was darker, while horse bean miso's is lighter. Address: Dep. of Grain Science & Industry, Kansas State Univ., Manhattan, KS 66506.

574. Saono, S.; Brotonegoro, S.; Abdulkadir, S.; Basuki, T.; Jutono, -; Badjra, I.G.P. 1977. Microbiological studies of tempe, kecap, and taoco. II. Qualitative amylolytic and proteolytic activities of the isolates from various products from west Java. Progress Report Subproject III.b. ASEAN Project for Soybean and Low-Cost High Protein Foods. Jan-Dec. 1977. 8 p. [5 ref]
• ***Summary:*** An analysis is given of the types of bacteria, yeasts, and molds found in tempe, kecap, and taoco.

Scientific names of these microorganisms are not given. For example, in tempeh, molds consistently gave the highest number of viable cultures on any of the test media employed, followed by yeasts and bacteria in that order. Address: 1-4. Treub Lab., the National Biological Inst., Bogor; 5-6. Faculty of Agriculture, Gadjah Mada Univ., Yogyakarta.

575. Shurtleff, William; Aoyagi, Akiko. 1977. Report on trip to Indonesia to study tempeh (May 10–June 7), and notes from GIAM V–SIFF Symposium in Bangkok, Thailand (Nov. 16-29). Lafayette, California: New-Age Foods Study Center. 135 p. Unpublished manuscript. Illust. No index. 28 cm. [12 ref]
• ***Summary:*** 1. Shurtleff's notes on Indonesian trip (56 p.). 2. Tempeh summaries and questions (27 p.). 3. Aoyagi's notes from recipe development sessions with Indonesian cooks (30 p. Contains many recipes). 4. Shurtleff's notes from Bangkok symposium on Global Impacts of Applied Microbiology and Symposium on Indigenous Fermented Foods (22 p.). Address: 790 Los Palos Manor, Lafayette, California 94549. Phone: 283-3161.

576. Kolb, H. 1977. Herkoemmliche Verfahren zur Nutzung von Soja im asiatischen Raum [Traditional processes for using soya in Asia]. *Alimenta* 17:41-45. [35 ref. Ger]
• ***Summary:*** Discusses each of the following foods briefly and gives sources of further information: Kinako (roasted soy flour), soymilk, yuba, tofu, kori tofu (dried-frozen tofu), aburaage, namaage, kinugoshi tofu, sufu, soy cheese (Western style), soy yogurt, ganmodoki, natto, Hamanatto, koji, tempeh, miso, tao-tjo [Indonesian-style miso], kochu-jang, shoyu, and ketjap. Address: Institut fuer Lebensmitteltechnologie, Frucht- und Gemuesetechnologie, Technische Universitaet Berlin, Koenigin-Luise-Strasse 27, D-1000 Berlin 33, West Germany.

577. Loegito, Mas. 1977. Aflatoxins in tempeh. Presented at Symposium on Indigenous Fermented Foods, Bangkok, Thailand. *

578. Loegito, Mas; Soeparmo, -. 1977. Studies on aflatoxin concentration of tempe menjes and tempe kapuk, fermented foods made of disposal material in Malang municipality. Malang, Indonesia. 4 p. Unpublished manuscript. [12 ref]
• ***Summary:*** Tempe menjes is made from a mixture of peanut presscake and coconut presscake. Tempeh kapuk is made from coconut presscake. The fermented foods collected were found to contain an average of 24 parts per billion of aflatoxin B-1 and 30 parts per billion of aflatoxin G-1. Address: Dep. of Biology, Faculty of Medicine, Brawijaya Univ., Malang.

579. Pusat Penelitian dan Pengembangan Gizi Unit Diponegoro (Committee on Nutritional Research and Deverlopment Unit at Diponegoro). 1977. ASEAN Project on soybean and protein rich foods. Jakarta: Badan Penelitian dan Pengembangan Gizi Unit Diponegoro. Research paper. * Address: Jakarta, Indonesia.

580. Staron, T. 1977. Obtention des protéines à partir des graines oléagineuses par des méthodes microbiologiques [Obtaining protein from oilseeds using microbiological methods]. In: T. Staron, ed. 1977. Les Nouvelles Sources de Proteines Alimentaires. Recueil de Travaux et de Conferences. Luce: INRA. See p. 137-63. [42 ref. Fre]*
• ***Summary:*** A review of some important East Asian fermented foods, including miso, shoyu, and tempeh. Address: INRA, Stat. Antibiotiques, Bioconversions, Luce.

581. *Teknologi Desa* (*Village Technology*).1977. Tempe [Tempeh]. p. 19-23. Jakarta: Departemen Tenaga Kerja/ Sekretariat Badan Kerjasama Tenaga Sukarela Indonesia (Directorate of Human Resources Development and Extension/Secretariat of Indonesian Voluntary Labor Committee). [Ind]*
• ***Summary:*** Methods of tempeh processing, from raw material selection, soaking, boiling, packaging, and storing until maturation of the tempeh. Address: Jakarta, Indonesia.

582. Utomo, Kamaludin; Rivai, Mien A. 1977. Faktor pemadatan dalam pembuatan tempe Malang [The firmness factor in the preparation of Malang tempeh]. *Berita Biologi* (*Biology News*) 2(2):ii-iii. [Ind]*
Address: Indonesia.

583. **Product Name:** Tempeh.
Manufacturer's Name: Wolfmoon Bakery & Tempeh Co.
Manufacturer's Address: 2011 E. Michigan Ave., Lansing, MI 48912.
Date of Introduction: 1977.
New Product–Documentation: Shurtleff & Aoyagi. 1976. What is Tempeh? p. 5. Run by Greg Demers. Two letters from Greg Demers. 1978. Jan. 17. Discusses his process for making tempeh and asks related questions. He is a very careful researcher in both food and academic research. Home address: 1522 Mount Vernon Rd., East Lansing.

Letter from Diane Demers (formerly Greg Demers). 1980. Aug. 1. Contains a number of bibliographic references to tempeh. Address is now 420 Evergreen St., East Lansing, Michigan 48823.

584. Bates, Cynthia; Shurtleff, William. 1977. Tempeh. Summertown, Tennessee: The Farm. 7 p. Undated. Unpublished manuscript.
• ***Summary:*** Contents: Introduction. Making tempeh at home (from whole soybeans or dehulled, cracked soybeans). Good tempeh, immature tempeh, and inedible tempeh. Favorite tempeh recipes: Deep-fried tempeh. Pan-fried tempeh.

Tempeh chips. Tempeh burger. Tempeh pizza. Tempeh in sauces. Tempeh in salads. Tempeh in soups or casseroles. Feeding the larger self. Nutritional value of soybeans.

This document was written by the authors when Shurtleff and Aoyagi were visiting The Farm in early 197. Address: Summertown, Tennessee.

585. Farm Foods. 1977. Fermentation funnies (Leaflet).

Summertown, Tennessee. 2 p.

• ***Summary:*** Another very creative publication from Farm Foods and The Farm. Each is a leaflet (8½ by 11 inches) printed on both sides with blue ink on white. Each gives, in cartoon-strip format, an introduction to fermentation, fermented foods, tempeh, etc. (1) "For thousands of years friendly microorganisms–have helped people produce a variety of fermented foods. (2) Literally hundreds of foods have enriched our diet... (3) ... which were made available through the action of molds, yeasts and bacteria." An illustration shows sauerkraut, yogurt, bread, soy sauce, vinegar, cheese, each running forward on two legs, each

holding up a hand with the index finger pointing up.

(4) "These helpful miniature plants, by secreting enzymes, that act on the parent food [substrate] create new foods." An illustration shows a small critter, driving a tractor over a cake of tempeh, spraying enzymes on the food (as some farmers might spray agrichemicals). (5) "They are good nutritionally and often have better taste, texture, digestibility and keeping properties.

(6) "Now, from Indonesia, another new fermented food. It's tempeh! (pronounced TEM-py or TEM-pay). (7) Yes, it's tempeh, a mild white cake of solid soybeans–Those high-protein, low-cost beans that farmers feed to their cows! (8) First, soybeans are cooked lightly, drained and cooled, sprinkled with tempeh starter, wrapped in wax paper or plastic, and left in a warm place for about a day.

(9) "When it forms, the new tempeh is ready to be quick-cooked or frozen for future meals. It can be fried, boiled, baked, stewed or frozen for different flavors. Now you can prepare tempeh at home and have it as an instant main dish any time you want! (10) Order soybeans, starter, and our instruction booklet separately or ask for our complete kit. Free instructions for making tempeh at home." An illustration shows a packet of tempeh starter. The final frame shows the Farm Foods logo. The leaflet is designed to be folded crosswise into thirds and mailed. On the back is an order form (with prices) and a photo of four kids eating and

enjoying tempeh.

Note: An earlier version of this same cartoon strip, with the same title, but undated (probably 1976 or early 1977) is not quite as creative. The text is somewhat similar but there is less promotion of products (only starter kits which are $1 each). Farm Foods is not mentioned; the return address is: Témpé, Box 156, Summertown, Tennessee 38483. It is also printed with blue ink on white paper and designed to be folded into thirds.

On the back is: (1) A table giving a detailed composition of soybeans. (2) A bar chart showing "Per acre yields of usable protein from different food sources" showing that soybeans (at 356 pounds) are highest, whereas beef (at 20 pounds) is lowest. This chart is adapted from *The Book of Tofu* (1975, p. 15). Address: 156 Drakes Lane, Summertown, Tennessee 38483. Phone: (615) 964-3574.

586. Farm Foods. 1977. Tempeh (Leaflet). Summertown, Tennessee. 2 p. Revised 1978.

• ***Summary:*** Contents: Introduction. Making tempeh at home: equipment and process (with a description of good, immature, and inedible tempeh). Preserving tempeh. Questions and answers. Four brief recipes: Tempeh burger. Deep-fried tempeh. Tempeh pizza. Cubed fried tempeh. Using whole soybeans.

The border around the front page is single stalks of bamboo. Around the back page is a woven bamboo colander. Contains 9 photos and a line drawing of a five-dollar incubator for tempeh. Address: 156 Drakes Lane,

Summertown, Tennessee 38483.

587. Gandjar, I. 1977. Fermentasi biji *Mucuna pruriens* DC dan pengaruhnya terhadap kwalitas protein [Fermentation of *Mucuna pruriens* DC seeds and its effects on protein quality]. Thesis, Institute Teknologi Bandung, Indonesia. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker. ix + 671 p. See p. 50-54. [Ind]*
• ***Summary:*** The resulting fermented food is velvet bean tempeh (*tempeh benguk*). Address: Bandung, Indonesia.

588. Hinson, K.; Hartwig, E.E. 1977. Soybean production in the tropics. *FAO Plant Production and Protection Paper* No. 4. v + 92 p. Illust. 27 cm. (Rome, Italy). Revised 1982. [82 ref. Eng; Chi; Fre; Spa]
• ***Summary:*** Contents: Introduction. Botany. Climatic requirements. Soils and soil fertility. Water and water management. Varieties and variety development. Culture. Nitrogen nutrition and inoculation. Diseases and nematodes. Insects. Harvesting and seed storage. Nutritive quality and use. Rotations and intercropping. Bibliography. Address: Research Agronomists, USDA.

589. Shurtleff, William. 1977. Indonesian words associated with tempeh / tempe and tempeh (or oncom / onchom) recipe names. Lafayette, California. 1 p. Unpublished typescript.
• ***Summary:*** This list was compiled from various books while writing *The Book of Tempeh.* The names are in alphabetic order and the number after each is the number or page number in some forgotten book–perhaps Mustika Rasa. (1) Achar tahu tempe–64. (2) Tempe asam manis–10. (3). Tempe bacem–8. (4) Tempe bacem kering–40. (5) Besengek tempe–35. (6) Bistik tempe–3. (7) Botok tempe–18, 21. (8) Brongkos tempe–55. (9) Tempe bumbu Bali–44.

(10) Tempe bumbu rujak–16. (11) Ento ento–53. (12) Gado-gado–39. (13) Gadon tempe–30. (13a) Gejos oncom–6. (14) Tempe goreng–1. (15) Tempe goreng biasa–58. (16) Tempe goreng dengan bumbu–13. (16a) Gudeg tempe–. (17) Gulai tempe–41. (18) Kare tempe–29. (19) Tempe kemul–2.

(20) Kering tempe–52. (21) Keripik tempe–4, 24. (22) Kokotan tempe–28. (23) Kroket tempe–3. (23a) Tempe lado–57. (24) Lengko-lengko–49. (25) Masak petis–45. (26) Masak taoco–48. (27) Mendoan tempe–31, 57. (28) Mendol–61. (29) Menjeng tempe–20.

(30) Menjes tempe -. (31) Nyomok tempe–50. (32) Oblok-oblok–54. (33) Oblok-oblok oncom–67. (34) Oncom goreng–14. (35) Opor tempe–43. (36) Orem orem–51. (37) Oseng oseng tempe–19. (38) Tempe panggang -. (39) Tempe pechel or pechil–.

(40) Penchok-pepechak–59. (41) Pepes oncom–66. (42) Pepes tempe -. (43) Perkedel tempe–17. (44) Pindang tempe busuk–36. (46) Tempe podomoro–68. (47) Rendang tempe–23. (48) Rempeyek tempe–24? (49) Sambal tempe -.

(50) Sambal goreng tempe–63. (51) Sambal goreng kanchung–75. (52) Sambal goreng kering–12. (53) Sambal goreng krechak–22. (54) Sambal jenggot–76. (55) Sambal tempe busuk–39. (56) Sambal tepung–73. (57) Sambal tumpang. (58) Sate tempe–32. (59) Sate manis tempe–.

(60) Sayur asam tempe–62. (60a) Sayur kangkung tempe–. (61) Sayur bening tempe–37. (62) Sayur lodeh tempe–74. (63) Semur tempe–65. (63a) Soto tempe -. (64) Tauge goreng–69. (64a) Tepung -. (65) Terik tempe–5. (66) Terik tahu dan tempe–42. (66a) Tumis oncom–2. (67) Tumis tempe–38. (68) Tumis kangkung tempe–34. (69) Tempe ungkep–See bacem.

Singkatan = abbreviations (Indonesian): bdj = bidji / biji (seed). bb = buah (fruit). btg = batang (stem, stalk). btl = botol (bottle). btr = butir (piece). gl = gelas (glass). ikt = ikat (bunch, bundle). lbr = lembar (sheet). pt = potong. rsd = ruas djari / ruas jari (finger tip size). sdm = sendok makan (tablespoon). sdt = sendok teh (teaspoon). tjkr = tjangkir / cangkir (tea cup). tk [or btg] = tangkai (stalk, stem). kg = kilogram. g = gram. Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

590. Souser, M.L.; Miller, L. 1977. Characterization of the lipase produced by *Rhizopus oligosporus*, the tempeh fungus (Abstract). *Abstracts of the Annual Meeting of the American Society for Microbiology* 77:258.
• ***Summary:*** "The extracellular lipase produced by *Rhizopus oligosporus* during tempeh fermentation and in liquid culture was partially purified and characterized." Lipase activity in tempeh peaked after 24 hours; its optimum pH is 7.0 and optimum temperature for activity is 40ºC. Address: Dep. of Microbiology, Cook College, Rutgers Univ.

591. *SoyaScan Notes.* 1977. Chronology of the early years of Legume, run by Gary Barat and Dyanne Chandri Speer Barat, through Dec. 1983. 27 Oct. 1988. Compiled by William Shurtleff of Soyfoods Center.
• ***Summary:*** Gary Barat is born on 28 Nov. 1942 in Manhattan, New York.

1967-72. Gary is one of the founders of an early hippie commune named Huggs, located on 2,000 acres outside Burlington, Vermont. They rented it for $1 a year. He lives there (in an Indian tepee for a year) and works on their co-operative organic farm. He also learned carpentry and cabinet making. They sold their crops at a fruit and vegetable stand. In 1968 he becomes a vegetarian for moral reasons.

1972-77. The farmer who owned the Vermont land died and his heirs wanted the community off the land. Gary returned to New York. There he worked on and off as a carpenter. In 1971 he founded a company named "Longest Pillow in the World" which markets pillow furniture at outlets like Bloomingdale's and Macys. He may have invented the term "pillow furniture." He creates and registers the trademark "X-Rated" and a logo. He eventually licenses

the rights to Sony.

1977. Gary has open-heart surgery necessitated by an unusual blood infection. While recuperating at his sister's home in Umatilla, Florida, he visits Lecanto Tofu Shop (90 minutes drive away) and first sees tofu being made. Decides he wants to do something with tofu as a right livelihood.

1978-79. Gary recuperates.

1979 June. Gary establishes Nature's Inn Corporation as a research company. He has no money–it was all gone from the operation and not being able to work for almost 2 years. But now he has a chance to start over with a Right Livelihood occupation. It was a spiritual quest. He uses this company to raise money to study the soyfoods market and create a business plan. Some money came from an investment banker, some from a man who owned an advertising agency. They were not relatives and they didn't stay with the company in the long term.

1979 July. Gary attends the Second Soycrafters Conference in Amherst, Massachusetts. First real involvement with soyfoods. Meets Steve Demos of White Wave, Tom Timmins of New England Soy Dairy, and others. After the conference he starts to compile a business plan for his new company.

1979 August. Gary meets Chandri Dyanne Speer at the Muktananda ashram in South Fallsburg, New York. Born on 3 March 1950, she graduated from Syracuse Univ., worked on a PhD at Boston College, studied in Paris at the Political Science Institute for a year, and then spent a year studying Eastern philosophy and meditation in India. Gary hires her to help him do research on the tofu market. On 23 Aug. 1979 Oak Barat of McNaturals orders books on tofu, miso, and tempeh from New-Age Foods Study Center. Gary and Chandri travel together around the USA researching tofu. After visiting Steve Demos at White Wave in Boulder (who personally prepared them a delicious dinner, featuring 15 tofu dishes, at his home) they decide at the Boulderado Hotel that they will make finished tofu products–not plain tofu. In California, they also visit Larry Needleman (their guide in California), Ray Nagai (who convinces them not to make tofu and not to own a factory), Bob Gerner of Gilman Street Gourmet in Berkeley (they loved and were inspired by the tofu burgers he sold at his Deli), and William Shurtleff (Dec. 18-21). At this point, their basic concept is to create a fast-food restaurant serving a variety of tofu dishes, with a traditional tofu shop in the restaurant, clearly visible behind a large glass window. Then on to Japan to study tofu there–with most of the expenses paid by Sony. They eventually collect 500 pages of research on the industry.

1980 May. Return to New York City and start baking Whipped Tofu Mousse Pie (their very first product), Tofu Muffins, and Tofu Spinach Quiche in their apartment. They sell them throughout the summer from a booth at street fairs in New York City both as a source of income and for market research to see which products were well accepted. Lasagna in large trays (unpackaged) was also sold at this time.

1980 June. Dissolve Natures Inn Corp. and start doing business as Legume. A Tempeh Chili product is being planned. Tempeh Cutlets soon follow, but neither of these are ever packaged or labeled. The muffins, quiches, and no-creme pies were the first products to be packaged and labeled; each is kosher. They made the first two products, mostly by hand themselves, in a large bakery they rented for the summer in the Crown Heights section of Brooklyn. The baker, impressed by their business plan, invested $19,500 in the company and let them use his bakery after his daily baking was done. Limited freezer space in this bakery was a major problem.

1981 Jan. 23. Incorporate Legume in New York, then that month move to Bloomfield Bakery, a larger facility in Verona, New Jersey (which has freezer space), ending up right next to Celentano. Meet Ira Shapiro, a food broker who represents major low-calorie frozen food lines. His son, Robert Shapiro, invests $10,000 in the company and becomes sales manager. At about this time, when they were trying to raise money, their basic concept changed from being a restaurant to being a nationwide marketer of prepared tofu dishes. The restaurant business was seen as too risky and neither Gary nor Chandri had any experience in it. Investors were scared of putting money into a restaurant.

1981 March. Legume publishes a leaflet with the slogan "Who says rich, creamy foods have to be high in cholesterol & calories." Their Tofu Country Pies, Tofu-Bran Muffins, Tofu No-Cream Pies, and Cakes now start to be shipped nationwide, frozen, through a network of health food distributors.

1981 May. Celentano starts co-packing Legume's Italian-style entrees, beginning with Tofu Lasagna, followed by Tofu Ravioli. The Tofu Lasagna, a frozen entree, has a crack-and-peel label on an all-white box. It bears the new Legume logo on the front but no food illustration yet. It debuted at a food show in Soho. Gary and Chandri are still making their baked goods by hand in the bakery. Since May 1980 Gary and Chandri have realized that they prefer to let another company make their products, so that they can focus on marketing. They are one of the first soyfoods companies to come to this key realization.

1981 June. Gary and Chandri are married in New Jersey.

1981 Sept. Legume runs its first magazine ad (in Whole Foods, p. 56), stating that Legume now markets 3 Legume-brand snacks (Tofu muffins, "No-creme" pies, and tofu cakes), and 3 entrees (Tofu lasagna, Tofu ravioli, and Tofu country pies). The company's slogan is "Delicious protein meals and snacks."

1982 Feb. (winter). The earliest document seen on Legume appears in *Soyfoods* magazine (p. 56). Their products: Tofu Bran Muffins (Raisin or Blueberry), Tofu No-Creme Pie (Strawberry, Coconut, Banana), Tofu Cake (Carrot or Banana), Tofu Country Pie (Spinach or Broccoli),

Tofu Ravioli, Tofu Lasagna.

1982 July. Richard Leviton visits Legume and publishes article in Soyfoods magazine ("Touring for Soyfoods," p. 32, 41). Products now include tofu pizza, lasagna, ravioli, vegetable pies, muffins, cakes, and cheesecakes. Company is now starting to phase out its line of baked products.

1982 Oct. Legume raises $200,000, half through a public sale of 1,000,000 shares of common stock at a price of $0.10 per share, and half a loan, to promote its tofu frozen entrees. This is the first of the new wave of tofu companies to become publicly owned. Now, with the help of food broker and board member Ira Shapiro, they take aim at supermarkets.

1983 Jan. 24. Article on Legume in the *Wall Street Journal* titled "Company finds a niche selling frozen foods made with tofu." Includes a good history of the company, whose sales now "are only $40,000 a month, $20,000 less than the break-even point."

1983 July. Gary Barat takes the lead in forming the Soyfoods Association of America, a new organization to represent larger companies and to break away from SANA.

1983 Aug. Legumes raises $600,000 more, 2/3 through sale of common stock to 34 people in a private transaction, and 1/3 from a loan.

1983 Dec. Six new Italian-style tofu entrees, sold frozen, introduced in stylish boxes. Line of "Legume Light & Natural Tofu Entrees" includes Stuffed Shells Provencale, Tofu Tetrazzini, Sesame-Ginger Stir-Fry, Tofu Bourguignon, and Cannelloni Florentine. Each contains less than 300 calories.

1984 Feb. The company borrowed $200,000 from two parties, one of whom, Vincent Galano, is a principal stockholder of the company.

592. Wood, B.J.B. 1977. Oriental food uses of *Aspergillus*. In: J.E. Smith and J.E. Pateman, eds. 1977. Genetics and Physiology of *Aspergillus*. New York: Academic Press. x + 552 p. See p. 481-98. [33 ref]
• ***Summary:*** Contents: Introduction. Koji. Tamari. Miso. Tempeh. Sake. Some minor fermentations. Fermented foods and mycotoxins. Acknowledgments. References. Address: Dep. of Applied Microbioloby, Univ. of Strathclyde, Glasgow [Scotland], U.K.

593. Yustuti, Edi Budi. 1977. Perlakuan penambahan asam laktat pada pembuatan tempe sebagai pengganti perlakuan perendaman biji kedelai [Addition of lactic acid in tempeh processing as an alternative treatment to soybean soaking]. Thesis (Skripsi), Fakultas Teknologi Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia. 26 p. [Ind]* Address: Yogyakarta, Indonesia.

594. Ang, H.G.; Kwik, W.L.; Tan, S.F.; Theng, C.Y. 1978. Development of traditional and new soy products using defatted meal. In: American Soybean Assoc., ed. 1978. International Soya Protein Food Conference, Proceedings. Hudson, Iowa: ASA. 136 p. See p. 53-58.
• ***Summary:*** Contents: Abstracts. Introduction: Non-fermented products (soymilk, soybean curd, yuba), fermented products (soy sauce, soy cheese, tempeh), others (soybean sprouts, whole bean), soymilk and soymilk powder from defatted soymeal. Results and discussions: Preparation of soymilk powder. Conclusion. Address: Dep. of Scientific Services, Singapore.

595. Shurtleff, William. 1978. Household preparation of winged bean tempeh, tofu, milk, and sprouts. In: 1978. The Winged Bean. Los Banos, Laguna, Philippines: Philippine Council for Agriculture and Resources Research (PCARR). xvii + 448 p. See p. 335-39. Jan.
• ***Summary:*** This book consists of papers presented at the 1st International Symposium on Developing the Potentials of the Winged Bean. Held Jan. 1978, at Manila, Philippines. Contents: Introduction. Homemade winged bean tempeh: Recipe, directions, polyethylene (plastic) bags, baking pans or pie tins, good tempeh, immature tempeh, inedible tempeh, troubleshooting (tempeh is too wet, mold is sparse and does not bind beans tightly, tempeh contains black spots or patches, tempeh smells strongly of ammonia, mold grew abundantly in some places but sparsely in others). Homemade winged bean tofu: Recipe, directions, troubleshooting (low yield, small curds or crumbly tofu texture, coagulant was insufficient). Homemade winged bean milk: Recipe, directions, honey-vanilla, rich and creamy, carob-honey, malt, mocha, or coffee. Homemade red winged bean miso. Homemade winged bean sprouts.

Note: This is the earliest document seen (Jan. 2011) that describes how to make tofu from winged beans (Kantha 1983). Address: New-Age Foods Study Center, 278-28 Higashi Oizumi, Nerima-ku, Tokyo 177, Japan. Phone: (03) 925-4974.

596. Stein, Ellin. 1978. Making money making tofu. *Whole Foods* (*Berkeley, California*). Jan. p. 32-38.
• ***Summary:*** This multi-part article describes commercial operations at Farm Foods (San Rafael, California–"Down on the Farm"), Redwood Natural Foods (Santa Rosa, California), The Tofu Shop (Rochester, New York–"Hope in Rochester"), Surata Soyfoods (Eugene, Oregon–"Tofu Recipe Doubles in Oregon"), and The Soy Plant (Ann Arbor, Michigan–"Midwest Soy Plant Expects to Grow").

Note: This is the earliest document seen (Sept. 2011) that mentions "Surata Soyfoods," the first company with the word "Soyfoods" in the company name.

Part of the main article ("A Busy Grasshopper Waits for Profits") and a full-page sidebar titled "Making Tofu on Main Street" tells the story of Laughing Grasshopper Tofu Shop in Millers Falls, Massachusetts. "With *The Book of Tofu* as their

guide, Ira and Kathleen Leviton founded the first occidental tofu shop in the northeastern USA in this sleepy papermill town in Aug. 1976. At the time the Levitons owned and operated Corn Creek Bakery in Greenfield, eight miles away, and they ran the two businesses until August 1977, when they closed Corn Creek due to a continuing labor dispute. Having formed a partnership with two men, Tom Timmins in August 1976 and Michael Cohen in February 1977, the Levitons found their 100 bread accounts quite eager to stock tofu. They are now producing over 800 pounds of tofu per day to service their 100 accounts... Grasshopper makes tofu with Prize variety soybean shipped from Iowa in trailer loads and stored in the plant...

"Fully believing that the tofu market can be doubled within the first quarter of 1978, Grasshopper is moving this month to a 3200-sq.-ft. plant in Greenfield that already offers a well-drained concrete floor... Tofu production will be upgraded with the installation of $5,000 worth of Japanese tofu machinery... Cohen estimates daily tofu capacity will increase to 1,600 pounds. 'As soon as we can,' says Cohen, 'we'll have not only tofu, but deep-fried age, soymilk–flavored and unflavored, tempeh, and soy "ice cream." We feel the market is at our fingertips. We've never taken the step into a serious sales campaign, but I think we will. So far, we make the soft tofu, we give the soft sell.'"

Note 1. This is the first issue of *Whole Foods* magazine. This is also the earliest article on soy seen (Aug. 2002) in *Whole Foods* magazine.

597. Yu, Swee Yean; Ch'ng, Guan Choo. 1978. Soy bean foods in Malaysia. In: American Soybean Assoc., ed. 1978. International Soya Protein Food Conference, Proceedings. Hudson, Iowa: ASA. 136 p. See p. 48-52. [16 ref]
• ***Summary:*** Contents: Introduction. Fermented soya bean products: Soya sauce (manufacture of 'thin' (dilute) soya sauce, manufacture of 'thick' (viscous) soya sauce, microbiology of Malaysian soya sauce, stability of the product), tempeh, tau cheo (thick paste-like sauce), tao si (soy nuggets). Non-fermented soya bean products: Soya bean sprouts, tofu (semi-firm curd), tofu fah (soft curd), tow kwa (firm curd), tin chok (dried, flat sheets [yuba]), fu chok (dried, rope-like [bamboo yuba]), tofu pok (deep-fried curd [tofu cubes]), chak tie (vegetarian [yuba] sausage), soya bean milk (tau cheong), meat analogues (soya flour is shaped into desired forms by hand). Nutritional data. Conclusion. Address: Universiti Pertanian Malaysia, Serdang.

598. New England Soy Dairy Inc. 1978. Re: Announcing opening of New England Soy Dairy, Inc. Letter to customers and friends of the business, Feb. 17. 2 p. Typed, with signature on orange letterhead. [1 ref]
• ***Summary:*** "Dear friends. We are pleased to announce the opening of the New England Soy Dairy, Inc... As soon as we can hook up our deep fryer and practice making agé and agé pouches, we'll add them to our list of products... We have ordered a packaging machine that is scheduled to arrive in a few weeks." The company will then start making packaged tofu (now it is all sold in bulk), and may begin producing hard tofu (doufu), tofu pudding, and bottled soymilk. "The possibilities for freshly made soybean products seem almost endless. We are experimenting with a soy ice creme, and with miso. We'd really like to start producing tempeh this autumn... Our tofu price will remain at $0.44/lb to retailers." The company plans to pick up its first two distributors: Homestead Trading Co. and nearby Llama.

Shurtleff and Aoyagi, and their *Book of Tofu* and *Book of Tempeh* are mentioned in the letter. At the end: "Soy to the world, (Thanks to Akiko Aoyagi for the drawings)." A handwritten note at the end reads: "Bill & Akiko, We sent this around to our customers. We're still reading the B.ofT. [Book of Tofu]. Tom Timmins. P.S. Come visit us next time you're East." Address: 305 Wells St., Greenfield, Massachusetts 01301. Phone: (413) 772-0746.

599. *Organic Gardening and Farming.*1978. Tempeh culture. 25:95. Feb.
• ***Summary:*** "We know of no better, easier way to fix dried soybeans than tempeh... More information, complete instructions, culture and even beans, if you need them, are available from both: Farm Foods, 156 Drakes Lane, Summertown, Tennessee 38483, and Microcultures, Drawer A, Bayville, New Jersey 08721."

An internal memo from Rodale Press, publisher of *Organic Gardening and Farming,* reveals that they ran this notice because "The demand for tempeh culture over the past months has exceeded our supply."

600. Westbrae Natural Foods. 1978. Price list [Catalog]: February 1978. Emeryville, California: Westbrae. 20 p. 26 cm.
• ***Summary:*** On the cover are a black plum blossom logo and a large, bold double "W" in calligraphy near the bottom against a gray background.

Interesting products: Natural fruit butters and unsweetened fruit spreads. Four types of granola and two trail mixes. Panda snacks: Tamari almonds, Tamari cashews, Tamari nut roaster's mix, Tamari sunflower seeds, White water trail mix (tamari roasted). Westbrae roasted nuts (25 lb boxes): Tamari almond, Tamari cashew pieces, Tamari valencia peanuts, Tamari nut roaster's mix, Tamari sunflower seeds, Tamari pepitas (pumpkin seeds), Tamari filberts. Tamari nut butters (12, incl. almond, 6 peanut, and sesame tahini). Whole wheat soy pasta.

Asian foods & sea vegetables: Miso (red miso, brown rice miso, barley miso, Hatcho miso, soybean miso, light yellow miso, natto miso). Miso made in the United States: Light yellow, mellow white, red, mixed case. Sea vegetables: Agar, dulse (whole or flakes / powder), sea palm, nori,

arame, hijiki, kombu, wakame. Shoyu and shoyu products: Josen shoyu, Sendai shoyu, White Tiger Tofu Sauce. Nigari. Kudzu. Umeboshi. Toasted sesame oil. Helpful tools: Wok (11 inch), vegetable brush, glass shoyu dispenser, Tofu kit, Tempeh kit, rice koji (Cold Mountain). Beans: Azuki (10 lb or 25 lb bag), soybeans (60 lb or 25 lb), soy grits raw. Publications: Includes four books and 3 pamphlets by Shurtleff and Aoyagi.

Note: The products in this catalog do not require refrigeration; they contain no refined sugar / white sugar, no meat, and no dairy products–just like the catalogs of almost all other natural food distributors during the 1970s and 1980s. Address: 4240 Hollis St., Emeryville, California 94608. Phone: (415) 658-7518 (order) or 7521 (office).

601. *Town Crier* (*Greenfield, Massachusetts*).1978. Tofu manufacturing plant opens. 12(3):1-2. March 22.
• ***Summary:*** "The New England Soy Dairy, 305 Wells Street, in Greenfield, has opened the doors on its new manufacturing plant... The firm has recently completed a long-projected expansion into more spacious and efficient facilities where it utilizes special tofu-making equipment imported from Japan enabling the company to produce nearly 10,000 pounds of tofu every week. The Soy Dairy ships this out all across New England, New York City, and Pennsylvania." The tofu, which retails for about $0.75/lb is "made from organically grown soybeans, water, and nigari, a coagulant extracted from seawater...

"The company uses the term 'dairy' to indicate its intention to provide a full range of alternative dairy-like products all derived from soybeans, including ice cream, yogurt, cream cheese, mayonnaise, whipped cream, tartar sauce, plain and flavored soymilk. In addition, other less familiar items will be introduced, such as miso soy bean paste, deep-fried tofu, and a fermented product, called tempeh. The Dairy operates at a medium level of technology, fusing traditional hand craftsmanship with modern labor saving equipment."

"The company is open Monday through Saturday, 8 a.m. to 6 p.m. and visitors are welcome." A photo shows Kathy Whelan Leviton cutting a large sheet of tofu into cakes.

602. **Product Name:** Tempeh.
Manufacturer's Name: Soy Plant (The).
Manufacturer's Address: 211 East Ann St., Ann Arbor, MI 48104. Phone: 313-663-8638.
Date of Introduction: 1978. March.
Ingredients: Organic soybeans, vinegar, Rhizopus oligosporus culture.
Wt/Vol., Packaging, Price: 8 oz.
Nutrition: Per 100 gm: Calories 157, protein 19.5 gm, fat 7.5 gm, carbohydrates 9.9 gm, calcium 142 mg, iron 5 mg.
New Product–Documentation: Letter from Steve Fiering. 1978. Oct. 2. A 5-page detailed description, including equipment and process, of how The Soy Plant makes tempeh.

Letter from Steve Fiering. 1979. Undated. A 3-page handwritten description of photos showing how The Soy Plant makes tempeh. Letter from Steve Fiering. 1979. Oct. 22. A 2-page typewritten description of how The Soy Plant makes tempeh.

Shurtleff & Aoyagi. 1979. The Book of Tempeh. p. 148. Made by Steve Fiering. Steve Fiering. 1979. Whole Foods. Jan. p. 38, 40. "A Midwestern Interest in Tofu." This is included in a list of products presently produced by the company.

Letter/Order for *The Book of Tempeh* from Kurt Getman of Frog Farm Tempeh (Soy Plant). 1979. Aug. His address is 5177 Grand River, Fowlerville, Michigan 48836. Two rectangular Labels in Soy Plant scrapbook. 1980. 6 by 4½ inches. Purple on white. Square Labels in Soy Plant scrapbook. About mid-1980. 4½ inches square. Black on white. The soy plant logo is near the bottom of a rayed V inside a circle. Written across the top of the circle: "Keep frozen. Thaw only portion used." No address is given.

Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Kurt Getman. Listed at 771 Airport Blvd. #1. Label. 1981, undated. Yellow, purple and green on white. The company name is given as "The Soyplant Co-op Inc.–A people's business."

Talk with Steve Fiering. 1988. June 10. This was the company's fourth commercial product. In January 1978 we moved into the shop at 211 E. Ann St. and within a couple of months we built a small incubator and started making tempeh.

603. Delaney, Connie. 1978. Readers' letters: Home-style tempeh incubator sans electricity. *Organic Gardening and Farming* 25:24. April.
• ***Summary:*** This method works even in a cold house in the dead of winter. Fill some jars with water heated to the temperature required for incubation. Put lids on the jars and place in a cardboard or Styrofoam box along with the tempeh (or yogurt). Insulate well on all sides with pillows, blankets, etc. This will hold a constant temperature for 8-10 hours in cold weather; at that time add more hot water. Address: Salmon, Idaho.

604. Saono, Susono; Basuki, Triadi. 1978. The amylolytic, lipolytic and proteolytic activities of yeasts and mycelial molds from ragi and some Indonesian traditional fermented foods. *Annales Bogorienses* 6(4):207-19. April. [9 ref]
• ***Summary:*** The only tempeh mentioned is okara tempeh (*oncom hitam*). Address: Treub Lab., National Biological Inst., Bogor, Indonesia.

605. Steinkraus, Keith H. 1978. Tempeh–An Asian example of appropriate/intermediate food technology. *Food Technology* 32(4):79-80. April. [7 ref]

• ***Summary:*** Discusses tempeh processes, process improvements, and transfer of these technology improvements to Indonesia. Address: Cornell Univ., Geneva, New York.

606. Walker, Robert. 1978. How to make tempeh–the nutritious meat substitute. *Alive* (*Canada*) No. 18. p. 13.
• ***Summary:*** The author started producing Canada's first commercial tempeh in June 1978. Here he describes what tempeh is, how to make it at home, and how to cook it. Photos show: (1) Robert Walker with the container he invented for making doughnut-shaped tempeh. The inside core and the holes on the outside tube allow the air to circulate evenly throughout the fermenting soybeans. (2) A close-up of two shapes of tempeh. A note at the bottom of the page states: "Robert Walker who lives in Port Perry, Ontario, is starting a tempeh making business." Address: Ontario, Canada.

607. Johns, Yohanni. 1978. Re: Thoughts on The Book of Tempeh manuscript. Letter to William Shurtleff at New-Age Foods Study Center, May 15. 1 p. Typed, with signature on letterhead.
• ***Summary:*** "Your book should have been published many years ago. It will be a hit even in Indonesia... I am from Central Sumatra, thus, there are many recipes that I have never seen before. Moreover, in Central Sumatra, where much more meat is eaten than in Java, people tend to look down on tempeh. In fact, I seldom ate tempeh until I made my first visit to Java at the age of twenty.

"Your recipes are fascinating... There is however, one important point: the making of tempeh making residual press-cake from sun-dried coconut is now banned in Indonesia. It may be lethal!"

Note: Yohanni is a well-known cookbook author. See *Dishes from Indonesia* (1977). Address: Lecturer, Dep. of Indonesian Languages and Literatures, Faculty of Asian Studies, The Australian National Univ., Box 4, P.O., Canberra, A.C.T.,.

608. Arbianto, Purwo. 1978. Tempe. Presented at ASEAN Workshop on Solid Substrate Fermentation. Held 8-13 May 1978 at Bandung, Indonesia. [Eng]*
Address: Team Bioteknologi, Departemen Kimia, Institut Teknologi, Bandung, Indonesia.

609. ASEAN Sub-Committee on Protein. ed. 1978. Report on the First ASEAN Workshop on Solid Substrate Fermentation. Bandung, Indonesia. Held 8-13 May 1978 at Bandung, Indonesia. [100+ ref]*
• ***Summary:*** This is the 5th ASEAN Protein Workshop. Address: Malaysia.

610. Ho, Coy Choke. 1978. Isolation, identification, and characterization of *Neurospora intermedia* from oncom: a fermented food in Indonesia. Paper presented at ASEAN Workshop on Solid Substrate Fermentation. 9 p. Held 8-13 May 1978 at Bandung, Indonesia. *
Address: Dep. of Genetics and Cellular Biology, Univ. of Malaya, Kuala Lumpur.

611. Ho, Coy Choke. 1978. Microbiology of oncom, an Indonesian fermented food. Paper presented at ASEAN Workshop on Solid Substrate Fermentation. 4 p. Held 8-13 May 1978 at Bandung, Indonesia. *
Address: Dep. of Genetics and Cellular Biology, Univ. of Malaya, Kuala Lumpur.

612. Whitaker, John R. 1978. Biochemical changes occurring during the fermentation of high-protein foods. *Food Technology* 32(5):175-80. May. [42 ref]
• ***Summary:*** Foods are fermented to improve the flavor, color, aroma, and texture, and to remove toxic constituents. Occidental fermentations generally use bacteria and non-filamentous fungi, whereas Oriental fermentation procedures generally use filamentous fungi. The following foods are discussed: Cheeses (particularly Roquefort and Cheddar), sufu, yoghurt, meat, fish, soy sauce, miso, tempeh, and ang-kak. Flow sheets show the production of sufu and soy sauce.

Contents: Reasons for fermenting foods. Occidental vs. oriental fermentations. Major fermented high-protein foods. References. Address: Dep. of Food Science and Technology, Univ. of California, Davis, California.

613. MacKinnon, Jerry; Fiering, Steve. 1978. Re: Update on plans for Soycrafters Convention at The Soy Plant in Ann Arbor, Michigan. Letter to William Shurtleff at New-Age Foods Study Center, Lafayette, California, June 9. 3 p. Typed, with signature.
• ***Summary:*** Includes a copy of Shurtleff's proposed schedule for the program. "Just a word about our shop here in Ann Arbor. We began over a year ago in the local bakery trying to eke out a hundred pounds of tofu a week. Today, we've opened a store front with our shop in back. By the time we see you in July we'll be well over the 2,000 lb. weekly mark with full scale Tempeh production." Address: The Soy Plant, 211 East Ann St., Ann Arbor, Michigan 48104. Phone: (313) 663-0500.

614. MacKinnon, Jerry; Fiering, Steve. 1978. An invitation. *Soycraft* (*Lawrence, Kansas*) 1(3):1. June.
• ***Summary:*** "The workers of the Soy Plant Soy Dairy would like to invite you to a national conference which is to be held in Ann Arbor, Michigan" on July 28-30, 1978. "We expect to have technical workshops on tofu, tempeh, soymilk and miso production as a base to begin from."

Note: The Soycrafters Association of North America (SANA) was founded at this meeting. Address: The Soy

Plant, 211 East Ann St., Ann Arbor, Michigan 48104. Phone: (313) 663-0500.

615. Olszewski, Nancy. comp. and ed. 1978. Tofu madness: 50 wild and crazy ways to use tofu and tempeh. Vashon, Washington: Island Spring. 64 p. June. Illust. by Kathy Provazek. No index. 21 cm.
• ***Summary:*** Contents: Introduction. Preface. Beverages. Quick snacks and sandwiches. Soups. Breakfasts. Dips, spreads, and salad dressings. Main dishes. Fancy international meals for special occasions. Desserts. Special tempeh recipes. Explanation of terms. Afterword. Contains 52 recipes. Address: Vashon, Washington.

616. Shurtleff, Bill. 1978. News from New-Age Foods Study Center. *Soycraft* (*Lawrence, Kansas*) 1(3):3-5. June.
• ***Summary:*** This open letter begins: "Dear Soycrafters of North America: There has recently been growing interest in North America in starting a Soycrafters Union or Cooperative, perhaps along the lines of Japanese National Tofu, Miso, Shoyu, Natto, etc. Unions [Associations]. Such a development would seem to represent a great leap forward, of benefit to many in the expansion of consciousness and production of quality soyfoods in the Western world."

The author then summarizes five major functions of Japanese national trade associations related to soy products, and suggests how each of these be adapted to present American conditions and consciousness which are very different from those in Japan: Purchasing soybeans, maintaining a list of member shops, doing "soyfood publicity," publishing a newsletter, and establishing and running a nationwide center, information clearing house, and school for teaching production of low-technology "soyfoods" to people from both developed and developing countries.

"How might this basic model be adapted to the United States? First, since soyfoods are still quite new in the USA, we might want to form one united front cooperative or union for all soycrafters or producers of soyfoods, rather than trying to form individual unions for tofu & soymilk, miso, tempeh, shoyu, etc. Given such a joint union, it would seem that all of the functions performed by the Japanese unions would be of great potential value to producers in North America. The key point, however, is that for the Union to work it must be financially viable and sound. Thus it must be created and supported by individual members who understand clearly that its functions are in their best interest, both in the short and long run."

"Second, we must remember that the number of shops presently producing soyfoods here is still very small. We have the names of 95 tofu shops and/or soy dairies in the United States plus 6 more in Canada, 9 tempeh shops, 8 miso shops, and one shoyu factory (Kikkoman). Of these, about 41 of the tofu shops and soy dairies, 5 of the tempeh shops, and 2 of the miso shops are 'new-age' types, newly started by Caucasian Americans. This latter group would probably form the initial nucleus of the Soycrafters Union, however after the benefits of membership could be clearly demonstrated, the more conservative Japanese producers might be eventually interested in joining."

"At the proposed First North American Soycrafters Convention to be held in Ann Arbor [Michigan] July 28-30 the above suggestions might be discussed one by one..."

At the end of the article is a form which new or existing tofu or soymilk manufacturers in the U.S. are invited to fill out and return to Shurtleff so that he can list them in the next edition of *The Book of Tofu.* Its asks for the name, address, and phone number of the company, the person(s) in charge, the date tofu or soymilk production started, the approximate cost of getting started, the average quantity of soybeans used per week, the soyfoods produced (in order of importance), the main pieces of equipment purchased, and equipment the company plans to purchase in the near future.

Note the early use of the terms "soyfoods" and "soyfood" in this article. The term "soyfoods" was coined by Surata Soyfoods of Eugene, Oregon, in Dec. 1976.

Note 2. This is the earliest document seen (Oct. 2008) that contains the term "low technology" (or "low tech"). Shurtleff coined this term to refer to soyfoods that could be made, and had long been made, using simple, traditional technologies, appropriate to Third World countries or relatively poor areas. Address: Director, New-Age Foods Study Center, 278-28 Higashi Oizumi, Nerima-ku, Tokyo 177, Japan. Phone: (03) 925-4974.

617. **Product Name:** Tempeh.
Manufacturer's Name: Tempeh Enterprises, Ltd.
Manufacturer's Address: R.R. 3, Group 3, Box 7, Port Perry, ONT, L0B 1N0 Canada. Phone: 416-985-3158.
Date of Introduction: 1978. June.
New Product–Documentation: Soya Bean Tempeh. This 1-page leaflet (undated, but probably printed in 1978-79) contains 10 tempeh recipes developed by Tempeh Enterprise Ltd.: Tempeh rarebit. Fried tempeh cakes. Tempeh-rice casserole. Tempeh soup. Tempeh casserole. Broiled tempeh cakes. Tempeh steamed delight. Tempeh carob (or chocolate) cookies. Tempeh candy bars. Tempeh and wheat-germ brownies.

Letter (5 pages) from Robert Walker, founder and owner. 1979. March 9. He presently makes 1 batch of tempeh a week; 28 lb of soybeans yield about 50 lb of tempeh. "I am 59 years old, have a full-time job, and started Tempeh Enterprises Limited about 1 year ago with thoughts of devoting all my time in the future, if I retire at an early age, to making and marketing tempeh... I made a large poster for each store ('Tempeh Available Here'). I am enclosing a recipe flyer, that is on the counter in each store..." Describes his process and equipment.

Letter from Robert Walker. 1979. Undated, but about

April. Gives a detailed handwritten 9-page description, with illustrations, of how his company makes tempeh. Letter from Robert Walker. 1979. May 9. Includes photos of his process for making tempeh. Shurtleff & Aoyagi. The Book of Tempeh. 1979 (July). p. 149. Owner: Robert Walker.

Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Robert Walker.

Letter from Robert Walker. 1984. May 3. "I started to sell tempeh in June 1978. I have enclosed a letter and some bills of sale as proof of the date. I do not know of any other tempeh production before mine. Robert Rodale wrote an article in *Prevention* magazine about tempeh in July 1977. After reading and studying that article I decided to start a tempeh shop. The maximum amount of tempeh I made and sold was 50 lb/week. I will be 65 years old in September and I am planning on retiring for my job at Port Perry High School at the end of that month. As to why I stopped making tempeh, I guess I was trying to burn the candle from both ends, working 8 hours a day, 5 days a week at the high school, making 50 pounds of tempeh and the starter and driving about 60 miles (one way) through heavy traffic to Toronto each Saturday to deliver the tempeh to 5 or 6 health food stores, as well as doing household duties, community work, gardening, snow shovelling (we live in the country), etc." On 29 Oct. 1979 Robert was taken to the hospital and diagnosed as suffering from anxiety syndrome. He was not able to return to work at school for one year. Now he is back to normal, but he had to discontinue making tempeh commercially.

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 60. This was the earliest known commercial tempeh made in Canada.

618. Bellicchi, Kathy. 1978. New England Soy Dairy. *East West Journal.* July. p. 42-44.
• ***Summary:*** A good history of and introduction to the company. "New England Soy Dairy began a year and a half ago with four partners, Tom Timmins, Kathy and Ira Leviton, and Michael Cohen. Before they got together, Tom was working for a natural foods distributor [Llama, Toucan & Crow], Kathy and Ira were running a natural foods bakery, and Michael was living in Virginia in a satellite community of The Farm (an experience which provided him with a sound working knowledge of soybeans)... They went into business as the Laughing Grasshopper Tofu Shop..." Later the company moved to a much larger facility on the outskirts of Greenfield, Massachusetts. Today they make 1,600 lb of tofu per 8 hour day.

The company presently produces only tofu. However they are in the "process of perfecting a variety of other soy products, including soy milk, soy mayonnaise, dips for crackers and spreads for sandwiches, tempeh (split, hulled soybeans that are fermented), age (deep-fried tofu), and, eventually, ice cream."

Photos show: A barrel of soy milk being curded with nigari. Arthur Braverman standing by the tofu-making equipment at the center of the plant. Tofu being pressed in forming boxes. Ira Leviton carrying a tray of tofu ready for packaging.

619. Farm, The. 1978. Make your own soyburger. *East West Journal.* July. p. 58-63.
• ***Summary:*** Most of the article describes how to make tempeh at home, with photos. Then there are sections on "Additional tempeh-checking tips" and "Questions and answers" about making tempeh at home, followed by recipes: Tempeh burger. Deep-fried tempeh. Tempeh pizza. Cubed fried tempeh. Tempeh and noodles. Address: Tennessee.

620. Sudarmadji, S.; Markakis, P. 1978. Lipid and other changes occurring during the fermentation and frying of tempeh. *Food Chemistry* 3(3):165-70. July. Originally presented in 1977 at the Symposium on Indigenous Fermented Foods, Bangkok, Thailand. Summarized in K.H. Steinkraus, ed. 1983. Handbook of Indigenous Fermented Foods. New York: Marcel Dekker, Inc. [10 ref]
• ***Summary:*** As tempeh is fermented for 30 hours, there is a rapid increase in free fatty acid (FFA) content, number of bacteria, and temperature, along with a copious growth of the mould. "Upon frying in coconut oil, tempeh undergoes a sharp reduction in FA content with a concomitant increase in the FFA content of the frying oil. While frying alters the percentage composition of the glycerides of tempeh because of coconut oil absorption, the glyceride composition of the frying oil barely changes." Address: Dep. of Food Science & Human Nutrition, Michigan State Univ., East Lansing, MI 48824.

621. Shurtleff, William. 1978. Re: Tempeh project. Soyfoods Association of North America. Letter to Cynthia Bates, The Farm, Summertown, Tennessee, Aug. 15. 1 p. Typed, with signature on letterhead (photocopy).
• ***Summary:*** "Our new technical manual, entitled *Tempeh Production,* is scheduled to go to the typesetters in about 3 to 4 weeks. We want very much to include your method for making tempeh starter. If however your method is secret or you do not want to share it with the people, please let me know so that I don't have to wait.

"We had hoped very much to see you at the First North American Soycrafters Convention in Ann Arbor. It was a great meeting with over 70 people from around the USA gathered together to discuss common problems, etc. We set up a nationwide body called the *Soycrafters Association of North America.* There was a great deal of interest in tempeh and many people are now starting tempeh shops, often together with tofu shops. We showed 230 color slides of tempeh production in Indonesia." Address: New-Age Foods

Study Center: U.S.A.–P.O. Box 234, Lafayette, CA 94549. Phone: 415-283-2991.

622. Shurtleff, William. 1978. Re: Proposal to add new categories and information about soyfoods to *Soybean Digest Blue Book.* Letter to Mr. Lynn Munyer, editor, *Soybean Digest Blue Book,* P.O. Box 158, Hudson, Iowa 50643, Aug. 21. 2 p. Typed, with signature on letterhead.
• ***Summary:*** Contents: Introduction to publications and work of New-age Foods Study Center. Statistics on consumption of traditional soyfoods in East Asia. Tofu. Soymilk. Miso. Shoyu. Tempeh. Natto. Conclusion.

"Worldwide and increasingly in the United States the traditional soyfoods discussed in our books account for an extremely large proportion of world soybean consumption for human diets.

"Therefore we feel it is in the interest of the ASA [American Soybean Association] and American Soybean farmers to do more to introduce these traditional soyfoods to people around the world via your publications." Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549. Phone: 415-283-2991.

623. **Product Name:** Tempeh Chips.
Manufacturer's Name: Bali Foods.
Manufacturer's Address: 4219 Alderson Ave., Unit B, Baldwin Park, CA 91706. Phone: (213) 338-7178 or 337-1682.
Date of Introduction: 1978. August.
Ingredients: Yuca (cassava) flour, tempeh, soy oil, salt, seasoning.
Wt/Vol., Packaging, Price: 2 oz in poly bag.
How Stored: Shelf stable.
New Product–Documentation: Letter from Henoch Khoe. 1978. Aug. 29. "Tempeh Chips are selling nationwide and our sales are increasing by leaps and bounds because a lot of money, time and efforts have been spent in promoting our Tempeh and Tempeh Chips in the U.S. market. Tempeh, therefore, has become a very sacred word to us. We strongly suggest that you immediately seek legal advice before you make any foolish decision to publish and sell your forthcoming 'Book of Tempeh."

Note 1. He is trying to use tempeh as a registered trademark.

Note 2. This is the earliest commercial soy product seen (Sept. 2011) in which tempeh is used as an ingredient.

Label. 1979, undated. Printed on plastic bag, 8.5 by 11 inches. Red and green on yellow. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center.

624. Kao, C.; Robinson, R.J. 1978. Nutritional aspects of fermented foods from chickpea, horsebean, and soybean. *Cereal Chemistry* 55(4):512-17. July/Aug. [9 ref]
• ***Summary:*** Tempeh and miso were made from chickpeas (*Cicer arietinum*), horsebeans (*Vicia faba*), and soybeans. Rats on freeze-dried tempeh diets ate more, gained more weight, and had higher PERs than did rats eating autoclaved (unfermented) grits. The PER of chickpea tempeh was slightly higher than that of soybean tempeh. The PER of horsebean tempeh was significantly lower than that of either of the other two tempehs. Misos contained about 25% salt on a dry weight basis–too much to be acceptable rat diets. Address: Dep. of Grain Science & Industry, Kansas State Univ., Manhattan, Kansas 66506.

625. **Product Name:** Tempeh.
Manufacturer's Name: Swan Gardens.
Manufacturer's Address: Route 1, Box 216, St. Ignatius, MT 59865.
Date of Introduction: 1978. August.
New Product–Documentation: Letter from Brenda Wood. 1978-79? Undated. "We have a tofu shop producing 260-390 lb a week and we also make and sell between 40 and 50 lb of tempeh weekly, made out of the okara (160-200 lb monthly)." Shurtleff & Aoyagi. The Book of Tempeh. 1979 (July). p. 148. Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Contact: Brenda Wood.

Talk with former Swan Gardens employee. 2001. Dec. 31. This tempeh was incubated in an old chicken egg incubator; it looked like a big upright wooden cabinet, about 5 feet tall, 3 feet wide, and 18 inches deep. It was probably introduced in about May 1978. Most of the tempeh was made with okara, but there was at least experimentation with whole soybean tempeh.

626. White Wave. 1978. White Wave through The Cow of China, offers food from the kingdom of plants. We make it all here in Boulder! 100% dairyless! (Poster). 1738 Pearl St., Boulder, CO 80302. 1 p. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center.
• ***Summary:*** "Organic nigari tofu, Soymilk, Soysage, Missing egg salad, Tofu mayo, Baked savory tofu cutlets, Sweet bean tofu pie, Tofu cinnamon rolls, soy-sesame bars, Energy chews, Almond butter, Cashew butter, Peanut butter, Tahini, Figgies, Date coconut bars, Tofu 'meatball' sandwiches, 'Macro' pizza, Tofu turnovers, 'Sloppy joe' sandwiches, Tempeh." Address: Boulder, Colorado.

627. Gandjar, I. 1978. Solid fermented foods of Java with special reference to tempe products. Presented at Meeting of the Danish Society of Food Technology and Hygiene, and the Danish Nutrition Society. Held Sept. 1978 at Copenhagen, Denmark. *
Address: Dep. of Biology, Faculty of Mathematics and Natural Sciences, Univ. of Indonesia, Jakarta.

628. Shurtleff, William. 1978. New food from old ways. *Agenda* (*US-AID, Washington, DC*) 1(8):18-20. Sept.

• ***Summary:*** This periodical is published by the U.S. Agency for International Development. Discusses: Soybeans and world hunger, the inefficient ways that soybeans are used in industrialized countries by feeding them to animals, and alternative ways of using them in foods such as tofu, soymilk, tempeh, and miso. Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

629. Shurtleff, William. 1978. Re: The Farm Vegetarian Cookbook. Letter to Margaret Gaskin, Laurie Praskin, Cynthia Bates, and Louise Hagler, The Farm, Summertown, Tennessee, Aug. 15. 1 p. Typed, with signature on letterhead (photocopy).
• ***Summary:*** "This morning I bought a copy of your new edition of *The Farm Vegetarian Cookbook* at Shambala in Berkeley and spent all day reading it. Akiko too. We both think it is a really outstanding job, one that will benefit people around the country and the world, and one that we look forward to learning a lot of new things from. The book has all the touches, so artistically and sensitively presented. We laughed over the illustration on page 95 of milking the cow-sized soybean or soybean sized cow, at the parfait on p. 102-03 that expands the more you open the book, etc. We look forward to trying out many of your soy recipes. With a book like that out, we feel we can retire from our work of trying to turn the world on to soy. You've done it, or at least provided a good start.

"We have a number of new books on soyfoods coming out soon, and you can be sure that we will make very favorable mention of your book in all of them. We will even try to get it into the Ballantine Books edition of the pocketbook mass-market *Book of Tofu* (175,000 copies first printing, out this January) but it may be too late. There will be numerous references in our *Book of Tempeh, Tempeh Production,* and *Tofu & Soymilk Production.* In the latter would you mind if we used a few of your recipes (e.g., Ice Bean) with credits, of course?" Address: New-Age Foods Study Center: U.S.A.–P.O. Box 234, Lafayette, CA 94549. Phone: 415-283-2991.

630. Daniels, Stevie. 1978. I was a sucker for protein. *East West Journal.* Oct. p. 60-62.
• ***Summary:*** Her introduction to soyfoods came the hard way–by trying a "can of textured soy protein"–the food that could end world hunger. She tried preparing it in many different ways. "Nothing worked. It was terrible. I threw it on the compost pile and watched squirrels, rats, and chipmunks detour around it for weeks... It was easy to see why even starving people gave thumbs down to this orangish, gloppy, spoiled-tasting canned concoction." She learned that the oil companies extract the oil from soybeans with hexane solvent then use the defatted leftovers to feed livestock and make textured soy protein.

Later she became a vegetarian, tried cooking whole soybeans, and then "fresh soybeans" in the pods–which a local organic farmer brought to her co-op. Finally one day she found a brochure stating: "The four main foods made from soybeans are tofu (soybean curd), tempeh (fermented soyburger), shoyu (soy sauce), and miso (fermented bean paste).

"I was amazed. The Eastern people, one-fourth of the world's population, had known how to use soybeans for centuries. I learned they also sprouted the beans..." She tried these foods and liked them. Bill Shurtleff stopped by the EWJ's office after attending the first national soyfood conference in Ann Arbor, Michigan. She describes their discussion, including the founding of the Soycrafters Association of North America. At the end is a list of resources and a bibliography of EWJ articles on soyfoods: Larry Needleman (Soycrafters Assoc. of North America, P.O. Box 76, Bodega, CA 94922. Phone: (707) 876-3341). Bill Shurtleff, The Farm (Summertown, Tennessee), Asunaro Eastern Studies Institute (Attn: Dina Drago, 4600 Cavedale Rd., Glen Ellen, California 95442. Phone: (707) 996-5365. Miso and shoyu production taught by Naboru [sic, Noboru] Muramoto).

631. **Product Name:** Tempeh.
Manufacturer's Name: It's Natural.
Manufacturer's Address: 502 Main St., Evanston, IL 60202. Phone: 312-491-1144.
Date of Introduction: 1978. October.
New Product–Documentation: Letter and menu from Brian Schaefer, owner. 1978. Oct. 13. "We are making tempeh at our restaurant now and selling it also in our natural foods store. The reaction among customers is, of course, mixed. I have been experimenting with different methods of tempeh production to try to find a method that will be consistent and efficient on a large scale operation (large enough to sell to other stores in our area). The menu of the restaurant at 514 Main Street contains the following recipes: Indonesian Curry (with tempeh and tofu), and Tempting Tempeh (tempeh with a special sauce, greens, and sprouts). On the front panel of this international [vegetarian] menu: "Welcome: Our purpose is to support nutritional habits that will promote the health and happiness of all earth's children. We endeavour to serve the most natural and organic food available; and we prepare it freshly for you in our kitchen. Relax and Enjoy."

On the back panel, titled "About our menu," is a brief definition of five words: Tofu, miso, tamari, tempeh, natural, and organic.

Letter from Brian Schaefer. 1979. A 4-page, handwritten description of how his company makes tempeh, plus a bulk recipe for Indonesian Tempeh with tempeh and tofu.

Shurtleff & Aoyagi. The Book of Tempeh. 1979 (July). p. 148. Owner: Brian Schaefer. Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Brian

Schaefer. This restaurant made tempeh in its kitchen, then served the tempeh in the restaurant in dishes such as Tempeh Filet (with mushrooms in lemon-butter sauce, rice and vegetable; $4.95 in 1980), and Tempeh lettuce and tomato on pita bread with tahini sauce ($2.75).

632. Jacobs, Leonard. 1978. Menage: My family has been making soymilk and tofu practically every day, but we cannot figure out what to do with the leftover soybean pulp (okara). M. Weintraub, Gabriola, California. *East West Journal.* Oct. p. 12.
• ***Summary:*** Answer: One of the best uses for okara is in making tempeh. You can also steam okara with vegetables and compost the rest. Address: Publisher, East West Journal.

633. Shurtleff, William. 1978. Protein source for the future. *PHP* (*Japan*). Oct. p. 8-18, 79-82. Illust. 18 cm.
• ***Summary:*** Contents: Introduction. Ten reasons why soybeans will be the protein source of the future: 1. Optimum land utilization. 2. Lowest cost source of protein in almost every country of the world. 3. High nutritional value. 4. Time tested for over 2,000 years. 5. Remarkably versatile. 6. Appropriate technology ("Traditional soyfoods can be produced in cottage industries"). 7. New dairylike products. 8. Soybeans are hardy and adaptive. 9. Free nitrogen fertilizer from nodules on soybean plants. 10. Great productivity potential.

Discusses new patterns of soy protein utilization, with specific reference and descriptions of tofu, soymilk, tempeh ("Indonesia's most popular soyfood"), miso, shoyu, whole dry soybeans, roasted soybeans, fresh green soybeans, soy flour, kinako, soy sprouts, and textured soy protein (TVP), yuba, and natto. Concludes with a discussion of new developments in the Western world. Address: New-Age Foods Study Center, P.O. Box 234 (951½ Mountain View Dr.), Lafayette, California 94549. Phone: 415-283-2991.

634. Fleiss, Paul M.; Douglass, J.M.; Wolfe, L. 1978. Vitamin B-12 deficiency in strict vegetarians. *New England J. of Medicine* 299(23):1319. Dec. 7. [2 ref]
• ***Summary:*** This letter was written in response to a letter by Higginbottom et al. in the Aug. 17 issue of JAMA. "A nutritionally adequate, strict vegetarian diet is, in fact, possible. Natural vitamin B-12 is synthesized by micro-organisms, and, accordingly, vegans may obtain vitamin B-12 from soy sauce (3 micrograms per 5 ml), miso, and tempeh, as well as certain seeds and nuts, or by colonic synthesis when adequate unheated seeds are eaten (U.D. Register, personal communication)... Our experience with hundreds of healthy, breast-fed infants indicates that omnivores, lacto-ovo-vegetarians, lacto-vegetarians, and strict vegans (some practicing lifetime avoidance of animal products) can nourish their infants adequately for the first few months of life without supplementation." Address: 1. USC School of Medicine; 2-3. Kaiser-Permanente Center, Los Angeles, California 90027.

635. *East West Journal.*1978. Soy boom. Dec. p. 18.
• ***Summary:*** "Over seventy people involved in the production of soy foods met in Ann Arbor, Michigan, this summer and established the Soycrafters Association of North America (SANA). The nonprofit organization will facilitate communication among the 140 businesses producing tofu, miso, soymilk, or tempeh. SANA reports soy foods have been received enthusiastically across the United States and Canada. Seventy new tofu shops and soy dairies have been established in thirty-one states in the last two years. For further information write SANA, Box 76, Bodega, California 94922."

636. Arbianto, Purwo. 1978. Proces fermentasi tempe ditinjau dari sudut fermentasi substrat padat [The tempeh fermentation process observed from the solid substrate fermentation viewpoint]. Presented at Seminar Mikrobiologi II (Second Seminar on Microbiology). Held at Yogyakarta. [Ind]*

637. Bhavanishankar, T.N.; Shatha, N.V.; Rajashekaran, V.P.; Sreenivasmurthy, V. 1978. Studies on tempeh made from groundnut and soybean mixture. In: Proceedings of the First Indian Convention of Food Scientists and Technologists. No. 9.2. See p. 95. *
• ***Summary:*** The authors reported a considerably better release of free amino acids like methionine and lysine, and higher non-protein nitrogen and free amino nitrogen in the fermented groundnut-soybean mixture than in the fermented soybean. Address: Central Food Technological Research Inst. (CFTRI), Mysore, India.

638. Farm Foods. 1978. Products catalog. 156 Drakes Lane, Summertown, TN 39483. 6 p. 21 cm.
• ***Summary:*** Products sold include Whole Cleaned Soybeans, Full-Fat Soy Flour, Good For Ya Texturized Vegetable Protein, Nigari, Tempeh Kit, Tempeh Starter, Good Tasting Nutritional Yeast, The Farm Vegetarian Cookbook, and Yay Soybeans! T-Shirts. Free literature includes: Yay Soybeans!, Vitamin-B-12 for Complete Vegetarians, Feeding Your Baby Vegetarian, Feeding Your Young Vegetarian Child, and Vegetarian Prenatal Nutrition and High Protein Recipes.

This innovative catalog is printed with brown ink on white paper. At the top of the cover are the words "Farm Foods"; to the left of them is a circular logo, which shows rows of crops (soybeans) in a field converging in the distance at the foot of three mountains. Below that is the address, phone number, and catalog title. On the bottom half of the cover is a photo of many young soybean plants growing in a field. Address: Summertown, Tennessee.

639. Kuswanto, Kapti Rahayu; Kasmidjo, R.B.; Bawono, Djoko. 1978. Pengaruh penggilingan kedele rebus sebelum inokulasi pada [Effect of grinding boiled soybeans before inoculation in tempeh processing]. Presented at Seminar Mikrobiologi II (2nd Seminar on Microbiology). Held at Yogyakarta. [Ind]*

640. Murthy, V. Sreenivasa. 1978. Development of tempeh and ontjom-type of food products for use in India. USDA, Final Technical Report. Public Law 480 Project UR-A7-(40)-207. *
• ***Summary:*** The Protein Efficiency Ratio (PER) was improved when groundnut/soybean mixtures were fermented with *Rhizopus oligosporus* NRRL 2549.

641. **Product Name:** Tofu, and Tempeh.
Manufacturer's Name: Pillar of Dawn (Amud Ha Shachar).
Manufacturer's Address: Moshav Me'or Modi'im, Doar Na Hamercaz, Israel.
Date of Introduction: 1978.
New Product–Documentation: Shurtleff & Aoyagi. 1979. July. New Tofu Shops & Soy Dairies in the West. Soyfoods Center. 1980. Sept. Tofu shops and soy dairies in the West (2 pages, typeset). Gives the company's name, address, and phone number. Owner: Avraham Sand.

Talk with Avraham Sand. 1981. This was Israel's first tofu shop; it started in 1978. The tofu was curded using bittern (nigari) from a salt factory on the Dead Sea. The company also made soymilk, tempeh, and miso, but only the tofu and miso were sold commercially, off the moshav, in Jerusalem. Avraham was an American, born Roger Sand, the son of Ralph Sand, who did work on soy cheeses with Anderson Clayton in Texas. Ralph tried to develop a casein-free soy cheese that would melt, but he never was able to.

Shurtleff & Aoyagi. 1982. Soyfoods Industry: Directory & Databook. Owner is now Ben Zion Soloman.

Talk with Avraham Sand. 1990. Sept. 9. Gives a detailed history of this company.

Talk with Nathan Segal. 1994. Sept. 12. He lives in Natanya, Israel. Shlomo Carlebach started this moshav, and it soon became a leading purveyor of natural foods in Israel. It was within that context that a tofu shop started there. He thinks the tofu shop is still in operation. Note: A moshav (the word was first used in 1931) is a cooperative settlement of small individual farms in Israel. By comparison, a kibbutz (the word was also first used in 1931) is a collective farm or settlement in Israel.

642. Roestamsjah, -; et al. 1978. Improvement of traditional tempe manufacturing techniques. Bandung: Indonesian Institute of Science. *
Address: Bandung.

643. Agustine, Nany. 1978. Pengaruh waktu perebusan kedele pada pembuatan tempe [Effect of soybean boiling time on tempeh processing]. Thesis (Skripsi), Fakultas Teknologi Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia. 26 p. [Ind]*
Address: Yogyakarta, Indonesia.

644. Aramaki, Nancy. 1978. Acceptance evaluation of tempeh made from soybeans, bulgar, millet and aduki beans. BS thesis in dietetics and food administration, California Polytechnic State University, San Luis Obispo, California. 24 p. 28 cm. [13 ref]
• ***Summary:*** The four types of tempeh were sliced and fried in oil before being served to members of a taste panel. The four categories of sensory evaluation were taste, smell, appearance, and texture. "The computer, which analyzed the results, showed acceptance of the four samples in all categories, except for the category of appearance of aduki bean tempeh." Millet tempeh was rated best in all 4 categories. Soybean tempeh was rated worst in taste. Aduki bean tempeh was rated worst in smell and appearance. Bulgar tempeh was rated worst in texture. Address: California Polytechnic State Univ., San Luis Obispo.

645. Association for Science Cooperation in Asia. 1978. Food technology for developing countries, 6th. Wellington, New Zealand: ASCA. 107 p. Held in Feb. 1978 at Palmerston North, New Zealand. *

646. Ballentine, Rudolph. 1978. Diet and nutrition: A wholistic approach. Honesdale, Pennsylvania: The Himalayan International Inst. 634 p. Illust. Index. 24 cm. Seventh printing (revised): 1982. [799* ref]
• ***Summary:*** Ballentine is an M.D. The book, advocating a vegetarian diet and based in part on the principles of Indian Ayurvedic medicine, is carefully researched and well written. He has a nice 1-page statement on tofu. Concerning de-gassing beans: "The gas that comes from eating beans is caused primarily by two unusual starches, stachyose and raffinose (Rackis 1970). They are rather short chains of sugar molecules, but they are joined by a special linkage that cannot be broken by any of the enzymes usually found in the intestine. For this reason they cannot be absorbed, but remain behind in the digestive tract where they are metabolized by certain bacteria that are more common in those who eat meat. Especially in one who is not accustomed to a vegetarian diet, these bacteria break down the short starches into carbon dioxide and hydrogen, the two main components of gastrointestinal gas (Rackis 1975). These starchy villains (stachyose and raffinose), responsible for so many unsavory misdeeds, can fortunately be removed from the beans. Soaking overnight helps a little since enzymes in the bean break down the starches into sugars. But this probably eliminates less than a tenth of the problematic

starches. Boiling for 20 minutes will remove a third of them, and 85% can be removed if soybeans, for example, are boiled 5 minutes, soaked for a half hour in tap water, rubbed until the hulls float free, then cooked for an hour (Wolf 1975, Latin Am.).

Most of the gas-producing starches can be eliminated by sprouting. This also increases the protein content, decreases the starch content, and shortens the cooking time of legumes.

"Phytic acid (p. 71) is phosphorous compound found in most plant foods but in especially large amounts in whole grains, beans, and peas. It has the property of combining with minerals, especially calcium, iron and zinc, to form insoluble compounds which are carried out in the stool." It can lead to rickets or softening of the bones in adults. Chapter 6, titled "Protein," contains interesting sections on legumes ("The soybean holds a position of honor in traditional Chinese culture... the higher the income in India the greater the quantity of legumes consumed"), history of attitudes toward protein (origin of the ideas of complete proteins, incomplete proteins, and complementary amino acids), and beans and grains (p. 135-40).

Note 1. By 1987 this book was in its 14th printing and had sold over 100,000 copies. Note 2. This is the earliest document seen (July 1999) with the word "wholistic" in the title. Address: Honesdale, Pennsylvania.

647. Behrman, Daniel. 1978. Protein for the poor from fermented foods. *ASM News* (*American Society for Microbiology, Ann Arbor, Michigan*) 44(3):104-06. *
• ***Summary:*** Includes a discussion of tempeh.

648. Beuchat, Larry R. 1978. Food and beverage mycology. Westport, Connecticut. AVI Publishing Co. x + 527 p. See p. 224-42. Illust. Index. 23 cm. [300+* ref]
• ***Summary:*** Chapter 9, "Traditional fermented food products (p. 224-53), by Larry R. Beuchat, is cited separately.

In Chapter 13, "Metabolites of Fungi Used in Food Processing" (p. 368-96), by R.J. Bothast and K.L. Smiley, the section on enzymes (p. 378) begins: "Fungal enzymes have been used for hundreds of years, especially in the Orient. However, modern industrial enzyme technology probably started with Takamine (1894) [Note: In Sept. 1894 he was issued two U.S. Patents for "Process of making diastatic enzyme," Nos. 525,820 and 525,823] and his work with *Aspergillus oryzae.* Today many industrial enzymes are of fungal origin." These include □-amylase (from *Aspergillus oryzae* and *A. niger*), glucoamylase, pectic enzymes or pectinases, naringinase, invertase (sucrase), □-galactosidase, lactase (□-D-galactosidase), protease (from *Aspergillus oryzae*), rennet (called rennin, if pure; from *Mucor pusillus, Mucor miehei,* or *Endothia parasitica;* used in many types of cheeses), and glucose oxidase, cellulase, lipase, catalase.

There are also chapters on: 14. "Myctoxins," by N.D. Davis and U.L. Diener. 15. "Methods for detecting mycotoxins in foods and beverages," by L.B. Bullerman. 16. "Methods for detecting fungi in foods and beverages," by B. Jarvis. Address: Assoc. Prof., Dep. of Food Science, Agric. Exp. Station, Univ. of Georgia, Experiment, GA.

649. Beuchat, Larry R. 1978. Traditional fermented food products. In: L.R. Beuchat, ed. 1978. Food and Beverage Mycology. Westport, Connecticut. AVI Publishing Co. xi + 527 p. See p. 224-53. Chap. 9. [69* ref]
• ***Summary:*** Contents: Introduction, Koji. Soybeans: Shoyu, miso, natto (incl. itohiki-natto, yukiwari-natto, and hama-natto / hamanatto), sufu, meitauza, témpé. Peanuts: Oncom. Rice: Lao-chao, ang-kak, idli. Maize: Ogi, kaanga-kopuwai, injera. Cassava: Tapé, gari. Taro (*Colocasia esculenta*)*:* Poi. Cacao beans: Cocoa, chocolate, and chocolate liquor are products derived from cacao fruits (*Theobroma cacao*).

Tables show: (1) Some fermented foods of fungal origin. For each food is given: Product name, geography, substrate, microorganisms, nature of product, and product use. Soy-related products include: Chee fan, Chinese yeast, Hamanatto, ketjap, meitauza, meju, miso, shoyu, sufu, tao-si, taotjo, and témpé.

"Yukiwari-natto is made by mixing itohiki natto with rice koji and salt, and aging at 25 to 30ºC for about two weeks." Note 1. Yukiwari natto is natto resembling miso, featuring the stickiness (*nebari*) of natto and the sweetness of koji. It is made by a two-step fermentation. Another process: (1) Make the natto and the koji, separately. (2) Mince natto finely and mix it with koji, shoyu, and dashi made from kombu. Ferment at 30-33ºC for 30-40 days.

Note 2. This is the earliest English-language document seen (Aug. 2006) that mentions the term yukiwari-natto (or yuki-wari natto). Address: Dep. of Food Science, Agric. Exp. Station, Univ. of Georgia, Experiment, GA.

650. Farm (The). 1978. Farm report: The year of the soybean–1978 (Brochure). Summertown, Tennessee. 24 panels. 43 cm. Blue ink on white paper.
• ***Summary:*** Contents: The community (history from San Francisco, California's, Haight-Ashbury days; arrived in Tennessee in May 1971 with about 270 people). How we live. Right vocation. Farm Foods ("our food distributing soybean-oriented cottage industry." Products {all vegetarian} include: whole and split soybeans, soy flour, texturized vegetable protein, nigari for curding tofu, tofu and home tofu presses, and tempeh. The Farm Construction Co. Government. Financial statement. The Book Publishing Co. (in the last 5 years they have sold over 1 million books; half of these they have printed themselves). Media (telephone system, CB radio, video production crew, audio tapes, The Farm Band). Education. The Gate. How we really make it ("We try to be spiritual in everything we do"). Other Plenty centers in Guatemala, South Bronx, Bangladesh). Quotation

from Stephen ("I really know we are all One"). Plenty. The Planet. The Noble Bean. The midwives. Farm health. This brochure contains 27 wonderful blue-and-white photos. Address: 156 Drakes Lane, Summertown, Tennessee 38483. Phone: (615) 964-3584.

651. Farm Foods. 1978. Tempeh (Leaflet). Summertown, Tennessee. 2 p. 36 cm. Brown ink on white paper. Original edition 1977.
• ***Summary:*** Page 1 describes how to make tempeh at home, with 6 photos. The top half of page 2 gives "Recipes for soybean tempeh:" Indonesian fried tempeh. Albert's tempeh topping. Barbequed tempeh. Sweet and sour tempeh. Pan fried tempeh. Tempeh cacciatore. Creamed tempeh. A photo shows a bowl of fried tempeh.

The bottom of page 2 describes: Preserving tempeh. How to start another batch of tempeh from a previous batch. Other methods for splitting and hulling whole soybeans. Why we use soybeans. Other delicious soyfoods described in "Yay! Soybeans." Bean and grain tempehs. Address: 156 Drakes Lane, Summertown, Tennessee 38483. Phone: (615) 964-3584.

652. Ford, Barbara. 1978. Future food: Alternate protein for the year 2000. New York, NY: William Morrow and Company, Inc. 300 p. Index. 22 cm. [40+ ref]
• ***Summary:*** The author concludes that soybeans are most likely to be the protein source of the future. Chapter 2, "The Cinderella Bean" (p. 32-53) and Chapter 3, "Soybeans, Oriental Style" (p. 54-71) both discuss the benefits of soybeans. Pages 37-38 note that soybeans were once called "haybeans" and their hay was called "haybean hay." Note: This is the earliest English-language document seen that which uses the term "haybean" or "haybeans."

The work of the USDA Northern Regional Research Lab. with soyfoods is described at length. Chapter 6, "It Ain't (Just) Hay," is about alfalfa leaf protein and leaf protein concentrate. Research on leaf protein "really started during World War II, when British scientist N.W. Pirie suggested the use of leaves to augment dwindling meat supplies... Pirie's proposal never got underway during the war because of the costs involved, but after the war he was given a laboratory where he carried out most of the pioneering work on leaf protein."

Chapter 9, "SCP: Promises, Promises," is about single-cell proteins such as the bacteria *Cellulomonas* and *Pseudomonas* (the champion, which can double its weight in 9 minutes). A probable culprit in SCPs is "nucleic acids, which have been shown to cause elevated uric acids in humans if used over an extended period of time. Raised uric acid levels lead to gout, kidney stones, and gallstones. Some bacteria contain from 15 to 16 percent nucleic acids, a fairly high level. Yeasts and fungi contain from 6 to 11 percent, still a high level. Algae have less." It is recommended that humans not consume more than 2 grams (0.7 ounces) of nucleic acid per day. Address: USA.

653. Frazier, W.C.; Westhoff, D.C. 1978. Food microbiology. 3d ed. New York, NY: McGraw-Hill Book Co. xvi + 540 p. Index. 24 cm. [400+* ref]
• ***Summary:*** Contents: 1. Food and microorganisms. 2. Principles of food preservation. 3. Contamination, preservation, and spoilage of different kinds of foods. 4. Foods and enzymes produced by microorganisms. 5. Foods in relation to disease. 6. Food sanitation, control, and inspection.

In the section on "Oriental fermented foods" (p. 387-91), the following soy-related foods are mentioned: Koji (*chou* in Chinese), soy sauce, tamari sauce, miso, tempeh, natto, soybean cheese or *tou-fu-ru.* Address: 1. Univ. of Wisconsin 2. Univ. of Maryland.

654. Gandjar, I. 1978. Fermentation of the winged bean seeds. In: 1978. The Winged Bean. Los Banos, Laguna, Philippines: Philippine Council for Agriculture and Resources Research (PCARR). xvii + 448 p. See p. 330-34. [12 ref]
• ***Summary:*** Initially presented at Workshop/Seminar on the Development of the Potential of the Winged Bean, Los Baños, Philippines, Jan. 1978. Address: Nutrition Research & Development Center, Dep. of Health, Indonesia.

655. Gandjar, I.; Jutono, Y. 1978. Microbiology, food and the Indonesian economy. In: W.R. Stanton and E.J. DaSilva, eds. 1978. GIAM V; Global Impacts of Applied Microbiology: State of the Art: GIAM and its Relevance to Developing Countries. Kuala Lumpur: UNEP/UNESCO/ICRO Panel of Microbiology Secretariat. Universiti Malaya Press. 323 p. See p. 169-72. Conference held 21-26 Nov. 1977 in Bangkok, Thailand. [5 ref]
• ***Summary:*** Indonesia consists of 5 big islands and thousands of smaller ones; 65% of the 130 million people live on the islands of Java and Madura. Since 60% of the people in Indonesia earn their living from agriculture, this sector was chosen as the leading sector in the First Five Year Development Plan of Indonesia (1969/70–1973/74). Protein calorie malnutrition is the most serious nutrition problem. "The main protein source is derived from dried fish or fresh water fish and legumes (soybeans, peanuts, and several other kinds of beans). Meat, eggs, and milk are relatively expensive and are consumed more by the better-off people. It is of great concern for us that a large part of the people and many children are not able to consume the amount of protein required.

"Traditional fermented foods always play an important role in the daily diet, especially of the low-income people. They are consumed as side-dishes with rice or as snacks and often serve as sources of vitamins and protein. The mature

dry leguminous seeds are often processed into a fermented form known as *tempe.* It is worth noting here that where in other countries the agricultural wastes are merely used for fodder, in Indonesia they are transformed through the aid of microorganisms into a palatable product, such as *oncom kacang* (fermented peanut presscake), *oncom tahoo* (fermented soybean milk refuse [okara onchom]) and *tempe bongkrek* (fermented coconut presscake).” Address: 1. Departemen Kesehatan, Bogor, Indonesia; 2. Gadjah Mada Univ., Yogjakarta, Indonesia.

656. Hagler, Louise. ed. 1978. The Farm vegetarian cookbook. Revised ed. Summertown, Tennessee: The Book Publishing Co. 223 p. Illust. Index. 22 cm.
• ***Summary:*** An expanded and extensively revised version of its pioneering and very creative and influential predecessor. There are excellent expanded sections on gluten (p. 76-81), tempeh and tempeh starter (p. 82-93), miso (p. 93), soymilk (p. 95-101), Ice Bean (soy ice cream, including recipes for 5 flavors), Frogurt (soymilk frozen yogurt, p. 107), soy yogurt (p. 108-13 including a non-fermented cheese made by draining soy yogurt curds in a cotton bag; from this “yogurt cheese” are made soy-based cottage cheese, sour cream, cream cheese, and cheesecake), tofu (p. 114-41), yuba (142-43), soy coffee, soy nuts, granola, and Soysage (p. 144-47), soy flour (p, 148-53), sprouts (incl. alfalfa, mung beans, and soybeans, p. 154-57). Address: Summertown, Tennessee.

657. Hellendorn, Emile W. 1978. Fermentation as the principal cause of the physiological activity of indigestible food residue. In: Gene A. Spiller, ed. 1978. Topics in Dietary Fiber Research. New York: Plenum Press. x + 223 p. See p. 127-68. Chap. 6. [76 ref]
• ***Summary:*** The “terms ‘roughage,’ ‘fiber,’ and particularly ‘cellulose’ are not applicable to the indigestible parts of human vegetable food and should no longer be used in this context.” The author prefers the terms “indigestible residue (IR)” which contains “crude fiber (CF).”

Defatted “soyflour” has a lower IR value than peas and beans. During tempeh fermentation, part of the indigestible matter disappears. A table (p. 132) shows that tempeh contains 49.8% dry matter of which (on a dry weight basis), 6.0% is crude fiber and 6.8% is indigestible residue. Defatted soyflour contains 88.1% dry matter of which 7.5% is crude fiber and 11.9% is indigestible residue. Foods with a high content of indigestible residue include: (1) Legumes–Canned Dun peas 19.6%. Pressure cooked kidney beans 15.0%. Cereal products–Wheat bran 56.0%. Rye bread 21.0%. Vegetables: Dehydrated cassava leaves 34.6%. Dehydrated curled kale 30.2%.

Foods with the greatest difference between the CF and IR values generally cause the most flatulence. Thus, beans and dun peas are more flatulent than soybeans, tempeh, or peanuts. Address: Central Inst. of Nutrition and Food Research, Zeist, The Netherlands.

658. Hobson, Phyllis. 1978. The soybean book. Growing and using nature’s miracle protein. Charlotte, Vermont: Garden Way Publishing. iv + 172 p. Illust. by Andrea Gray. Index. 23 cm.
• ***Summary:*** Contents: Why soybeans? How to grow, harvest, and store soybeans: Selecting seed (edible varieties and time to maturity for fresh soybeans and dried beans), sources of seed, how much seed, planting the seed, inoculation, germination, the developing plant, the harvest, storing beans. Saving seed. How to process soybeans: Fresh soybeans (in the pods), dried soybeans, soy grits, soy pulp (cooked, mashed dehulled soybeans), soy flour, soy milk (from whole soybeans or from soy flour; the remaining “pulp” may be added to meat loaves or casseroles), soy curd (tofu), soy sprouts. Recipes–Soybean “meats.” Roasted soybeans. Fermented soybean cakes (tempeh). Soy beverages. Soy breads. Soy cereals. Soy desserts. Soybeans with eggs. Soy salads. Soy spreads. Soy snacks. Candy and cookies. Soy soups. Soymeat dishes. Soybeans with meat. Soybean vegetable dishes. Supper dishes. Growing soybeans for animal feeds. Homemade dog and cat food. Using soybeans for soil improvement.

Note: The chapter on how to grow soybeans (p. 6-20) is especially useful. Address: USA.

659. Huriati, Isna. 1978. A study of the storage stability of dehydrated tempeh. MSc thesis, University of New South Wales, Sidney, Australia. 74 p. *
Address: Sidney, Australia.

660. Muljokusumo, E. Sudigdo. 1978. Hasil proses fermentasi, kedelai dijadikan lebih bergizi [As a result of the fermentation process, the soybean is made more nutritious]. Bandung: Tarate. 79 p. [Ind]*

661. Null, Gary; Null, Steve. 1978. The new vegetarian: Building your health through natural eating. New York, NY: William Morrow and Company, Inc. 350 p. Index. 22 cm. [63 ref]
• ***Summary:*** In the chapter titled “Incomplete Protein Foods,” soybeans are discussed on pages 183-86. A brief introduction is given to soy protein concentrates, isolates, spun protein fibers, and textured vegetable proteins. Full-fat soy flour, soy granules, soy flakes, and defatted soy flour and grits are available in natural-food stores.

“In striking contrast to these highly refined products of the West are the traditional East Asian products, tamari soy sauce, miso (fermented paste), and tofu... Tofu (soy curd or soy cheese) is a truly remarkable food. It is very inexpensive when purchased at Oriental markets or natural food shops and even more so if made at home.” A description of how to make tofu and a summary of its nutritional benefits are

given.

The soybean is "delicious when served a fresh green summer vegetable, simmered or steamed in the pod." Or as roasted soybeans [soynuts, dry-roasted or oil-roasted], cooked whole dry soybeans, tempeh, or soy sprouts. The same chapter also discusses miso and tamari in detail (p. 197-99), wheat gluten (p. 178-79), and azuki beans (p. 180). Address: Director, Nutrition Inst. of America, New York. Host of the daily radio program "Natural Living.".

662. Shihani, S. 1978. Microbiology of the soy sauce and tempeh fermentations. MSc thesis, Dep. of Applied Microbiology, University of Strathclyde, Glasgow, Scotland. *
Address: Univ. of Strathclyde, Glasgow, Scotland.

663. Smith, Allan K.; Circle, S.J. eds. 1978. Soybeans: Chemistry and technology. Vol. 1. Proteins. Revised. Westport, Connecticut: AVI Publishing Co. xiii + 470 p. Illust. Index. 24 cm. [500+ ref]
• ***Summary:*** This revised edition contains relatively few, unimportant changes from the original, classic 1972 edition. The following changes have been made: Addition of a 7-line preface to the "revised second printing" dated 4 Oct. 1977, updating of a graph of U.S. soybean production (p. 1). Updating (to 1976) of a table on U.S. and world production of important oilseeds (soybeans, cottonseeds, peanuts, sunflower, rape, sesame) (p. 2). Minor textual changes on pages 18-19. Addition of a table showing distribution of the 3 leading soybean varieties in 14 major states and the percentage of acreage harvested for each variety in 1976 (e.g., in Illinois, Williams accounted for 25.1% of harvested acreage, Amsoy 17.3%, and Wayne 12.8%). And updating of a table on U.S. soybean production by state showing acreage harvested, yield per acre, and production for 1974, 1975, and 1976 (p. 32).

The foreword, chapter titles, and index have not been changed at all. Note: Vol. 2 was never published. Address: 1. Oilseeds protein consultant, Hot Springs, Arkansas; 2. Oilseed protein consultant, Protein Technology, Richardson, Texas.

664. Steinkraus, K.H. 1978. Contributions of Asian fermented foods to international food science and technology. In: W.R. Stanton and E.J. DaSilva, eds. 1978. GIAM V; Global Impacts of Applied Microbiology: State of the Art: GIAM and its Relevance to Developing Countries. Kuala Lumpur: UNEP/UNESCO/ICRO Panel of Microbiology Secretariat. Universiti Malaya Press. 323 p. See p. 173-79. Conference held 21-26 Nov. 1977 in Bangkok, Thailand. [23 ref]
• ***Summary:*** Contents: Meat analogs: Ontjom, soy sauce, seafood sauces, tempe, tape (tapeh). Microbial protein.

Mass doubling times: Bacteria and yeasts 10-120 minutes, molds and algae 2-6 weeks, grass and some plants 1-2 weeks, chickens (broilers) 2-4 weeks, young pigs 4-6 weeks, young cattle 4-8 weeks, humans 2-6 months.

Yields of protein in kg/ha/year: Elephant grass 2,000 to 8,775 (world's record), alfalfa 3,000, soybeans (four successive crops) 3,200, Miracle Rice (IR-8) 1,600, groundnut 500, mungo bean (2 crops) 500, coconut 190, cow's milk 90, yeast (continuous fermenter charged with 500 kg yeast cells built on 1 hectare of land) 250,000 (dry basis, of *Candida lipolytica*).

Note: UNEP is the United Nations Environment Program. MIRCENs are Microbiological Resources Centres. GIAM 1 was held in 1963 in Stockholm, Sweden; Proceedings edited by M.P. Starr were published in 1964. GIAM 2 was held in 1966 in Addis Ababa, Ethiopia; Proceedings edited by E.L. Garden, Jr. were published in 1969. GIAM 3 was held in 1969 in Bombay, India; Proceedings edited by Y.M. Freitas and F. Fernandes published in 1971. GIAM 4 was held in 1973 in Sao Paulo, Brazil; Proceedings edited by J.S. Furtado were published after 1978. Address: Cornell Univ., Geneva, New York, USA.

665. Sussman, Vic S. 1978. The vegetarian alternative: A guide to a healthful and humane diet. Emmaus, Pennsylvania: Rodale Press. xvii + 286 p. Index. 22 cm. [39 ref]
• ***Summary:*** Explains the fundamentals of a vegetarian diet. Covers nutrition, protein requirements, health, world food crisis, recipes, and kitchen techniques. Paul Obis, editor of *Vegetarian Times,* has called this "the most complete, concise, and nondogmatic book we have come across." Keith Akers says that this is one of his four favorite books on vegetarianism.

This book contains extensive information on soyfoods (p. 248-50) including soymilk, tofu, tempeh, miso, and soy flour. The author's greatest praise is for tofu. Of *The Book of Tofu,* by Shurtleff and Aoyagi, he says (p. 274): "The most important book on food ever published for vegetarians–if not all the world. Clear prose and beautiful illustrations... Five hundred recipes for preparing this versatile and nutritious food. Buy this book..." Address: Travilah, Maryland.

666. Wardhani, Rose Wahyuni. 1978. Variasi pembuatan tempe di sekitar kota Bogor [Variations of tempeh processing in Bogor and its vicinity]. Thesis (Skripsi), Akademi Gizi (Academy of Nutrition), Jakarta. 39 p. [Ind]*
Address: Jakarta, Indonesia.

667. Yanwar, Afrida Nazir; Saparsih, Sri Budhi. comps. 1978. Selected abstracts of traditional fermented food. Jakarta, Indonesia: National Scientific Documentation Center, Indonesian Institute of Sciences (PDIN–LIPI). iv + 470 p. Author index. 29 cm. [506 soy ref]

• ***Summary:*** These are abstracts of documents published from 1910 to 1976 on traditional fermented food, particularly of food prepared and consumed in Southeast Asia and the Far East. Each chapter is divided into 6 sections: Method of preparation, microorganisms, fermentation studies, nutritive values, other influence in the foodstuff, storage. Within each section, the references are listed alphabetically by author. The source of most of the references is *Chemical Abstracts,* to which an exact citation is usually given.

Contents: Preface. Introduction. 1. Fermented rice (incl. tape ketan [tapeh], sake, awamori). 2. Fermented soy beans: Soysauce (p. 173-294; 350 references), tempe (p. 294-307; 43 refs), natto (p. 307-312; 13 refs), miso (p. 312-343; 100 refs). 3. Fermented coconut press cake (bongkrek; p. 345-47). 4. Sauerkraut. 5. Fermented fish. 6. Vinegar. 7. Fermented cassava (tape / tapeh). Author index (p. 459-70).

Financial assistance was received from the National Institute of Chemistry, the Indonesian Institute of Sciences, the Indonesian Protein Project in the framework of ASEAN–Australian Economic Co-operation. Address: Indonesia.

668. Zurbel, Runa; Zurbel, Victor. 1978. The vegetarian family: With recipes for a healthier life. Englewood Cliffs, New Jersey: Prentice-Hall, Inc. 185 p. Edited by Lester Alexander. Illust. Index. 23 cm. [44 ref]
• ***Summary:*** The section on soybeans (p. 62-67) discusses soybeans and soyfoods, then gives recipes for: Basic soybeans. Mediterranean soybean casserole Soybean casserole. Soybean salad. Soy milk. Sesame soy milk. Roasted soybeans (baked). Other soy-related recipes include: Soyburgers (p. 80). Ginger tamari sauce (p. 118). Miso yogurt dip (p. 127).

The section titled "Basic Macrobiotic Cooking" discusses shoyu tamari, and miso, and gives recipes for: Miso soup. Miso spread. Nerimiso (Sweet simmered miso).

Chapter 7 (p. 88-101) is titled "Tofu: The food of the future–Discovered over two thousand years ago." A full-page photo opposite the title page shows a wooden forming box, with cakes of tofu and soybeans nearby. *The Book of Tofu,* by Shurtleff and Aoyagi, is praised and credited as the source of much of the information on tofu in this book. Recipes include: Quick tofu. Homemade traditional tofu. Tofu sandwich. Tofu salad. Tofu and peas. Tofu and snow peas. Tofu and Chinese vegetables. Tofu and [mung] bean sprouts. Tofu and sesame. Kinugoshi and how to make custard style kinugoshi. The chapter ends with 2 pages on tempeh, but no recipes.

669. Shurtleff, Willam. 1978? La soja, esperanza mundial: Nuevos alimentos con modalidades muy antiguas [The soybean, hope for the world: New foods with ancient roots]. *Chacra y Campo Moderno* (*Buenos Aires, Argentina*). [8 ref. Spa]
• ***Summary:*** Discusses soy protein and world hunger, tofu, tempeh, and miso. Growth of the soybean industry worldwide. Address: P.O. Box 234, Lafayette, California 94549. Phone: 415-283-2991.

670. Fiering, Steve. 1979. A Midwestern interest in tofu [The Soy Plant in Ann Arbor, Michigan]. *Whole Foods* (*Berkeley, California*) 2(1):38, 40. Jan.
• ***Summary:*** This is basically a history of The Soy Plant and some of its creative financing schemes. The Soy Plant began operation in August 1977. New products include soymilk, tempeh, spiced tofu, two spreads (one with eggless soy mayo and turmeric; one with tofu, sweet miso and tahini), ice bean [soy ice cream], tofu pies, okara peanut butter balls, and soy sausage. Address: The Soy Plant, Ann Arbor, Michigan.

671. Fillip, Janice. 1979. The fermentation transformation. *Whole Foods* (*Berkeley, California*) 2(1):31-33. Jan. [2 ref]
• ***Summary:*** Contents: Introduction. Shoyu, tamari and soysauce. Tempeh. Address: California.

672. Gandjar, Indrawati. 1979. Food: Microbiological aspects. Paper presented at UNESCO Regional Training Course Development. 16 p. Held 8-24 Jan. 1979 at Bandung Institute of Technology, Bandung, Indonesia. *
Address: Nutrition Research & Development Center, Dep. of Health, Indonesia.

673. Monroe, Linda. 1979. The many faces of tofu. *Alch Mist of Ann Arbor* (*Michigan*). Jan.
• ***Summary:*** The Soy Plant, located at 211 East Ann St., is a tofu shop–but they also make soysage, missing egg salad, tempeh, spiced tofu (various spices are added when curdling the soy milk), soy milk (regular or flavored with honey and vanilla), missing egg salad, tofu-tahini spread, tofu tarts (a tasty dessert). Coming soon: Soy Scream (soy milk ice cream), and Boston brown bread (steamed). Tofu is made four days a week. "Soy products can be and indeed are the staple of many vegetarian diets."

"The Soy Plant sells one pound cubes of tofu for 70 cents (if you bring your own container), 72 cents with their plastic bag, or 85 cents in their container [plastic tub]. They encourage people to bring their own containers so as to cut down the use of plastic." "The collective has been very creative with the versatile little soy bean. Their ideas seem to be endless. They have developed many tasty foods by experimenting with different combinations of ingredients."

"The Soy Plant is a cheerful, pleasant place to visit. You'll usually find samples of their different spreads and beverages. Any questions about soy products are gladly answered either by collective members or by just looking in any of the various books available there on tofu, miso and other soy products. You can be sure the collective will always be coming up with new items to surprise and satisfy your taste buds.

"The Soy Plant is open Mondays–Fridays, 10-6, and Saturday, 9-5."

In the middle of the article is The Soy Plant Logo, two soybean plants growing (to left and right) out of Planet Earth. Around the bottom is written "The Soy Plant."

Talk with Steve Fiering, a founder of The Soy Plant in Ann Arbor. 2000. Dec. 3. The title of this periodical derives from the word "Alchemist." The logo was Steve's idea, developed by Marge Bruchac, Susanna Middaugh, and Dan Ecclestone.

674. Shurtleff, William; Aoyagi, Akiko. 1979. The book of tofu. Extensively revised and updated. Condensed. New York, NY: Ballantine Books. 434 p. Illust. by Akiko Aoyagi Shurtleff. Index. Jan. 18 cm. [60 ref]
• ***Summary:*** Contents: Preface. Acknowledgements. 1. Protein East and West. 2. Tofu as a food. 3. Getting started: Favorite tofu recipes. 4. Soybeans. 5. Fresh soy puree. 6. Okara (Soy pulp). 7. Curds and whey. 8. Tofu & firm tofu. 9. Deep-fried tofu: Tofu cutlets, burgers, treasure balls, and pouches. 10. Soymilk. 11. Silken tofu. 12. Grilled tofu. 13. Frozen & dried-frozen tofu. 14. Fermented tofu. 15. Yuba. Appendices: A. Tofu restaurants in Japan. B. Tofu shops and soy dairies in the West. C. Varieties of tofu in East Asia. D. Table of equivalents. Bibliography. Glossary. Contains 250 recipes and 100 illustrations. Price: $2.95.

This new edition features: (1) New recipes: Over fifty new American-style tofu recipes including Creamy Tofu Dressings, Tofu Teriyaki, Tofu Burgers, Tofu Eggless Egg Salad, and the like. The key to the book is an updated list of favorite tofu recipes plus suggestions for incorporating them into a weekly menu (p. 56). (2) New sections: An extensive new introduction to Soy Protein Foods (p. 66), dairylike products made from tofu (p. 150), dairylike products made from soymilk (p. 302) including soymilk yogurt (fermented), ice cream, kefir, mayonnaise, whipped cream, popsicles, buttermilk, and soy shakes. (3) New chapters: Wine Fermented Tofu and Varieties of Tofu in East Asia. (4) New basic methodologies: The key recipes for homemade tofu and homemade soymilk have been simplified and improved. (5) Updates: A complete listing of the 120 tofu shops and soy dairies now operating in the West; over 60 Caucasian-run shops have opened in the past two years. (6) New Americanized tofu names: Including tofu burgers, tofu cutlets, silken tofu, wine fermented tofu, and fresh soy puree. (7) No sugar.

Note 1. This is the earliest English-language document seen (March 2004) that uses the term "silken tofu."

Note 2. This is the 2nd earliest English-language document seen (Oct. 2010) that contains the term "Wine-fermented tofu."

In Jan. 1988 a new printing (but not a new edition) of this book (the 13th), slightly revised, appeared. It had a new cover and many new small illustrations. The subtitle was "Protein Source of the Future–Now!" The heading: "The World's Bestselling Book on Tofu." Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

675. Shurtleff, William. 1979. Protein source for the future. *Cosmos* (*NSW, Australia*) 6(6):1, 4-5. Jan.
• ***Summary:*** Gives ten reasons why soybeans soy will be the protein source of the future: 1. Optimum land utilization. 2. Lowest cost protein. 3. High nutritional value. 4. Time tested. 5. Remarkably versatile. 6. Appropriate technology. 7. New dairylike products. 8. Hardy and adaptive. 9. Free nitrogen fertilizer. 10. Energy and resource efficient. "All of these ten factors work together synergistically, reinforcing one another, to give added weight to the prediction that soybeans will be a key protein source for the future on plant earth."

Note: This information was published in July 1979 in *The Book of Tempeh* (p. 21-24). Address: Lafayette, California.

676. Wang, H.L.; Mustakas, G.C.; Wolf, W.J.; Wang, L.C.; Hesseltine, C.W.; Bagley, E.B. 1979. Soybeans as human food: Unprocessed and simply processed. *USDA Utilization Research Report* No. 5. iv + 54 p. Jan. Slightly revised, July 1979. Jan. No index. 28 cm. Compiled for USAID. [50+ ref]
• ***Summary:*** Contents: Introduction. 1. Soybean food uses in Asia. China: Soaking dry soybeans, tou chiang (soybean milk), tou fu (soybean curd), processed tou fu products, tou fu pi (protein-lipid films), huang tou ya (soybean sprouts), whole soybeans, fermented soybean foods, production and consumption. Japan: Tofu (soybean curd), kinugoshi tofu, processed tofu products, yuba (protein-lipid film), soybean milk, gô (ground soybean mash), daizu no moyashi (soybean sprouts), whole soybeans, fermented soybean food, production and consumption. Korea: Tubu (soybean curd), processed tubu product, soybean sprouts, whole soybeans, soybean flour, fermented soybean food, production and consumption. Indonesia: Tahu or tahoo (soybean curd), bubuk kedele (soybean powder), tempe kedele, tempe gembus [the name in Central and East Java for okara tempeh], oncom tahu [the name in West Java for okara onchom], other soybean products (soybean sprouts, green soybeans, roasted and boiled soybeans, kecap {soy sauce}, tauco {soybean paste}), food mixtures, production and consumption. Thailand: Tofu (*tauhu*), soy sauce, green soybeans in the pods (*tourae*). Philippines: Soybean sprouts, soybean coffee, soybean cake, soybean milk, tou fu and processed tou fu products, production and consumption. Burma. India. Malaysia. Nepal. Singapore. Sri Lanka (Ceylon). Vietnam. Middle East. References–Soybean food uses in Asia.

2. Soybean food uses in Africa. Ethiopia: Injera, wots and allichas, kitta, dabbo, dabokolo, porridge. Kenya. Morocco. Nigeria: Whole soybeans, soybean paste, corn-

soy mixtures (soy-ogi). Tanzania. Uganda. Production. References–Soybean food uses in Africa.

3. Soybean food uses in Europe and U.S.S.R.

4. Soybean food uses in Latin America. Argentina. Bolivia. Brazil. Chile. Colombia. Ecuador. Guyana. Paraguay. Peru. Uruguay. Venezuela. Mexico: New village process, commercial developments. Honduras. Costa Rica. Panama. Dominican Republic. Jamaica. Haiti. Trinidad. References–Soybean food uses in Latin America.

5. Soybean food uses in North America. United States. Canada. References–Soybean food uses in North America.

6. Soybean food uses in Australia. 7. Summary of soybean food uses. Traditional soybean foods: Soybean milk, soybean curd and processed soybean curd products, protein-lipid film, soybean sprouts, tempe (tempeh), green soybeans, boiled soybeans, roasted soybeans, soybean flour, soy sauce, fermented soybean paste, fermented whole soybeans, natto, fermented soybean curd. Experimental soybean foods: Whole soybean foods, soybean paste, soy flour, soy beverage. Production and consumption.

8. Simple village process for processing whole soybeans: Equipment, process, sanitation requirements, quality of product, evaluation of product in formulas and procedures for family and institutional use in developing countries. NRRC village process. 9. Industrial production and selling prices of edible soybean protein products.

10. Barriers to accepting and using soybeans in food: Availability. Cultural and social factors. Texture. Flavor. Nutrition and food safety. Technology development. Technology transfer. Address: NRRC, Peoria, Illinois.

677. Weaver, Greg. 1979. Re: The Tofu Shop retail outlet in Rochester, and its favorite recipes. Letter to William Shurtleff at New-Age Foods Study Center, undated. 6 p. Handwritten.

• ***Summary:*** Describes the reasons for setting up "the retail shop." Numerous favorite tofu and tempeh recipes are attached. Some were used by Shurtleff & Aoyagi in their book *Tempeh Production.* Address: The Tofu Shop, 686 Monroe Ave. / 277 N. Goodman St., Rochester, New York 14607. Phone: 716-442-1213.

678. *Whole Foods* (*Berkeley, California*).1979. The beaning of Motown. 2(1):41. Jan.

• ***Summary:*** In January 1978, Carol Ann and Timothy Huang, founders of the Yellow Bean Trading Co. in Detroit, Michigan, started to distribute tofu, soymilk, and tempeh made at The Soy Plant in Ann Arbor, Michigan. Yellow Bean takes the products to health and natural food stores, restaurants, fruit markets, and Oriental grocery stores in Detroit. In the beginning they distributed 100 lb/week of tofu; that figure has now risen to 400 lb/week. They also carry nutritional yeast, sprouts, textured vegetable protein, soybeans, soy flour, and *The Farm Vegetarian Cookbook,* which contains excellent soyfoods recipes.

Timothy and Carol Ann made soyfoods a major part of their diet while living on The Farm in Tennessee. They were married on a branch of The Farm in Wisconsin, where their son was born. Carol and Tim now also give demonstrations on how to cook with tofu and other soyfoods.

"As the wholesale business grows, the Huang family is now setting up a store and restaurant, Yellow Bean Vegetarian Foods. At first, the restaurant is planned as a carry-out, including a deli case." Later they hope to expand to a larger location, open a sit-down restaurant, and begin making their own tofu and soymilk.

The Huangs feel "really glad to be part of this 'revolution,' and offer what we've learned."

679. *Whole Foods* (*Berkeley, California*).1979. The food of the future. 2(1):22-24. Jan.

• ***Summary:*** The article begins: "Why devote an entire issue of *Whole Foods* to the subject of soyfoods? Soyfoods are a rapidly growing part of the natural foods industry..."

"The bringing of the 'Soyfoods Revolution' to the natural foods industry is the work of individuals, toying and playing with new recipes in their own kitchens and shops. No person deserves more credit for this revolution than William Shurtleff who, along with Akiko Aoyagi, wrote *The Book of Tofu,* and told us all how to do it. (An updated pocket-size version of *The Book of Tofu* is just off the presses of Ballantine Press.) Shurtleff travels the globe, sharing his expertise on soyfoods, covering topics as specific as chip-dip recipes and as broad as the role of soybean production in future patterns of world protein hunger.

"Other individuals, most of them with small soyfoods shops of their own, met recently to form the Soycrafters Association of North America (SANA), which is likely to serve as the backbone of the Soyfoods Revolution in the natural foods industry. [Note: This historic first meeting was held on 28-30 July 1978 at The Soy Plant in Ann Arbor, Michigan.] SANA selected Larry Needleman as its first president. Needleman, whose Bean Machines, Inc. imports the prime line of Takai tofu and soymilk equipment from Japan, has been a major source of information about soyfoods equipment for our industry.

"Needleman wrote about the spirit of the new organization at its first gathering in Ann Arbor.

"'Imagine a group of seventy people representing enthusiastic dedication (almost to the point of craziness) to the production and distribution of tofu and other soyfoods, gathered in an informal setting in a university town in the Midwest, with meetings scheduled from nine in the morning till eleven at night–and you've got a good idea of what went on... 'Sharing began immediately. Groups of people gathered here and there and began asking each other about their shop or organization. Those passing by would hear a familiar word such as 'yield' of 'pressure-cooker' and just stopped to join

the conversation. It was apparent that here was a gathering destined to be stimulating and mutually beneficial...

"'The first evening, Bill Shurtleff set up a slide show about tofu and miso production in Japan. The presentation ran the gamut from small, traditional shops built over their own well, to large, fully-automated factories turning out tens of thousand of pounds per day. Bill answered questions and added a personal touch to the showing because he had shot the photos himself over a period of years, and was familiar with the language, traditions and production of the Japanese...

"'On Saturday morning, The Soy Plant showed us their method of producing tofu and soymilk. Those with less experience absorbed information and asked questions, and those with more experience volunteered information, clarified points and offered suggestions. Then Wataru Takai, the overseas manager for Takai Tofu and Soymilk Equipment Co., Japan's largest manufacturer of this equipment, explained principles behind each step of production, and the uses of the equipment...

"'At a later session, it was remarked that many soyfoods producers are operating on an inefficient and labor-intensive basis. Some felt this was a good way to begin, first becoming intimate with the steps of production and developing a market 'track record,' and then using that base to upgrade production by purchasing more sophisticated equipment. Others felt that the time and energy involved in putting together a makeshift shop which was outgrown in about six months would be better spent in the capital to start at higher technological level...

"'In one of the most popular and exciting discussions of the conference, the consensus of the group was that tofu and soymilk were the foods that Americans have been waiting for. A list of related products that have been marketed with incredible success included tofu burgers, no-egg salad, honey soymilk ice cream, tofu chip-dips and dressings, flavored soymilk, tofu 'mayonnaise,' and pressed, marinated tofu. There was unanimous agreement that it was these new soyfoods that would capture the interest and palate of middle America, people who had turned up their noses at that tasteless white cake of tofu floating in water...

"'Later we discussed the problems of proper storage and display of our products. In US food markets, tofu has usually been sold with Oriental foods in the vegetable section. Getting it moved to a cooler, more appropriate cheese display case, where it will stay fresh longer and compete favorably with dairy products, has met with resistance...

"'In the evening, another slide show by Bill Shurtleff showed us how tempeh, a key protein source for millions of people in Indonesia, is quickly and simply produced as a cottage industry in their homes. Having sampled this unusual food at lunch, we were eager to learn about it because it was delectable. Somewhere between a deep-fried fish cake and Kentucky fried chicken in flavor and texture, it lent itself to use in a seemingly endless variety of ways...'

"Toward the end of the conference, discussion turned to marketing and finance. It was found that some firms lacked capital for growth, while others had enough capital but needed greater management skills to keep up with the growing demand for soyfoods. That demand is not uniform nationwide. Different regions show various levels of consumer awareness, interest in, and acceptance of soyfoods. Printed hand-out sheets and cooking classes were suggested as promotional efforts were an important part of the creation of a desirable image for soyfoods.

"Before leaving Ann Arbor, the participants formed the Soycrafters Association of North America as a trade association to promote soyfoods and exchange information among the members. With the founding of SANA, the Soyfoods Revolution took its longest recent stride. Soycrafters were no longer isolated persons, groups and shops, but had become a nationwide network devoted to the same purposes, sharing their experiences for mutual benefit and the ultimate benefit of the American consumer."

Note: The word "soyfoods" is used throughout this article.

680. [Shurtleff, William; Aoyagi, Akiko]. 1979. Soyfoods buyer's guide [Tofu, tempeh and miso shops in the USA and Canada]. *Whole Foods* (*Berkeley, California*) 2(1):42-44. Jan.

• ***Summary:*** A listing of all companies in the USA and Canada, by food type, by state.

Note: This is also the earliest English-language publication (one of two in this issue) seen with the term "Soyfoods" in the title. Shurtleff and Aoyagi compiled this list and gave *Whole Foods* permission to use it free of charge. Address: P.O. Box 234, Lafayette, California 94549.

681. Steinkraus, Keith H. 1979. Re: Vitamin B-12 content of tempeh. Detecting "true" vs. "pseudo" B-12 activity. Letter to William Shurtleff at New-Age Foods Study Center, Feb. 14–in reply to letter of Feb. 10. 1 p.

• ***Summary:*** "Thank you for your letter of Feb. 10 and also the copy of your paperback book–The Book of Tofu..."

"Regarding your article on vitamin B-12, the best I can do is to inject a word of caution. It is probably a good idea if you can distribute the 'facts' but the question is what are the 'facts.'

"Even the Liem et al. paper [1977] can be interpreted wrongly. What we report in that paper are vitamin B-12 'activities'. In our original publication, we reported a level of about 5 nanograms vitamin B-12 activity in dried Indonesian tempe. Our assay then was based upon experiments using a photosynthetic protozoa–*Ochramonas malhamensis.* This organism supposedly detects only 'true' vitamin B-12 and thus is a 'supposedly' accurate measurement of the vitamin B-12 activity that product would have in man. Even this is

not necessarily so if the consumer does not have enough 'intrinsic factor' in the diet which directly influences absorption of vitamin B-12 consumed. But let's assume that the figure is correct for true vitamin B-12 in tempeh.

"In Liem's studies, she used another assay for vitamin B-12 activity–*Lactobacillus leichmanii.* It is somewhat easier to use than *Ochramonas* but it is probably not as fastidious in detecting only 'true vitamin B-12 activity'. It also responds to pseudo-vitamin B-12 activity of which there are several forms. So, a portion of the vitamin B-12 activity reported in Liem's paper may be inactive in the human consumer. We are repeating that work with *Ochramonas* in an effort to determine the 'true B-12 activity'.

"You should worry not only about our figures on B-12 activity but also the figures published by others. How many of the others have used *Ochramonas* and how many have used *L. leichmanii* and therefore include some pseudo-B-12 (inactive in the human) in their figures.

"Next we do not know of any yeasts or molds where it has been proven that they produce vitamin B-12. Vitamin B-12 is produced only by prokaryotes (the bacteria and possibly some *Actinomycetes*).

"Thus, this area of vitamin B-12 activity in tempeh and other products is quite complex and it would be very easy to distribute false information. If you are dealing with scientists, most will be familiar with the basic assumptions and the possible fallacies that may be involved. In other words, the amount of the vitamin found is dependent upon the method used and the type of activity detected (whether 'true' or 'pseudo') and the relative proportions depend upon the actual amounts of both types present and the method and organism of assay. If these same figures are thrown at the lay public, they may get entirely wrong ideas about the amounts of B-12 they are ingesting.

"This is another reason why I caution producers also not to make too many claims regarding the vitamin B-12 activity in their products. As soon as a claim is made that the product contains a certain amount of B-12, the FDA can challenge them to prove that their claims are accurate and that the vitamin B-12 is 'true' B-12 and not 'pseudo'. Based upon our studies with *Ochramonas* we know that our basic results are all correct. Tempeh does contain vitamin B-12 activity in the 'true' form when *Klebsiella* is present but the levels may vary anywhere from 3 to 15 nanograms per gram tempeh. We do not know for certain what the exact levels of 'true' B-12 activity are in tempeh (not to our satisfaction at any rate)." Address: Prof. of Microbiology, Dep. of Food Science & Technology, New York State Agric. Exp. Station, Geneva, NY 14456. Phone: 315-787-2255.

682. **Product Name:** Okara Tempeh.
Manufacturer's Name: Kirpalu Yoga Retreat.
Manufacturer's Address: Box 120, Summit Station, PA 17979. Phone: 717-754-3051.
Date of Introduction: 1979. February.
New Product–Documentation: Letter from Chris Yorston, Kitchen Dep., Kirpalu Yoga Retreat. 1979. Feb. 20. Describes how they make okara tempeh on a community scale. They sometimes supplement it with bulghur for taste. They make their own starter by growing a package of The Farm's starter on white rice. The tempeh is made in standard 15 by 24 inch baking trays covered with perforated plastic wrap, then incubated in the kitchen loft. They prefer to bake rather than fry so their favorite recipe is Baked Tempeh with Bar-b-que Sauce.

Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Chris Yorston.

683. **Product Name:** Tempeh.
Manufacturer's Name: Surata Soyfoods.
Manufacturer's Address: 518 Olive St., Eugene, OR 97401. Phone: 503-485-6990.
Date of Introduction: 1979. February.
Ingredients: Organically grown soybeans, vinegar, Rhizopus oligosporus (mold inoculant).
Wt/Vol., Packaging, Price: 10 oz in perforated plastic bag, in outer plastic bag.

How Stored: Frozen.
New Product–Documentation: Label. 1979, undated. 4.25 by 5.5 inches. Blue on white. "Saute in skillet until brown on both sides. Add 1/3 cup water, cover, and cook 15 minutes." Shurtleff & Aoyagi. 1979 (July). The Book of Tempeh. p. 149. Made by Benjamin Hills. He learned how to make tempeh from his former wife, who learned it from The Farm in Tennessee. Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owners: Ed Miller & Lisa Rein. Label. 1982, undated. Red on beige from 302 Blair. Talk with Newt Loken. 1989. Sept. 19. They now make bulk tempeh. Average production of all tempeh is 500 lb/week, but on weeks with large bulk orders it may reach 1,500 lb/week.

Form filled out by Shevah Lambert. 1990. July 2.

1982

An Oregon Cooperative

Surata Soyfoods

"The firmest, best quality tempeh we have yet tasted in the U.S."

Tempeh Production by Shurtleff & Aoyagi (The Soyfoods Center), Authors *Book of Tempeh*

TEMPEH

A Cultured Soyfood

Ingredients: *Sprouted* organically grown soybeans, water, apple cider vinegar, tempeh culture *(Rhizopus Oligosporus)*

Keep frozen NET WT. 10 OZ.

Tempeh can be steamed, baked, broiled, fried, or barbequed. See recipes on other side.

Dark spots are normal to the tempeh culture and do not indicate spoilage.

For more recipes and information, send S.A.S.E. to **Surata Soyfoods Inc.**, 302 Blair, Eugene, OR 97402

MAKES 4 BURGERS!

TEMPEH STROGANOFF

10 oz. Surata Tempeh
½ medium onion, chopped well
1 lb. fresh mushrooms, chopped well
3 T butter (or oil)
3 T soy sauce
¾ c water
1 ¼ t salt
1 t dry mustard powder
dash pepper
¼ c. burgundy wine
2 T pastry flour
4 c uncooked egg noodles
¾ c sour cream

Saute onions and mushrooms in butter for a few minutes until onions are translucent. Cut tempeh into small (½") cubes, and saute with mushrooms and onions for 5 minutes. Add soy sauce and water.

Simmer 1 minute, then add salt, pepper, mustard powder, and wine.

Simmer another minute, and add flour to slightly thicken juices. Set aside.

Cook noodles and drain; add pat of butter, dash of salt and pepper.

Mix noodles, tempeh mixture, and sour cream in a large bowl. Serve immediately. Serves 3-4.

TEMPEH SALAD

Serves 4

10 oz. Tempeh, steamed for 20 minutes, allowed to cool, and cut into small cubes
4-5 T mayonnaise
1 stalk celery, chopped fine
3 T minced dill pickles
4 T minced onion
2 T fresh minced parsley (or 1 t dried)
1 carrot, grated
1 t prepared mustard
1 t soy sauce
dash of garlic powder/dash of cayenne pepper
(½ t prepared horseradish, optional)
½ t basil
½ t dill

Combine all ingredients and mix well. Great on sandwiches!!

TEMPEH BURGERS

Tastes great on buns with all the fixings, or in lasagna, Mexican food, "sloppy joes," or on pizza!

10 oz. Surata Tempeh
1 T butter (or oil)
1 T soy sauce
1 clove garlic (optional), minced or crushed

If tempeh is frozen, thaw for about 15 minutes until it can be cut into 4 pieces for burgers, or into cubes or strips for casseroles, pizza, etc. Steam tempeh in vegetable steamer for 15-20 minutes. Melt butter in skillet (add garlic here if you choose). Add tempeh and soy sauce; cook until tempeh is brown on both sides. For cheese-burgers, melt slices of cheese on burgers just before removing from heat.

For more information and delicious recipes see *The Book of Tempeh* by Shurtleff & Aoyagi (Harper & Row).

Nutritional Information: Per 2½ oz. Serving		Percentage of U.S. Recommended Daily Allowance U.S. RDA			
Calories	113	Protein	25%	Vitamin B-12	38%
Protein	14 g.	Iron	11%	Vitamin A	3%
Carbohydrates	7 g.	Riboflavin	19%	Thiamine	5%
Fat	5 g.	Calcium	6%	Niacin	8%

Surata now makes 1,063 lb/month of this product called Soy Tempeh. Production started in Feb. 1979.

684. **Product Name:** Tempeh.
Manufacturer's Name: White Wave.
Manufacturer's Address: 3869 Walnut St., Boulder, CO 80301. Phone: 303-443-3470.
Date of Introduction: 1979. February.
Ingredients: Certified organically raised soybeans, Rhizopus oligosporus mold spores.
Wt/Vol., Packaging, Price: 10 oz.
How Stored: Refrigerated.
New Product–Documentation: Letter from Steve Demos. 1979. Sept. 2. Tempeh is a minor product. Only 160 by 8 oz. bags are produced. Chip McIntosh was the first tempeh maker, followed by Chris O'Riley; Label. Undated. 4 inches square. Black on tan. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center. Product Price List. 1979, winter. 10 oz. "Delicious deep fried or steamed with ginger and soy sauce." Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Address listed as 1990 N 57th St., Boulder, Colorado 80301. Chip McIntosh is the tempeh maker.

685. **Product Name:** Soya Rice Tempeh.
Manufacturer's Name: White Wave.
Manufacturer's Address: 3869 Walnut St., Boulder, CO 80301.
Date of Introduction: 1979. February.
Ingredients: Certified organically raised soybeans, brown rice, apple cider vinegar, Rhizopus oligosporus mold spores.
Wt/Vol., Packaging, Price: 10 oz.
How Stored: Refrigerated.
New Product–Documentation: Label. 1979, undated.

4 inches square. Brown on tan. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 54. This is America's first commercial multigrain or soy-and-grain tempeh, and the first to contain rice as an ingredient.

686. Davis, Melissa. 1979. The soy of cooking: Out of the field, into the kitchen. *Washington Post.* March 15. p. E1, E14, E20.
• ***Summary:*** Starts by discussing Henry Ford's interest in and work with soybeans. He wanted to find a way to "grow automobiles out of the soil. In 1940 he discovered that soybeans were his bumper crop."

Last week a milestone in soybean history was made on Capitol Hill [Washington, DC]. "About 500 people including senators, representatives, ambassadors, diplomats and freeloaders turned up at the International Soybean Fair.

While Chai Zemin (of the People's Republic of China) and Bob Bergland (U.S. Secretary of Agriculture) stood shaking hands, people pushed and shoved to get to the bar and to hors d'oeuvres made from every soybean product imaginable–soy flour, bean curd, textured vegetable protein (TVP), soy milk, soy sauce, etc. Also mentions tempeh and miso.

The event was largely sponsored by the Food Protein Council and its member companies. "There were a few interesting hors d'oeuvres including soy nuts and garlic smothered bean curd." Contains recipes.

687. Schecter, Andy. 1979. Re: Tempeh at Northern Soy. Letter to William Shurtleff at New-Age Foods Study Center, March 31. 1 p. Typed, with signature. [1 ref]
• ***Summary:*** In 13 steps describes the process for making tempeh at Northern Soy in perforated Ziploc bags.

A handwritten notes at the end states: "Here is our tempeh process. We're doing some experimentation with starter production, which is not exactly trouble-free at this point. Tried your 'sporulated inoculated soybean method' but must have left it in incubator too long 'cause it started to smell like ammonia. Will try again. Pics [pictures = photos] to follow as soon as we can get them processed. Best wishes, Andy." Address: The Tofu Shop, 277 N. Goodman St., Rochester, New York 14607. Phone: 716-442-1213.

688. *Ann Arbor Observer* (*Michigan*).1979. One of the few U.S. tofu manufacturers is right here in Ann Arbor: At the Soy Plant on Ann Street a collectively-run business combines political and nutritional interests to produce over 2000 pounds of soybean curd weekly. March. p. 29. [1 ref]
• ***Summary:*** This February morning Steve Fierling [sic, Fiering] arrives at The Soy Plant at 5 a.m. to start the day's work in the back room of the former pizza carryout at 211 East Ann St. in Ann Arbor. He turns on the lights and the boiler, then starts cooking soy milk for the first batch of tofu.

Fiering is part of a nine-member collective; this week he's the cooker. The first batch of tofu should be ready by 7 a.m. Making tofu is a demanding discipline. Fiering, Sue Kalen, Chris Coon, and Al Dynak were the original founders of The Soy Plant one and a half years ago. Steve originally came from Camden, New Jersey, to the University of Michigan, where he majored in geology and, as he puts it, "minored in extracurricular political activism." Politics led to a job as coordinator of the People's Food Co-op, and that led to helping to start The Soy Plant. The Soy Plant is one of the few places in America where people can buy fresh tofu daily. A low-cost vegetable source of protein, retails for $0.70/lb in the consumer's tub or $0.85 in a plastic tub.

Henry Ford was deeply interested in soybeans. He believed that "mechanized soybean production would help free the farmer from the drudgery of dealing with animals by eliminating the need for most meat... In fact his large demonstration soybean farm was near Macon, south of Saline, in Lenawee County." Tofu can become an economical vegetarian alternative to ground beef.

The company began as the Tofu Collective, a Sundays only operation at Wildflour Community Bakery around the corner on North Fourth Avenue. A few months later, in the summer of 1977, the name was changed to The Soy Plant, and the collective moved into the basement of Eden Foods, where it attempted to produce tofu to sell wholesale. Fiering recalls that the early days were *really* hard. They used to work 14-16 hours a day. But the hard work paid off. By last spring The Soy Plant had the track record and credibility to be able to raise $10,000 in loans to purchase more efficient equipment and move into larger quarters at its present location on Ann Street near Fourth.

For each $100 loan, supporters were compensated with an unusual but sensible kind of interest: a pound of tofu each week, which yields a 35% annual return. Backers included both typical co-op supporters and quite a few native Asians eager to find a local source of fresh tofu.

Members of the collective now earn $3.25 an hour–a big increase over the $50 a week that they were paid in the beginning. But that cheap labor was the capital that got the business started. Current members of the collective are Fiering, Sue Kalen, Dan Ecclestone, Anne Elder, Kurt Getman, George Hanley, Mike Mazzie, Jerry McKenna [sic, MacKinnon], and Ann Wilson.

The Soy Plant makes its tofu in 50-pound batches. Of the more than 2,000 lb of tofu it makes each week, about 350 lb are sold at The Soy Plant retail store, where soy milk, soy byproducts, and prepared soy foods like sandwich spreads, missing egg salad, soysage, and pies are also sold. Another 1,700 lb/week of tofu goes to local restaurants, retail stores (incl. Meijer's Thrifty Acres, Asian-, and natural food stores), and to Midwest Natural Foods, which distributes the tofu to as far away as Pennsylvania and West Virginia.

Soy Plant workers have strong political motivations. They believe that soy products can help to solve world food problems. Fiering, a decentralist, talks about his personal beliefs. An excellent introduction to tofu is the 15-cent pamphlet titled "What is tofu?" available at The Soy Plant. It contains ten popular recipes plus basic information. "For the truly committed, there's the encyclopaedic *Book of Tofu: Food for Mankind* by William Shurtleff and Akiko Aoyagi." Shurtleff "has been the tofu guru for America in the 1970s, and this book has inspired and instructed most of the country's approximately fifty tofu shops operated by non-Asians."

A sidebar titled "Take-out tofu treats" mentions the following made and sold at The Soy Plant: Tofu-tahini spread. Tempeh–which resembles Brie cheese in texture and flavor. Tofu tarts in several flavors: pecan cream, pumpkin cream, yam, mocha, and lemon.

Photos by Peter Yates show: (1) Anne Elder adding soy puree to boiling water in the cooking kettle to make a foamy brew that is eventually curded to become tofu. (2) Steve Fiering filling one-pound tofu retail packages (in a bathtub) with water from a hose before shipping. Address: Ann Arbor, Michigan.

689. Hesseltine, C.W. 1979. Some important fermented foods of Mid-Asia, the Middle East, and Africa. *J. of the American Oil Chemists' Society* 56(3):367-74. March. [34 ref]
• ***Summary:*** Contents: Abstract ("These fermentations, unlike those of the Orient, use bacteria and yeasts instead of filamentous fungi"). Introduction. Eight reasons for using a fermentation process in the production of acid foods. Idli. Kishk. Ogi (The Yoruba {western Nigeria} for a fermented sour maize product found throughout Black Africa). Mahewu (Magou). Kaffir beer (Bantu beer, sorghum beer, mqombothi).

"When we think of food fermentations, aside from those we encounter daily such as cheese and bread, we think of those strange and exotic products like soy sauce, soybean paste [miso], and tempeh made in China, Japan, and the East Indies."

A photo shows Hesseltine. See also p. 380-81 of this March issue. Address: NRRC, Peoria, Illinois.

690. Hesseltine, C.W. 1979. Other fermented foods. *J. of the American Oil Chemists' Society* 56(3):380-81. March.
• ***Summary:*** Discusses four more examples of traditional fermentations that have been industrialized: Kaffir beer (Bantu beer), the new Kikkoman plant in the USA, mahewu (sour maize from South Africa), and tempeh. Address: NRRC, Peoria, Illinois.

691. Leon, Sonia V. de. 1979. Tropical foods in the Far East. In: G.E. Inglett and G. Charalambous, eds. 1979. Tropical Foods: Chemistry and Nutrition. Vol. 1. New York: Academic Press. x + 701 p. See p. 351-63. [15 ref]

• ***Summary:*** The section titled "Fermented Cereals and Grains" gives basic information about the following fermented soybean foods: Tempeh, soy sauce, miso, and sufu or Chinese cheese. Address: Dep. of Food Science and Nutrition, Univ. of the Philippines, Diliman, Quezon City, Philippines.

692. **Product Name:** Tempeh.
Manufacturer's Name: Northern Soy.
Manufacturer's Address: 277 N. Goodman St. Rochester, NY 14607. Phone: 716-442-1213.
Date of Introduction: 1979. March.
New Product–Documentation: Letter from Andy Schecter on stationery with no letterhead. 1979. March 31. "Tempeh at Northern Soy." A 1-page description of how the company makes tempeh in perforated Ziploc bags.

Letter from Andy Schecter on The Tofu Shop letterhead. 1979. May 26. Seven small photos show the company's tempeh-making process and equipment: (1) Cooking soybeans with steam. (2) Cooling cooked beans on a table. (3) Mixing in starter in plastic buckets. (4) Bagging and flattening inoculated soybeans. Tofu is being made in the background. (5) Placing screen trays loaded with bagged tempeh into the incubator. (6) Tempeh (and starter in Petri dishes) in the incubator. (7). Front of incubator. Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Address listed as 30 Somerton St., Rochester, New York 14607.

693. Winarno, F.G. 1979. Fermented vegetable protein and related foods of Southeast Asia with special reference to Indonesia. *J. of the American Oil Chemists' Society* 56(3):363-66. March. [22 ref]
• ***Summary:*** Contents: Abstract. Introduction. Fermented foods and food needs. Tempeh and oncom. Bongkrek (and its toxic-producing bacteria) and tauco. Wholesomeness of fermented foods. Development of food supplement using fermented food as a basic ingredient.

Table I shows the population, population growth rate, and average national income per capita in ten Southeast Asian countries. Indonesia has by far the largest population (136.9 million), followed by Vietnam (47.3). Khmer republic (Cambodia) has the highest population growth rate (2.8%), followed by the Philippines (2.7%); Singapore has the lowest (1.3%). Singapore has by far the highest average national income per capita (US$2,510), followed by Malaysia ($720), then Maungthai (Thailand–$350); Khmer Republic and Laos have the two lowest per capita incomes ($70). Table II shows the nutritional composition of tempeh, oncom, bongkrek, and tauco per 100 gm. Table III shows 7 fermented vegetable protein foods in Southeast Asia: Tempeh, bongkrek, oncom, tauco, kecap (shoyu), ang-kak, and sofu (sufu); for each is given the microorganism used, substrate, nature of product (solid, liquid), and area where article is sold commercially. Table IV shows the composition and nutritional value of TFR (Tempeh-Fish-Rice), as developed at the National Research Institute, Bogor, Indonesia. A photo shows F.G. Winarno. Address: Bogor Agricultural Univ., Fatemeta, IPB, Jalan Gunung Gede, Bogor, Indonesia.

694. Yueh, Mao H.; Daravingas, G.V.; Rigelhof, F.J.; Mueller, H.W. Assignors to General Mills Inc. (Minneapolis, Minnesota). 1979. Process for producing a fried snack food containing tempeh. *U.S. Patent* 4,151,307. April 24. 3 p. Application filed 2 Dec. 1974. [5 ref]
• ***Summary:*** A dough is made from cereal, potato flour, and starch, plus tempeh (5-60% dry weight). For example, cooled tempeh is ground and blended with other ingredients in the following amounts: ground tempeh 44%, ground potato flakes 44%, pregelatinized waxy maize starch (Polar Gel I) 8.5%, and table salt 3.5%. The mixture is extruded and the resulting thin strips of dough are cut into chip sizes (approximately 1 by 1¼ inches) and allowed to air dry overnight to a moisture content of about 9%. These chips are then deep fat fried in coconut oil at 375ºF for 6½ seconds drained. The resulting fried chips had a good texture and flavor, and were expanded about 3 times. They had a protein content of 11.5% and a fat content of 25.4% as compared to 5.3% protein and 39.8% fat in a typical commercial potato chip product.

5% gluten (Pro 80) can also be used as an ingredient in place of 5% of the ground potato flakes. Address: 1&4. Minneapolis; 2. Edina; 3. Minnetonka. All: Minnesota.

695. Shurtleff, William. 1979. Re: Request for clarification and additional information on making tempeh at Northern Soy. Letter to Andy Schecter at Northern Soy in Rochester, New York, April 29. 1 p. Typed, without signature (carbon copy). [1 ref]
• ***Summary:*** Shurtleff thanks Andy for his letter of March 31, asks him to check Shurtleff's rewritten description for the book *Tempeh Production,* then asks 7 questions with space after each for a response. Andy's handwritten responses are included.

Shurtleff's typewritten P.S. adds: *"Tofu & Soymilk Production* went to the printers last week. We hope to have it ready by the SANA conference. 320 pages." Andy's handwritten note at the end: "Keep up the good work, Bill! We're real interested in *The Book of Tempeh* [not yet published]–especially a pocket size edition will help us to get sales going." Address: New-age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

696. Duienga, Suzanne; Duienga, William. 1979. The Soy Plant. *Beansprout Flyer and Pocket Reader: Grand Rapids Food Co-op Newsletter* 2(3): April.
• ***Summary:*** "A current personal interest in soybeans combined with a concern about the high price of tofu at the coop led us to visit the Soy Plant in Ann Arbor. What we found was not a 'plant' or a factory at all, but a downhome group of people with a genuine interest in their work.

"Steve Fiering, the man who first envisioned the Soy Plant, stopped his work to show us around the shop and talk with us about his experiences and his soybean philosophy.

"When asked why Soy Plant tofu costs so much, Steve gave us some pretty impressive reasons. First of all the soybeans that the Plant uses are organic. Secondly, Steve values the people with whom he works and so wages ($4.00 per hour) reflect this. Lastly and most importantly, the Soy Plant is the first of its kind in this area. As with all first, 'We make mistakes and they cost money.'" Steve made much of the machinery in the shop himself.

"The Soy Plant already has a large line of delicious soy products (all personally sampled and 'wholestomachally' approved of), including soysage, tempeh, soymilk, brown bread, sweet white miso, spiced tofu, spreads, tofu pies, and okara peanut butter balls. Free samples of the delectable spreads are available on the counter.

"During the visit our basic curiosity evolved into true inspiration. The Plant is a living, breathing, organically growing example of how a cooperative group of people can come together and make something happen. The place truly is a center of learning, staffed by people eager to share their newly found knowledge about the creating of this very old food.

"Do you often wonder what to make with this nutritious but strange stuff called tofu? Here are some delightful recipes:" The recipes, from *The Book of Tofu* by Shurtleff and Aoyagi, are for Tofu-nut butter spread or topping, and Banana-tofu milkshake. Address: Michigan.

697. Jack, Alex. 1979. The taste of America: Our changing diet. *East West Journal* 10(4):46-61. April. [24 ref]
• ***Summary:*** This is a macrobiotic view of the changing American diet. Contents: Modern dietary trends. The rise of the standard diet. Food origins: Meat-centered, traditional, vegetarian. Food changes: 1910-1976 (percentage change). The effects of meat and dairy. Effects of sugar and spice. The limits of modern nutrition. The rise of vegetarianism: Adolf Hitler [in Germany], Mohandas Gandhi [in India]. You are what your grandparents ate. Popular health foods: Honey, yogurt, herb teas. The traditional diet of humans. Seven levels of eating. The future diet of humanity.

"Underlying nearly all modern dietary trends is a shift from meals centered around animal products toward ones derived from plant sources. According to a 1978 Roper Poll, 7 million Americans over age 18 do not eat any meat and 37 million more are cautious about how much meat they consume. Another 44% regard a reduction of meat consumption as healthy." In all, nearly 50% of Americans are concerned about meat and the standard American diet. Then lists 12 signs of a major shift in our attitudes toward meat and dairy products; No. 10 incl. "the rising popularity of soy products such as miso, tofu, and tempeh as alternative protein sources to meat." Address: [Boston, Massachusetts].

698. Rhodes, Elizabeth. 1979. A tofu-tempeh tycoon on Vashon Island? *Seattle Times Magazine.* May 6. [1 ref]
• ***Summary:*** William Luke Lukoskie was born 24 November 1946 in Duluth, Minnesota. His Catholic family moved to Edmonds, Washington, in 1956 and he attended parochial schools. After earning a BA in philosophy (math minor) from Carroll College in Helena, Montana, he returned to Seattle. He enrolled in graduate business school at the University of Washington in 1968, then switched to working on a doctorate in educational psychology, then dropped out. In 1976 he founded Island Spring tofu factory. Today Island Spring produces tofu, tempeh, soymilk, Soyfreeze soy ice cream, and Delicious Steamed Tofu. Future products may include soy mayonnaise, soy yogurt, frozen tofu lasagna, and cheesecake. A photo shows Lukoskie smiling and holding a block of his tofu with a six-petaled flower pressed into the surface. Address: Seattle.

699. Cohen, Michael. 1979. Re: Hope to start tempeh production by mid-July in Greenfield, Massachusetts. Letter to William Shurtleff at New-Age Foods Study Center, May 15. 2 p. Handwritten, with signature on letterhead.
• ***Summary:*** "Dear Bill, I've been meaning to write you for over a month, now, but the time keeps slipping by. Hopefully we'll be into tempeh production by mid-July. 'We' is actually me right now with moral and administrative support from Shelley. We've got a 1200 square foot building, cinder block walls and slab floor; floor drains and other plumbing going in this week. The incubation room is 12 feet long, 6 feet deep and 8 feet high. Its heated by an electric baseboard system with an industrial thermostat with an 85º-110ºF range.... The incubator should be able to handle 2,500 lbs/week (We hope to be doing 1,000 lbs/week as soon as possible). We are starting with a 40 gallon steam kettle.

"We've decided not to market the tempeh as a frozen food but as a refrigerated item. Most retailers agree that

cooler foods move about 3 times as fast as their frozen counterparts. We will do frozen tempeh for any large account (distributor, restaurant, etc.) that might want it. We'd like to deep-fry the tempeh–it would give us a good shelf life and have the advantage of making the tempeh a ready to eat food. Unfortunately at this time we would not afford the investment of a deep-fry operation... So it looks like we're going to steam the tempeh prior to packaging and then store at just above freezing in our walk-in... See you in July, Michael." Address: The Tempeh Works, P.O. Box 870, Greenfield, Massachusetts 01301.

700. Flinders, Carol. 1979. Soybean key to world food plight? Notes from Laurel's Kitchen. *Rocky Mountain News* (*Denver, Colorado*). May 16. p. 24A.
• ***Summary:*** Twelve years ago (i.e., in late 1968) Carol spent a memorable week at the Tassajara Zen Mountain Center near Big Sur, California. "Among the many good people I met, one I've always remembered was Bill Shurtleff, who helped run the kitchen out of which was issued the well known Tassajara bread.

"Spare of words, lean and thoughtful, he had a kind of banked fire in his eyes that told you he was a man in search of a vocation. Last week Bill and his wife, Akiko, came to our home to visit and exchange ideas. It's clear that he has found the vocation he's been looking for, and that, in a sense, all of us stand to gain from the passion with which he's answered it.

"The cause Bill has taken up is that of the more than one billion people of the world for whom hunger is *the* central fact of life. To be as continually mindful of their plight as he is would probably be unbearable if he didn't believe he holds a significant key to relieving it. The key? 'Glycine max'–soybeans to you and me.

"Western exploitation of the soybean has been absurdly slight until recent years. Mostly we've fattened our livestock with it. That soy is 'king of beans' we've long recognized." But they have entered the American food supply well disguised in such forms as textured vegetable protein. "The soybean foods Bill is promoting are of a much more sophisticated nature. Their names fall oddly on the Western ear:" tofu, shoyu, tempeh, miso.

Bill and Akiko met in Japan. She "was a fashion designer in Tokyo before they were married. The image of big city haute couture doesn't attach easily to the simply dressed and unpretentious Akiko, and everything makes a little more sense when you find out the fashions she designed were actually for handicapped children.

"Akiko's skill as a graphic artist and fine cook are the perfect complement to Bill's, as writer and investigator. Her warmth and gentleness are the perfect balance to his single-minded intensity. (Akiko doesn't just invite you for dinner. She seizes your arm as you're walking along together, wraps it close in her own and holds on tight, convincing you life will be pure misery for them until you come to their house).

"Tofu was the soyfood that first captured Bill's interest." Discusses its virtues. "But what really wins him over, I think, is the sheer romance of tofu. What you know of tofu, and what I've told you about Bill, might make that seem unlikely. But read his book and see for yourself–beneath that samurai exterior beats the heart of a Shelley or a Keats. Listen:

"'Like water that flows through the worlds, serving as it moves along, tofu joyfully surrenders itself to the endless play of transformation. Pierced with a skewer, it sizzles and broils above a bed of live coals... deep-fried in crackling oil, it emerges crisp and handsome in robes of golden brown, frozen all night in snow under vast mountain skies, it emerges glistening with frost and utterly changed. All as if it knew there was no death to die, no fixed or separate self to cling to, no other home than here.'"

Contains a favorite Flinders' recipe for tofu patties.

701. Tempeh Crew. 1979. Tempeh news. *Amazing Tales of Real Life* (*The Farm, Summertown, Tennessee*). May 24. p. 1.
• ***Summary:*** "We've found that the best way to feed the Farm lots of high quality tempeh is to give inoculated, ready-to-incubate beans to the households, and have the people incubate their own tempeh. We're putting the beans in plastic bags and they can be incubated right in the bag if you poke holes with a fork every inch or so on all sides as soon as you can."

"The best way to increase our production right now would be to have more dedicated people helping make tempeh. It's fine revolutionary work, a good skill to learn and it's a light-duty job (suitable for pregnant ladies). With a little more help the Farm will eat more tempeh."

702. Schecter, Andy. 1979. Re: Equipment and process for making tempeh at The Tofu Shop. Letter to William Shurtleff at New-Age Foods Study Center, May 26. 1 p. Handwritten, with signature on letterhead. [1 ref]
• ***Summary:*** Seven small photos (contact prints) show the company's tempeh-making process and equipment: (1) Cooking soybeans with steam. (2) Cooling cooked beans on a table. (3) Mixing in starter in plastic buckets. (4) Bagging and flattening inoculated soybeans. Tofu is being made in the background. (5) Placing screen trays loaded with bagged tempeh into the incubator. (6) Tempeh (and starter in petri dishes) in the incubator. (7). Front of incubator.

He concludes: "Looking forward to seeing you & Akiko at the SANA conference and in Rochester afterwards! Take care, Andy. P.S. Please send $10 to defray film, processing & the photographer. Thanks." Address: The Tofu Shop, 277 N. Goodman St., Rochester, New York 14607. Phone: 716-442-1213.

703. Gandjar, Indrawati; Slamet, Dewi Sabita; Kartosuwondo, Diah. 1979. Tempe from non-soybean

leguminous seeds. Presented at Seminar Teknologi Pangan IV (Fourth Seminar on Food Technology). Held 16-17 May in Bogor, Indonesia. *
Address: Nutrition Research & Development Center, Dep. of Health, Indonesia.

704. Moore, Karen. 1979. Tofu, a Far East import, offers potential as meat, fish, cheese substitute. *Food Product Development* 13(5):24. May.
• ***Summary:*** Discusses both tofu and tempeh. "New England Soy Dairy has already increased production [of tofu] from 500 pounds per week in 1977 to 9 tons [18,000 lb] per week in 1979, and the company expects revenues to exceed $750,000 this year. Matsuda Hinode Tofu Co. of L.A. produces approximately 10 tons [20,000 lb] of tofu daily."

"Interest in tempeh is beginning to build. Within the last year USDA's Northern Regional Research Center filled 36,000 requests for inoculum." Address: Assoc. editor.

705. Tanuwidjaja, Lindajati; Ambijah, Koesbianti. 1979. Pembuatan inokulum tempe dengan kultur campuran [Preparation of tempeh inoculum using mixed cultures]. In: Proceeding Seminar Teknologi Pangan IV. See p. 191-99. Held 16-17 May 1979 in Bogor, Indonesia. [Ind]*
Address: Bandung, Indonesia.

706. *Whole Foods* (*Berkeley, California*).1979. B-12 bonanza. May. p. 20.
• ***Summary:*** Tempeh, a fermented soyfood from Indonesia, is one of the few vegetarian sources of vitamin B-12. The bacterium *Klebsiella* has been identified as the producer of B-12 in tempeh. "Samples of tempeh commercially available in this country were found to contain 1.5 to 6.3 micrograms per 3½ ounce (100 gm) serving. When researchers added *Klebsiella* to the starter used to make tempeh, B-12 content was boosted as high as 14.8 micrograms per 100 gram serving."

707. Zilliken, Fritz W. Z-L Limited Partnership (Janesville, Wisconsin). 1979. Antioxidants, antioxidant compositions and methods of preparing and using same. *U.S. Patent* 4,157,984. June 12. 8 p. Application filed 8 June 1977. [8 ref]
• ***Summary:*** An alcohol-soluble mixture of antioxidants and antioxidant compositions has been extracted from a natural source, tempeh, a fermented soybean product. The oil of tempeh demonstrates improved antioxidant properties over those of unextracted tempeh. The mixture is purified and used as a food, or a stabilizer for oils and fats. "An ergostadientriol which possesses antioxidative properties and which in combination with mixtures of isoflavones provides compositions having exceptional antioxidative properties has been produced. This new sterol, either alone or in combination with mixtures of isoflavones or other compounds, would appear to be useful in the prevention and/or treatment of various diseases including atherosclerosis... Two novel isoflavones have also been produced and recovered from tempeh. A mixture of these isoflavones possesses antioxidative properties which are enhanced by the presence of the ergostadientriol and known isoflavones."

The principal antioxidants currently used by the food industry are BHA (butylated hydroxyanisole), BHT (butylated hydroxtoluene), and TBHQ (tertiary butylhydroquinone). Address: Remangen, West Germany.

708. Hesseltine, Clifford W.; Wang, Hwa L. 1979. Fermented foods. *Chemistry and Industry* (*London*) No. 12. p. 393-99. June 16. [4 ref]
• ***Summary:*** Contents: Fermentation: Advantages of fermented foods. Need for more research. Need for a worldwide fermented foods catalogue. Investigating the process. Characteristics and microorganisms. Fermentation: 12 aspects that merit attention. Improvement: Example of tempeh spores and plastic bags. New foods (such as wheat and cereal tempehs). Future of traditional fermented foods (it looks bright). Mahewu. Kaffir/Bantu beer.

"Finally we would like to suggest several fermented foods that might be possible candidates for future development outside the Orient. These are miso, natto, hamanatto, and sufu." Address: NRRC, Peoria, Illinois.

709. **Product Name:** Tempeh.
Manufacturer's Name: Farm Foods.
Manufacturer's Address: R.R. #3, Lanark, ONT, K0G 1K0, Canada. Phone: 613-278-2215.
Date of Introduction: 1979. June.
Ingredients: Soybeans, water, culture.
Wt/Vol., Packaging, Price: 12 oz perforated plastic bag (not vacuum packed).
How Stored: Frozen.
New Product–Documentation: Talk with Allan and Susan Brown. 1998. May 11, followed by a detailed letter from Allan. In the late summer of 1974, having met and become engaged on the Wisconsin Farm, Allan and Susan hitch-hiked to The Farm in Summertown, Tennessee, where they were married later that year. Susan writes: "When we arrived at the Gate, it was Cynthia and Albert Bates who graciously took us in and shared their humble tent-house on Hickory Hill. (They even moved next door for a weekend to make room for my parents when they came from Boston to attend the wedding.) While we were staying there, Cynthia sometimes took me to the soy dairy, where she and Alexander Lyon were experimenting with ways to make tempeh. They had heard about it from Dr. Hesseltine in Illinois. I learned to make tempeh starter on rice from Cynthia. Little did I know then that I would eventually make my livelihood making tempeh!

"Our next experience with tempeh was in January

1976 while we were visiting my parents in Belmont, near Boston, Massachusetts. On my mother's shelf was a tempeh kit–a small package containing dry split soybeans, starter, and instructions. She had ordered it via a Farm catalogue. The culture was spores mixed with starch, to make such small amounts easier to measure. I made tempeh on the water-heater, in various containers. The most effective was a covered casserole (very Earth-friendly compared to the disposable plastic bags we now use!) The results were delicious, although there were a few patches of dark gray and some dried out places where the culture hadn't grown."

In 1978 Allan learned how to make tempeh from Mary Hubbard (who was from The Farm in Tennessee) in the kitchen on The Farm in Canada. Mary and her husband Nick had their home base in Tennessee. From the Farm-affiliated Denver Center (in Colorado), where they had been making tempeh, they had come to Lanark, Ontario, to help out at The Farm, while most of the community members were away at Thunder Bay planting trees as a fund-raiser for Plenty and while Allan and Susan were bonding with a newborn baby given to them by a young lady who did not want to keep her baby. For about 3 weeks Mary and Nick made "every kind of soy product under the sun, including tempeh." A good friend of Allan's named Paul Smith ran Baldwin Natural Foods–the hottest macrobiotic store in Toronto. Paul had seen the tempeh made by Robert Walker at Baldwin Natural Foods; he was making about 50 lb/week of tempeh shaped like a doughnut. Allan thought there was a market for a second tempeh product, so in the summer of 1979 he started making tempeh under the Farm Foods label. Allan photocopied a label with a bamboo border, and sold the tempeh at Baldwin Natural Foods. Allan made the tempeh in the community kitchen and incubated it on the rafters above the wood stove in the kitchen. There wasn't a lot of agreement on The Farm to make tempeh commercially. There was a constant struggle for the available energy from Plenty and from Farm Foods. After about 6 months, during which they made only 2-3 very small batches of tempeh and sold them to just one store (Baldwin Natural Foods) in Toronto, Allan and Susan were ready to leave The Farm. Their tempeh operation wasn't really a business yet; it was more just testing the waters. Robert Walker had suffered a stroke and his tempeh-making equipment was up for sale. So as the Browns moved to Toronto, taking their fledgling tempeh operation with them, they bought Robert's equipment. In June 1980, in the heart of Toronto's Chinatown, they started Noble Bean (which see) as a tempeh manufacturing company.

Photo copy of Label (5¼ by 3½ inches) sent by Allan Brown. 1998. Jan. 21. This label was used for a short period of time in 1979. It has a bamboo border, with the word "Tempeh" written in large letters across the top half of the label. "Contents: Soybeans, water, *Rhizopus oligosporus* culture, vinegar." Below that are the words "Farm Foods" with a thin outline around each word. Between the two words is a circular logo, which shows rows of crops (soybeans) in a field converging in the distance at the foot of three mountains. Below that is the typewritten address: "R.R. #3, Lanark, ONT K0G 1K0." Note: The typeface used for the word "Tempeh," the bamboo border, and the Farm Foods logo all appeared earlier (about 1978) on tempeh products made at The Farm in Summertown, Tennessee.

710. Gomez, M.I.; Kothary, M. 1979. Tempeh from red kidney beans. *League for International Food Education Newsletter.* June. p. 1-2.
• ***Summary:*** Describes how to make the product, which was found to be highly palatable. Address: Dep. of Food Science & Technology, Univ. of Nairobi, Kabeta, Kenya.

711. **Product Name:** Island Spring Soy Bean Tempeh.
Manufacturer's Name: Island Spring, Inc.
Manufacturer's Address: P.O. Box 747, Vashon, WA 98070. Phone: 206-622-6448.
Date of Introduction: 1979. June.
Ingredients: Organic soy beans, water, apple cider vinegar, Rhizopus oligosporus.
Wt/Vol., Packaging, Price: 8 oz (227 gm).
How Stored: Frozen or refrigerated.

New Product–Documentation: Form filled out by Luke Lukoskie. 1979. Oct. 3. He buys his soybeans from Living Farms; Pacific Coast Soybeans in Walla Walla, Washington, went out of business last year when the Chinese undersold them in the Japanese market. Discusses how to buy used food processing equipment. Shurtleff & Aoyagi. 1979. The Book of Tempeh. p. 149. Made by Russ Pals and Ben O'Loughlin, this was the world's first tempeh to be packaged in a tofu tub.

Label. 1980, undated. 4 by 5 inches. Red and black on white. Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Luke Lukoskie. Form filled out by Yvonne Kuperberg. 1988. Oct. 1. Launched June 1979. Discontinued

after the fire, Feb. 1986.

712. Shurtleff, William. 1979. Sources of vegetarian vitamin B-12. *Vegetarian Times* No. 31. May/June. p. 36-37, 39-40. Reprinted, revised and updated, in Vegetarian Times, Feb. 1983, p. 61-63. [11 ref]
• ***Summary:*** This review of the literature shows that the major vegetarian sources of vitamin B-12 are fermented soyfoods (tempeh, natto, miso), single-cell-proteins (spirulina, chlorella, scenedesmus, unfortified yeasts), sea vegetables (kombu, wakame, and others). The richest known animal source is beef liver. Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

713. Shurtleff, William; Aoyagi, Akiko. 1979. The book of tempeh: A super soyfood from Indonesia. New York, NY: Harper & Row. 160 p. Illust. by Akiko Aoyagi Shurtleff. Index. July. 28 cm. [24 ref]

• ***Summary:*** Contents: Acknowledgments. What is tempeh? Preface. 1. Soybeans–Protein source of the future: Introduction, the causes of hunger and starvation–two analyses (*The Twenty-Ninth Day,* by Lester Brown–population, affluence; *Food First: Beyond the Myth of Scarcity,* by Lappé and Collins–population, narrow focus on increasing food productivity, international food exploitation, land monopolization and misuse, cash crop system of export agriculture). Ten reasons soy will be the protein source of the future: 1. Optimum land utilization. 2. Lowest cost protein. 3. High nutritional value. 4. Time tested. 5. Remarkably versatile. 6. Appropriate technology. 7. New dairylike products. 8. Hardy and adaptive. 9. Free nitrogen fertilizer. 10. Energy and resource efficient. "All of these ten factors work together synergistically, reinforcing one another, to give added weight to the prediction that soybeans will be a key protein source for the future on plant earth." Present patterns of soy protein utilization. New developments. An idea whose time has come.

2. Tempeh as a food. 3. Getting started (incl. basic preparatory techniques and 18 recipes, incl. a recipe for sweet Indonesian soy sauce {*kechap manis*}). Favorite tempeh recipes (13 Western favorites, 6 non-fried favorites, and 12 Indonesian favorites; also Suggestions for serving tempeh throughout the day). 4. Western-style and Oriental tempeh recipes (68 recipes). 5. Indonesian tempeh recipes (70 recipes). 6. Making tempeh at home or in a community. 7. Making tempeh starter. 8. The Indonesian tempeh shop. Appendix A: A brief history of tempeh East and West. Appendix B: Tempeh shops in the West. Weights, Measures, and Equivalents. Glossary. Bibliography. About the authors. About the New-Age Foods Study Center.

The first book in the world devoted entirely to tempeh. It contains the first sizeable collection of American-style and Indonesian tempeh recipes (130 in all), the first illustrated descriptions of making tempeh, tempeh starter, and onchom on various scales in Indonesian tempeh shops, the first history of tempeh, detailed discussion of tempeh in Indonesian culture and of the many varieties of Indonesian tempeh, and the first recommendations for commercial names for the more than 30 types of tempeh that could easily be made in the West. It also contains chapters and reviews of the literature on tempeh nutrition and the microbiology and biochemistry of tempeh fermentation, plus the largest bibliography on tempeh to date (including many new Indonesian references), an annotated listing of 61 people and organizations around the world connected with tempeh, and the first list of tempeh companies in the West.

Page 26 states: "Modern soy-protein products, such as textured soy proteins, are increasingly available at supermarkets, often in forms that simulate the fibrous, chewy texture of meat.

Note 1. This is the earliest known book in any language devoted entirely to tempeh. Note 2. This is the earliest English-language document seen (Aug. 2011) that contains the term "modern soy protein products;" Shurtleff would soon start to use it to refer to defatted soy flour or grits, soy protein concentrates, soy protein isolates, and textured soy protein products.

Illustrations (line drawings; unnumbered, not including "spots"). Indonesian dancer in sarong and crown. Balinese lion mask dancer. Two Indonesian women dancing. Cuts of fresh tempeh on a woven bamboo tray. Woman in a

traditional Indonesian kitchen cooking tempeh. Terraced rice patties in Java. Woman selling tempeh in Bali market. Masked Indonesian figure. Soybeans in the pod. A hand holding dry soybeans over a sack of such soybeans. Three women selling beans and grains in a Javanese market. Two men selling tempeh in a Javanese market. Balinese mask. Indonesian mortar and pestle. Traditional oil skimmer for deep frying. A wok. Tamarind paste and pods. Soy sprouts. Pieces of tempeh on a bamboo tray Gado-gado. Laos root & chilies. Palm sugar. Chilies. Indonesian woman carrying fruits in a bowl on her head. Salam leaf. Botok tempeh. Peté beans. Winged and masked Balinese figure. Indonesian spices. Soybean (enlarged). Cartoon of a fuzzy little critter driving his tiny tractor over a cake of tempeh, inoculating it with a secret enzyme (The Farm, Summertown, Tennessee). Placing tempeh into a homemade Styrofoam incubator. Cross section of good tempeh and bad. Winged beans. Close-up of outside of a homemade tempeh incubator. Dry soybeans in pods on plant. Woman in the USA making tempeh. A deep woven bamboo basket for treading soaked soybeans. Ten steps in the process for making traditional soy tempeh in a small shop (GIZI, Bogor). Twenty steps in the process for making and delivering traditional soy tempeh in a large shop (Oeben, Bandung). Two views of a modern dehuller and dehuller-separator. Five steps showing making tempeh in plastic bags. Three steps showing making tempeh in banana-leaf wrappers. Fourteen steps in the process for making and delivering Malang tempeh.

Map of Southeast Asia. Map of Java, Madura, and Bali (incl. West, Central and East Java). Indonesian stilt house (house on stilts, famous among the Dayak in Borneo, the Minangkabu and Batak of Sumatra, and the Toraja of Sulawesi). Woman selling leaf-wrapped tempeh in a Balinese market (color, rear cover).

Numbered figures (line drawings unless otherwise stated. The number before the decimal refers to the chapter number). 1.1 Table: The changing pattern of world grain trade (exporters and importers). 1.2 Graph: Projected population densities in various regions of the world. 1.3 Bar chart: Per capita protein consumption in rich and poor countries. 1.4 Bar chart: Per acre yields of usable protein from various food sources (pounds per acre). 1.5 Graph: Word soybean production (1965-1977). 1.6 Bar chart: Protein consumed vs. protein returned from milk, eggs, chicken, pork, beef. 1.7. Where the world's money goes (yearly global and U.S.).

2.1 Table: Percentage of protein in various foods. 2.2 Table: Composition of nutrients in 100 grams of tempeh of different types. 2.3 Table: Protein quality (NPU) of various foods. 2.4 Table: Amino acid composition of tempeh compared with the FAO/WHO reference pattern. 2.5 Bar cart: Limiting amino acids in rice and tempeh. 2.6 Table: Combining foods to increase protein. 2.7 Bar chart: Grams of dietary fiber in 100 grams of various foods. 2.8 Table: Fatty acids in soy tempeh. 2.9 Table: Vitamins and minerals in soy tempeh. 2.0 Table: Price of one day's supply of usable protein from various foods.

3.1 Bar chart: Comparison of nutrients in brown and white rice. 3.2 Shoyu (natural soy sauce) in four wooden keg, can, bottle, and small dispenser. 3.3 Grating a coconut. 3.4 Mortar & pestle (two types). 3.5 Cross section of a coconut in the husk. 3.6 Making coconut milk (7 steps). 3.7 Ladies in a Javanese market selling chilies (in mounds). 4.1 Deep-frying tempeh, with all utensils shown. 4.2 Shallow-frying tempeh. 4.3 Seasoned crisp tempeh with dip. 4.4 Tempeh shish kebab. 4.5 Coriander & garlic crisp tempeh. 4.6 Tempeh fondue. 4.7 Making tempeh-filled pot-stickers or gyoza. 4.8 Tempeh pita bread sandwich. 4.9 Tempeh burger. 4.10 Tortilla with tempeh & guacamole. 4.11 Tempeh guacamole. 4.12 Tomatoes stuffed with tempeh.

5.1 Woman in an Indonesian village kitchen. 5.2 Woman grinding spices with a mortar. 5.3 Table: Indonesia's 7 most popular tempeh recipes, in descending order of popularity: Tempeh goreng, tempeh bachem, keripik tempeh, sayur lodeh, sambal goreng tempeh, terik tempeh, sambal goreng kering tempeh. Recipes for each are given. 5.4 Selling traditional banana-leaf wrapped tempeh in Yogyakarta, Java. 5.5 Deep-frying tempeh keripik in batter. 5.6 Deep-frying tempeh keripik in Javanese market. 5.7 Botok tempeh #1. 5.8 Botok tempeh #2. 5.9 Gadon tempeh. 5.10. Folding leaf wrappers for gadon tempeh. 5.11 Rolling leaf wrappers for pepes tempeh. 5.12. Pepes tempeh on broiler and packets ready to serve. 5.13 Folding leaf wrappers for Balinese pepesan. 5.15. Saté tempeh on broiler. 5.15 Saté vendor in Java. 5.16. Saté manis tempeh. 5.17 Tempeh sambal accompaniment for rice.

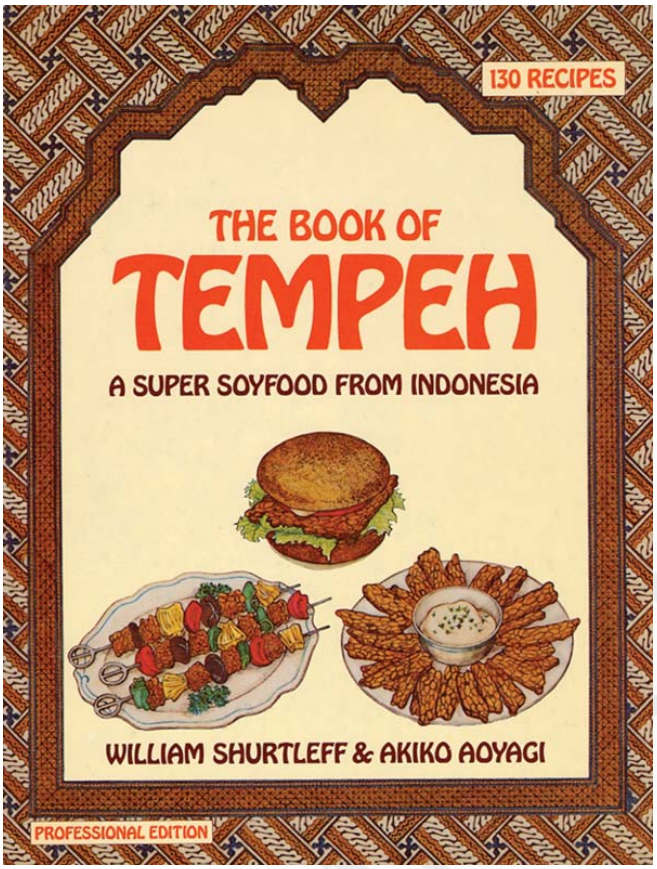
6.1 Flowchart for homemade soy tempeh. 6.2 Tempeh incubator (home-made). 6.3 Good soy tempeh (diagonally sliced). 6.4 Four types of homemade tempeh. 6.5 Wooden tempeh incubation tray designs. 6.6 Community tempeh incubator. 6.7 Graph: Tempeh incubation time versus temperature for soy tempeh (shows slow, moderate, and quick combinations).

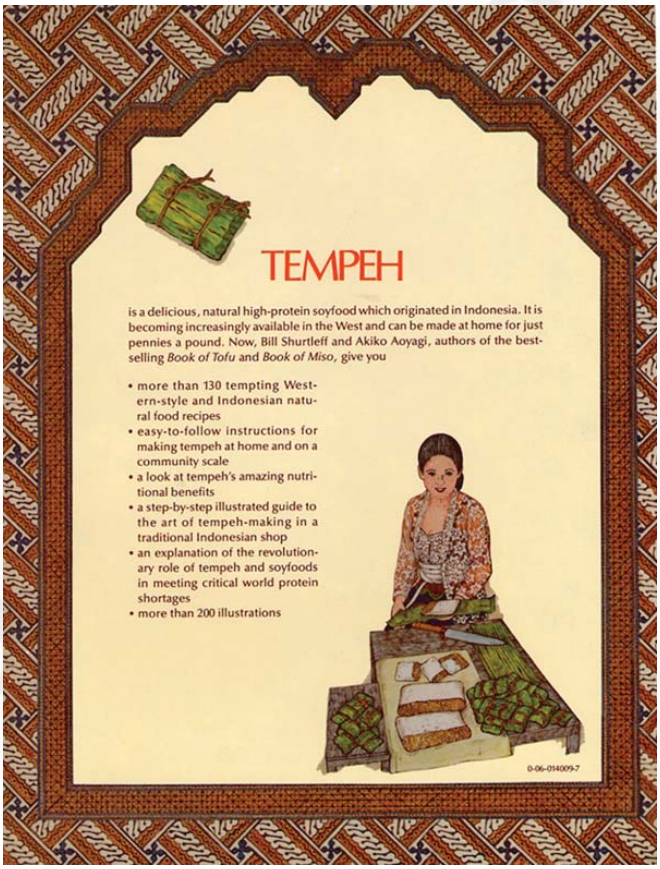
7.1 Graph: Loss of tempeh starter potency when stored at various temperatures and humidities. 7.2 Sporulated tempeh for starter in bread pan. 7.3 Dry-strainer spore extraction. 7.4 Sporulated rice, pressure cooker, and Mason jar method of making tempeh starter. 7.5 Picking leaves from a hibiscus tree for tempeh starter. 7.6 Arranging inoculated soybeans on hibiscus leaves. 7.7 Covering hibiscus leaf sandwiches in trays. 7.8 Hibiscus leaves for tempeh starter ready to use. 7.9 Hibiscus inoculum leaves on round tray. 7.10 Drying inoculum leaves in sun on roof. 7.11 Tying inoculum leaves under rafters to dry.

8.1 Flowchart for basic Indonesian soy tempeh method. 8.2. A small Indonesian tempeh shop (floor plan). 8.3 Floor plan of the large Oeben tempeh shop in Bandung, Java. 8.4 Flowchart for Malang tempeh.

A color photo shows a high-quality cake of tempeh sliced on a plate. Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

714. Shurtleff, William; Aoyagi, Akiko. 1979. The book of tempeh: A super soyfood from Indonesia. Professional hardcover edition. New York, NY: Harper & Row. 248 p. Illust. by Akiko Aoyagi Shurtleff. Index. July. 28 cm. [190 ref]





• ***Summary:*** A special cloth-bound professional edition of *The Book of Tempeh* prepared for libraries, commercial tempeh producers, microbiologists, students of Indonesian foods, and those who love fine books. In addition to the full contents of the paperback edition, it contains the following lengthy appendixes: B: Tempeh in Indonesia (an overview of the tempeh industry and market, including the number of shops by province, per capita consumption, etc.). C: The Varieties of Tempeh. D: Soybean Production and Traditional Soyfoods in Indonesia. E: The Microbiology & Chemistry of Tempeh Fermentation. H. Onchom or Ontjom. A Glossary of Indonesian Foods (the most extensive one available in English). Bibliography on Tempeh containing over 190 entries: Works on the world food crisis, works on tempeh cookery or Indonesian cuisine, scientific journal articles on tempeh, early Dutch- and German-language works on tempeh, Indonesian-language works about tempeh, key English-language works on microbiology, film and color slides on tempeh. Illustration of an Indonesian dancer. Expanded Index. A great deal of original research is contained in the extra 88 pages and 54 illustrations.

Appendix C, "The varieties of tempeh, states: "The many varieties of tempeh may be grouped into five basic types, according to the primary ingredient used: legumes, grains & soy, grains, presscake residues, and nonlegume seeds. Legume tempehs: Soy tempeh (*témpé kedelé or kedelai,* made from the seeds of *Glycine max*). Velvet-bean tempeh (*tempe benguk or tempe koro benguk,* made from the seeds of *Mucuna pruriens,* which are called *kara benguk* in Indonesian). Winged-bean tempeh (*tempe kecipir,* made from the seeds of *Psophocarpus tetragonolobus*). Leucaena tempeh (*tempe lamtoro or tempe mlandingan,* made from the seeds of *Leucena leucocephala*). Mung bean tempeh (*tempe kacang hijau,* made from the seeds of *Vigna radiata,* which are called *kachang hijau* in Indonesian). Broad-bean or fava-bean tempeh (*tempe kacang babi,* made from the seeds of *Vicia faba,* also called horse beans). Sesban-bean tempeh (*tempe turi,* made from the seeds of *Sesbania grandiflora*). Pigeon-pea tempeh (*tempe kacang iris,* made from the seeds of *Cajanus cajan*). Green-bean tempeh (*tempe kacang merah,* made from the seeds of *Phaseolus vulgaris,* which are called *kacang buncis* in Indonesian). Lima-bean tempeh (*tempe kara or tempe kara kratok,* made

from the seeds of *Phaseolus lunatus*). Lablab-bean tempeh (*tempe kara-kara or tempe koro wedus,* made from the seeds of *Lablab purpureus,* which is called hyacinth bean in the USA). Jack-bean tempeh (*tempe kara bedong or tempe kara pedang,* made from the seeds of some strains of *Canavalia ensiformis*). Lupin tempeh (developed in Australia, made from the seeds of the narrow-leafed sweet lupin (*Lupinus angustifolius*) or the Andean lupin (*Lupinus mutabilis*)). Cowpea or black-eyed pea tempeh (developed in West Africa and Thailand, made from the seeds of *Vigna unguiculata*). Note: Chickpeas (garbanzo beans), baby limas, and great northern beans have also been used to make tempeh.

Grain & soy tempehs: Wheat & soy tempeh, barley & soy tempeh, rice & soy tempeh, bulgur & soy tempeh. Grain tempehs: Barley, rice, wheat, oats, and rye have been used with good results.

Presscake tempehs: Okara tempeh (called *tempe gembus* in Central and East Java where it is most popular, and called *oncom hitam* in West Java where it is not widely used). Peanut presscake tempeh (called black onchom (*oncom hitam*) in the Bogor region of West Java where it is most widely consumed, or white onchom (*oncom putih*) in the Tasikmalaya region, or "tempeh from peanut presscake" (*tempe bungkil kacang*) in East Java). Coconut presscake tempeh (*tempe bongkrek, tempe bungkil kelapa, or tempe kapuk*) comes in several varieties and can be can be poisonous if the pathogenic aerobic bacterium *Pseudomonas cocovenenans* grows on it and produces either yellow-colored toxoflavin or the more toxic colorless bongkrek acid. Peanut- & coconut-presscake tempeh (*tempe menjes*). Mung-bean-presscake tempeh (*oncom hitam or oncom ampas kacang hijau*). Soy- & peanut-presscake tempeh. Defatted soy-meal tempeh.

Seed tempehs (nonleguminous): Rubberseed tempeh (*tempe kaloko*) is made from the seeds of the rubber tree (*Hevea brasiliemsis*). Okra tempeh. Sesame & soy tempeh. Tempeh extenders and adulterants: Okara, cassava, mung-bean presscake, soybean hulls, sweet potato, coconut- or peanut presscake, papaya. The stages of tempeh fermentation (underripe to overripe): Premature tempeh (*tempe koro*), mature tempeh, slightly overripe tempeh (*tempe semangit or tempe lanas*), overripe tempeh (*tempe busuk or tempe bosok*), rotten tempeh. Tempeh wrappers.

Appendix D: "Soybean production and traditional soyfoods in Indonesia" discusses: Soybean production in Indonesia, traditional Indonesian soyfoods: Kechap (*kecap / ketjap, incl. kecap manis*), taucho (*tauco or taoco*), okara onchom, sereh (*sere*), taokoan or takoa, tofu (*tahu*). Other nonfermented soyfoods: Soy sprouts (*taugé kedele*), yuba (*bungah tahu*), soymilk, roasted soybeans (*dele sangan, kedele sangrai*), roasted soy grits or full-fat flour (*bubuk kedele*), fresh green soybeans (*kedelai rebus*).

Note: This is the earliest English-language document seen (March. 2009) uses the word "taucho" (spelled in that way) to refer to Indonesian-style miso.

Appendix E: "The microbiology and chemistry of tempeh fermentation" discusses: What are fungi?, general characteristics of *Rhizopus* molds, *Rhizopus* species used to make tempeh, pure cultures versus mixed cultures, preparing soybeans for fermentation, requirements for mold growth, general changes during tempeh fermentation, changes in nutrients and digestibility, the finished tempeh, the advantages and disadvantages of tempeh fermentation, suggestions for further research.

Appendix H: "Onchom or ontjom" discusses: Introduction. The varieties of onchom (*onchom merah* or *onchom beureum*): Peanut-presscake onchom, okara onchom, soy onchom, coconut-presscake onchom. Making peanut-presscake onchom in a commercial shop. Making okara onchom in a commercial shop. The microbiology of onchom. Laboratory studies of onchom. Aflatoxins. Works on onchom and Neurospora. People connected with onchom and Neurospora. Continued. Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

715. Fiering, Steve. 1979. Re: Thanks for hospitality. Next Soycrafters conference. Tempeh equipment. Letter to William Shurtleff at New-Age Foods Study Center, July 11. 1 p. Typed, with signature on letterhead.
• ***Summary:*** Across the top of the letterhead is written "Organic Soy Products." "Thank you again for your hospitality. The evening with you and Akiko was one of the highlights of the trip for both Sue and myself. I came back to The Soy Plant with many new insights into the soy foods business and our shop in particular and my approach has changed quite a bit. I feel interested in being more businesslike and professional in my work...

"All plans are still go for the conference, I'm really quite excited... Please confirm my order for 30 *Book of Tempeh* and order 25 Ballantine *Book of Tofu."*

Gives the address and phone number of Kerry Sandford of Ann Arbor, Michigan, who is interested in making bean busters–a pedal-powered Corona mill for dehulling soybeans.

Gives details on the company's tempeh incubator and perforated plate. Address: The Soy Plant, 211 East Ann St., Ann Arbor, Michigan 48104. Phone: (313) 663-0500.

716. *Recorder* (*Greenfield, Massachusetts*).1979. Soybean revolution conquering American tastes. July 28. *

717. **Product Name:** Tempeh.
Manufacturer's Name: Farm Tempeh Shop.
Manufacturer's Address: 156 Drakes Lane, Summertown, TN 38483. Phone: 615-964-3574.
Date of Introduction: 1979. July.
New Product–Documentation: Shurtleff & Aoyagi. The Book of Tempeh. 1979 (July). p. 148-49. Contact Cynthia Bates, Louis Headrick, or Alexander Lyon; distributes frozen

tempeh; sells tempeh starter and dehulled cracked soybeans. Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Cynthia Bates.

718. Leviton, Richard. 1979. The soy delicatessen. *Soycraft* (*Greenfield, Massachusetts*) 1(1):12-18. Summer.
• ***Summary:*** Describes The Tofu Shop (Rochester, New York), The Soy Plant (Ann Arbor, Michigan), The Cow of China (Boulder, Colorado), and The Tofu Shop (Telluride, Colorado).

Photos taken at The Tofu Shop in Rochester show: Greg Weaver at the counter serving a woman (cover photo). The inside of the restaurant, including two women seated at a wooden table and the large menu on the wall in the back. A woman employee cutting vegetables in the kitchen. Another woman working in the kitchen. A close-up of the wooden menu on the back wall (with prices; * = organically grown), which offers: Deli: Tofu*, tempeh*, soy mayo, soysage, soy milk*. Salads: Deviled tofu, tempeh, tossed. Dips (with tofu): Onion, dill. Hot sandwiches: Tofu burger, tofelafel, sloppy joe tempeh, tempeh Reuben, temptation! Cold sandwiches: Deviled tofu, tempeh salad. Casseroles: Tofu-spinach pie, tofu Italiano. Soups: Miso, soup of the day. Sampler plate. Special of the week: Ginger garlic sauce over tofu, rice and sauteed vegetables. Desserts: Lemon cream pie, tofu carob-mint pie, chocolate-mint pie, gingerbread, peanut butter cookies. Drinks: Soymilk, herb tea*, vegetable juice*, apple cider, Bambu (a roasted grain coffee), banilla shake (with frozen bananas and soymilk), carobanana. The deli case at White Wave. The outside of The Cow of China.

Note 1. This is the earliest document seen (Feb. 2007) that mentions the use of frozen bananas to add thickness to a smoothie–a breakthrough idea.

"Matthew Schmit–proprietor of The Tofu Shop, in Telluride, Colorado, Juice Bar, Dining, Catering, Wholesale Kitchens, 'producers and suppliers of specialty foods for the western slope–operates a soy-based restaurant that seats about thirty people and has waiters and waitresses. The Restaurant, which opened in October 1977, and had gross sales last year of twenty thousand dollars, is open six days a week from 11:00 A.M. to 9:30 P.M. Matthew astonished me with the figure of one thousand dollars as the initial capital investment for this business, which now produces 250 pounds of tofu for weekly wholesale distribution in addition to the flourishing restaurant.

"The menu, which features a stunning photograph of Rocky Mountains rising out of a misty valley, and which they use as a promotional brochure, delineates the fare: Entrees (Stir-fried tofu, Rice & vegetables; Soy burgers, Tofu burgers, Okara burgers, Grilled tofu & vegetables in pita bread, Guacamole & tofu, Spicy tofu & rice filling with guacamole for burritos); Smoothies (Carob-honey soymilk with banana, Carrot sunny shake); Beverages (Miso broth, soymilk, [soy] whey); and Salads (Tofu & guacamole salad, okara salad, tofu & vegetable salad)." Matthew explains the okara salad and whey.

"Matthew and his associates regard the tofu and soyfoods as an entrance into an expanded food processing line for their local market, a move that will lessen their dependence on only one or two products. Believing that every community should have its own fresh tofu, Matthew adds that 'everyone develops their own business according to the nature of their community.'" During the holiday season, Matthew's community created an exotic recipe for "tofu turkey." "Chunks of tofu are seasoned and basted, often carved in the shape of turkeys, and baked for an entire day"–after which "they taste exactly like turkey."

Note 2. This is the English-language document seen (Jan. 2007) that contains the term "Okara burgers" (or "Okara burger"). Address: Sunrise Farm, 100 Heath Rd., Colrain, Massachusetts 01340.

719. Leviton, Richard. 1979. Opening speech. Paper presented at Second Annual Soycrafters' Conference. 6 p. Held 26-29 July 1979 at Hampshire College, Amherst, Massachusetts. Typed manuscript.
Address: 100 Heath Rd., Colrain, Massachusetts 01340.

720. Shurtleff, William. 1979. Soyfoods in America 1979: Progress, problems, challenges. Keynote paper presented at Second Annual Soycrafters Conference, Hampshire College, Amherst, Massachusetts. July 26. 14 p. Unpublished manuscript.
• ***Summary:*** The full text of this presentation has been transcribed. The major events of the past 12 months are reviewed. The key challenge is to build a strong Soycrafters Association. Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

721. Shurtleff, William. 1979. Report on trip to second annual meeting of Soycrafters Association of North America (Amherst College, Massachusetts, July 26-29), and subsequent visit to Rochester, New York. P.O. Box 234, Lafayette, CA 94549. 2 p. Aug. Unpublished manuscript.
• ***Summary:*** July 15–9:45. Akiko and I fly to New York City from Lafayette. The previous day our *Book of Tempeh* had arrived from Harper & Row, and we took it with us to the conference. Stay in a hotel near a park, with fear of being mugged or robbed in this unfriendly city.

We attend and I speak at Buckminster Fuller's World Games (about world hunger and world resources) in New York City. Have a nice talk there with Robert Rodale.

Akiko and I meet Uri Geller at his home / apartment–at his invitation, because he knows and admires our Book of Tofu; he is a very nice, healthy man with world-famous psychic abilities. He bends my house key before my eyes by psychic force, without touching it; I carry that useless house key on my key chain for years and show it to many people.

Uri also replicates a drawing I made of a stick figure standing with both hands held high under a rayed sun; he was sitting across the room and could not see what I had drawn.

I do about 3 live radio broadcasts for Gary Null (WBAI Natural Living) and visit his home for taping segments; he is a bachelor. Also do an evening program on soyfoods for Annemarie Colbin at her home. And we have dinner at The Cauldron (that makes tofu–and probably tofu cheesecake–we visit the kitchen) and Souen (which makes tofu cheesecake), both macrobiotic restaurants.

While in New York City, Akiko and I visit our editors at Harper & Row headquarters–many stories up in Manhattan.

July 22–Overnight at Ira and Kathy Leviton's home at Sunrise Farm, 100 Heath Road., Colrain, Massachusetts.

July 24? Visit Michael and Shelley Cohen's Tempeh Works, which is preparing to open in a gas station in Greenfield, Massachusetts (production officially began on Oct. 1). I take 3 pages of handwritten notes and many photos for our forthcoming book *Tempeh Production* (see p. 95-98). I first describe each piece of equipment in the shop and illustrate some, then describe the process (20 lb of dry beans makes 52 lb of tempeh), and finally draw a detailed floor plan of the shop. This was the first batch of tempeh Michael had ever made in this shop. He sold 200 lb of tempeh to the Soycrafters Conference later that week.

July 25. Our book *Tofu & Soymilk Production,* published by our New-Age Foods Study Center, arrives from the printer (Braun Brumfield) in Ann Arbor, Michigan. It is the first book we have self-published properly, and the first to contain an ISBN (our second, 0-933332-01-7) and an LCCN.

July 26-29 (Thurs. to Sun.) Second Annual Soycrafters Association of North America (SANA) conference at Hampshire College in Amherst, Massachusetts, organized and run by Ira / Richard Leviton. 230 people attend. It is Akiko's first SANA conference. A magnificent event. Also first issue of *Soyfoods* magazine out, published by Leviton. One evening there is a square dance. I recall Jon Lee of New England Soy Dairy being a superb square dancer. I meet angry Paul Duchesne. Steve Earle from San Jirushi gives a wooden speech on the history of his company and the tamari they make.

July 30-31. After the conference, with Richard Leviton driving and Jeremiah Ridenour on board, we visit The Tofu Shop, a soy deli at 686 Monroe Ave., Rochester, New York, founded by Andy Schecter, Greg Weaver, and Norman Holland. Very interesting. Ira takes lots of photos for an article in *Soyfoods* magazine. One nice one shows Akiko and Jeremiah Ridenour seated in the Deli at a table which is loaded with soyfoods dishes ready to eat.

Will in Rochester, Shurtleff presented a lecture and slide show to 150 people at the Eisenhart Auditorium in the Rochester Museum and Science Center; it was sponsored by The Tofu Shop.

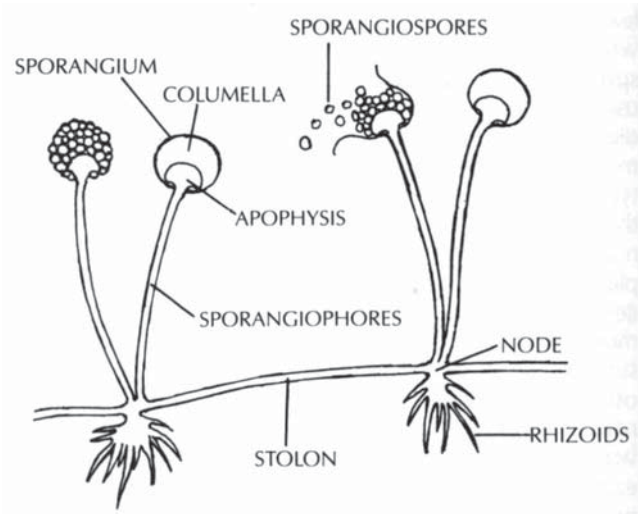
Aug. 2–We arrive back in Lafayette. Address: New-age Foods Study Center, Lafayette, California.

722. Shurtleff, William; Aoyagi, Akiko. 1979. The book of tempeh: A super soyfood from Indonesia. Professional hardcover edition (Continued). New York, NY: Harper & Row. 248 p. Illust. by Akiko Aoyagi Shurtleff. Index. July. 28 cm. [190 ref]

• ***Summary:*** Continued: Numbered figures (line drawings unless otherwise stated. The capital letter before the decimal refers to the appendix number). B.1 Table: Tempeh shops in Indonesia by province: Home-industry scale. B.2 Table: Relative frequency of tempeh consumption in Indonesia (by province). B.3 Carrying tempeh to market in Java using a shoulder pole and trays stacked on two baskets. B.4 Cost of one day's supply of protein in Indonesia.

C.1 Table: Edible grain legumes. C.2 Map: Distribution of legumes in southeast Asia. C.3 Winged bean, showing leaves, pods, flowers and beans. C.4 Leucaena leaves and pods (*peté china*). C.5 Reduction in bongkrek toxicity from bongkrek acid during fermentation (Ko 1977). Okra. Packets of tempeh, ready to sell, wrapped in leaves and tied. A large soybean, with hilum showing.

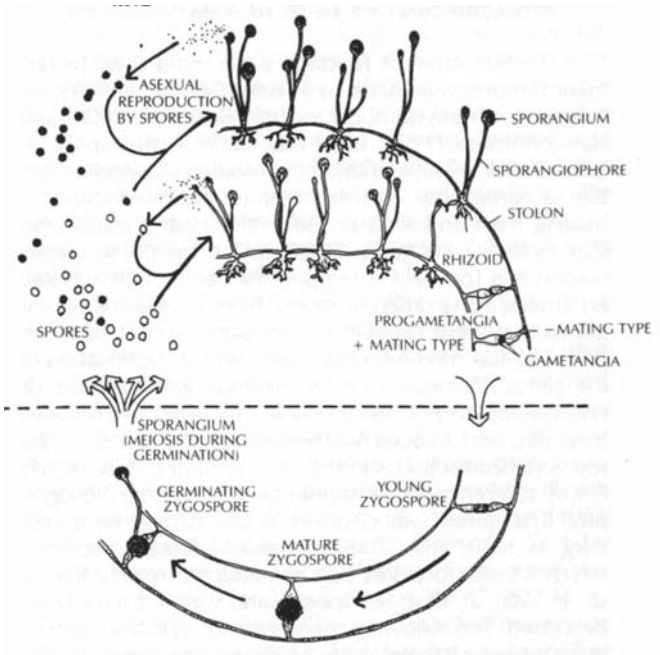
D.1 Table: Soybean production in Indonesia (1950-1976). D.2 Table: Major Indonesian food crops, D.3 Table: Indonesian soybean production and yields (by province). D.4 Map: Major soybean producing districts in Java (1976; most are in East Java, led by Jemper and Pasuruan). Table: Daily per capita consumption of tempeh (by province, led by Central Java, then West Nusa Tenggara, Yogyakarta, and East Java). Table: Percent of dietary protein supplied by major food categories (led by cereal grains, then fish, nonlegume vegetables, and soy products). Table: Percentage of dietary protein supplied by soy products (by province, led by Central Java, then East Java, Yogyakarta, and West Java). D.5 Table: Statistics on production and consumption of basic Indonesian soyfoods (led by tempeh, then tofu, kechap, taucho). D.6 Star anise. Grinding soybeans for tofu using traditional push-pull stone mills. Pouring soy curds into cloth-lined forming box.



Javanese shadow puppet (*wayang kulit*).

Table: Classification of *Rhizopus oligosporus.* E.1 Two stages in the germination of a spore (after 1½ and 10 hours). E.2 Two successive views of hyphal tip growth at half-hour intervals (previous page).

E.3 Rhizopus oligosporus (Frazier 1957, showing sporangium, columella, apophysis, sporangiophores, stolon, sporangiospores, node, rhizoid). E.4 *Rhizopus stolonifer.* A. Columella and attached spores. B. Collapsed (invaginated) columella (Webster 1970).



E.5 Life cycle of *Rhizopus* (Raven and Everet 1976). E.6 Graph: Changes in tempeh oil and moisture content during fermentation (Sudarmadji 1977). E.7 Graph: Three phases of tempeh fermentation (rapid, transition, and deterioration; Sudarmadji 1977). E.8 Graph: Changes occurring during tempeh fermentation (temperature, soluble solids, pH, soluble nitrogen, and reducing solids; Steinkraus et al. 1960). E.9 Graph: Yields of tempeh and of solids and different stages of the fermentation process (100 gm of whole dry soybeans yield 173 gm of tempeh on average; Steinkraus 1960; Murata 1967). E.10 Table: Loss of solids and protein during tempeh fermentation. E.11 Table: Percentage changes in composition of key essential amino acids during tempeh fermentation. E.12 Table: PER (protein efficiency ratio, a measure of protein quality for humans) changes during tempeh fermentation. E.13 Graph: Changes in concentration of three carbohydrates during tempeh fermentation (sucrose, stachyose, and raffinose, all decrease; Shallenberger et al. 1976). E.14 Table: Amount of B-complex vitamins in 100 gm of tempeh vs. 100 gm unfermented soybeans (all increase in tempeh except thiamine {vitamin B-1}). Changes in peroxide value and TBA value tempeh and soy flour during storage at 37ºC (98.6ºF; both rise rapidly in soybeans, but stay near zero and stable for tempeh; Watanabe et al. 1971).

H.1 Table: Foods known in Indonesia as "onchom" (made from peanuts or soybeans). H.2 Selling onchom in a Javanese market. H.3 Graph: Changes in soy onchom during fermentation (temperature, soluble solids, pH, soluble nitrogen, and reducing solids; Steinkraus et al. 1965). H.4 Flowchart for preparation of peanut presscake onchom. Unnumbered illustrations show 12 steps in the process of making onchom in a commercial shop in Indonesia. Neurospora: Budding conidia, conidiophore. H.5 Graph: Reduction in onchom aflatoxin during fermentation with *Neurospora* (Ko 1974). A thermometer, showing both Fahrenheit and Centigrade.

Glossary of Indonesian foods, spices, etc. Agar. Amaranth, Indonesian. Apem. Arak. Aren sugar. Aromatic ginger. Asam. Bananas (pisang). Basil. Bawang merah. Bawang putih. Bayam. Bean sprouts. Belimbing. Blachan. Brem. Bumbu. Candlenuts (kemiri). Carambola (belimbing). Cassava. Chabé. Chayoté. Chilies (red, green, fiery dwarf). Two-page spread showing illustrations of Indonesian natural foods. Choko. Cirus leaves. Cloves. Coconut. Coconut, grated. Coconut milk and cream. Coconut oil. Coconut water. Coriander. Cumin. Dageh. Daun asam. Daun jeruk purut. Daun salam. Daun seré. Daun-so. Durian. Fermented fish. Fermented fish sauce. Fruits. Galangal, greater. Galangal, lesser. Gingerroot. Indonesian amaranth. Jackfruit. Jaggery. Jinten or jintan. Kangkung leaves. Kecap (kecap) or ketjap. Kemangi leaves. Kemiri. Kenchur root. Ketjap. Ketumbar. Kluwak. Koji. Kolang-kaling. Krupuk. Kunyit. Labu siam. Laos root. Lemongrass. Lime leaves. Lombok. Melinjo leaves. Mochi, Indonesian (*uli*). Mung-bean sprouts. Nutmeg. Okara. Onchom or ontjom. Palm sugar. Pandanus leaf. Pasta. Pepper. Peté beans. Petis. Peuyeum. Prawn paste. Putjung nuts. Ragi. Rempeyek. Rice. Salam leaf. Sambals. Santan, Sayur asin. Seré or serai. Shallots. Shrimp crisps. Shrimp paste. Soursop. Soy sauce, Indonesian. Star fruit. Swamp cabbage. Tahu. Tamarind. Taocho, taoco, taoco, or taotjo. Taogé or taugé. Tape. Tapioca. Taucho or tauco. Terasi. Tofu. Trasi. Tuak or tuwak. Turmeric. Winged bean. Note on monosodium glutamate. A woman holding a tray of leaf-wrapped tempeh in Surinam. Photo of Shurtleff and Aoyagi on inside rear dust jacket. Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

723. *Soycraft* (*Greenfield, Massachusetts*).1979. Greenfield, Massachusetts: Tempeh Works. 1(1):9. Summer.

• ***Summary:*** Michael Cohen is now opening what promises to be one of the largest volume tempeh shops in the U.S., with a capacity of 3,000 lb/week in the 1,200 square foot workshop. He intends to have the New England Soy Dairy handle the bulk of his distribution.

Note: This is the earliest document seen (Sept. 2011) concerning The Tempeh Works.

724. Suharni, Th. Tri. 1979. Pemilihan bakteri yang berpengaruh dalam pembentukan growth factor pada fermentasi tempe [Selections of bacteria that affect growth factor formation during tempeh fermentation]. Presented at Kongres Nasional Biokimia IV. Held 10-12 July 1979 at Bandung, Indonesia. [Ind]*

725. Zamora, Regalado G.; Veum, Trygve L. 1979. The nutritive value of dehulled soybeans fermented with *Aspergillus oryzae* or *Rhizopus oligosporus* as evaluated by rats. *J. of Nutrition* 109(7):1333-39. July. [23 ref]
• ***Summary:*** The diets containing heated dehulled soybeans fermented with either *Aspergillus oryzae* or *Rhizopus oligosporus* had a greater apparent biological value and apparent net protein utilization when fed to rats compared to diets containing heated unfermented dehulled soybeans. In two experiments, a 30% and a 12% improvement in average daily weight gain by the rats was observed due to fermentation of the soybeans. Address: 110 Animal Science Research Center, Univ. of Missouri, Columbia, Missouri 65211.

726. [Adams, Ruth]. 1979. How you can use soybeans. *Better Nutrition.* July. p. 22-23, 38, 40.
• ***Summary:*** A good introduction to tempeh and to food uses of soybean with 4 photos and recipes for Soy stuffed peppers (with ¼ cup soy grits) and Baked soybeans (with 2 cups dry soybeans).

It begins: "In the orient soybeans are used in 400 different ways, according to Charles B. Heiser in *Seed to Civilization."* "Soy protein is of very high quality, its amino acid content almost equalling that of eggs and meat."

Tempeh is a staple food throughout Indonesia with its 100 million people; it is made in hundreds of thousands of homes and in many small tempeh shops. "More than half of Indonesia's annual soybean crop is used for making tempeh." Gives a brief description of how Indonesians make tempeh.

727. O'Connell, Jean. 1979. Protein through the soybean: Soycrafters' new food. *Morning Union* (*The*) (*Springfield, Massachusetts*). Aug. 1. p. 22, 27.
• ***Summary:*** The Soycrafters Association of North America held its first national conference at Hampshire College this past weekend. Some 230 people attended the conference. Most were under 40, and most were looking quite fit, certainly not fat. William Shurtleff gave the conference keynote address. A large illustration by Akiko Aoyagi shows Richard Leviton stirring nigari into hot soymilk to make tofu. Address: Union Food Editor.

728. Redrupp, Jackie. 1979. 'We must return to getting protein from the earth.' *Democrat and Chronicle* (*Rochester, New York*). Aug. 4. p. 12C. [2 ref]
• ***Summary:*** About the work of William Shurtleff and Akiko Aoyagi with tempeh. A photo shows Akiko standing by a skillet with a freshly-made tempeh burger. The Shurtleffs are on the East Coast to attend the second annual Soycrafters of North America Conference at Hampshire College, Amherst, Massachusetts; it was attended by about 230 people. Greg Weaver, a partner in The Tofu Shop, 686 Monroe Avenue, the soy delicatessen of the Northern Soy Tofu Company of Rochester, attended the conference and invited Shurtleff to Rochester to sample the deli's selection of soyfoods and to share ideas about the production and marketing of tempeh. Contains 3 favorite recipes from *The Book of Tempeh.* Address: D&C Food Writer.

729. Gump, Debbie. 1979. Tempeh, Tempeh. Don't turn up your nose–It doesn't taste half-bad and the protein story on tempeh is really good news. *Times-Union* (*Rochester, New York*). Aug. 7. p. 1C, 2C, 4C.
• ***Summary:*** Based on a lecture presented last week by William Shurtleff to 150 people at the Eisenhart Auditorium in the Rochester Museum and Science Center. Sponsored by The Tofu Shop, 686 Monroe Ave., which sells Sloppy Joe Tempehs, Tempeh Reubens, and Temptations. The article contains recipes for Homemade soy tempeh, Seasoned crisp tempeh, and Tempeh Reuben sandwich. Address: Food editor.

730. *Recorder* (*Greenfield, Massachusetts*).1979. Our growth industry [soyfoods]. Aug. 8. p. A6.
• ***Summary:*** This editorial states that the New England Soy Dairy has moved into the former Bete Fog Nozzle building on Wells Street and plans to add 1,200 square feet for refrigeration. New equipment will help maintain production of 25,000 pounds of tofu weekly.

Michael Cohen is opening The Tempeh Works on French King Highway; he hopes it will be one of the largest volume tempeh businesses in the United States. And Lama Trading Co. [formerly Llama, Toucan & Crow], which moved to Greenfield from Brattleboro, Vermont, is growing as a major soyfood-natural foods distributor throughout the Northeast.

"To help coordinate and build the industry, Richard Leviton and David Kilroy have formed the Soycrafters Association of North America and are publishing a slick quarterly magazine called *Soycraft.* Both use the Wells Street address. More than 200 industry representatives gathered in Amherst recently for a national conference organized primarily under Mr. Leviton's direction."

731. *Valley News & Valley Green Sheet* (*Van Nuys, California*).1979. From the makers of tofu and miso, a new tempeh-tation–The Joy of Soy: Treat your body like a temple with tempeh. Aug. 16. *

732. New-age Foods Study Center. 1979. Catalog of

publications & materials by William Shurtleff & Akiko Aoyagi [mail order]. P.O. Box 234, Lafayette, CA 94549. 2 p. Aug. 24.
• ***Summary:*** This single page leaflet, 8½ by 14 inches, is printed on both sides with brown and teal blue ink on white Classic Laid paper. The Japanese-style logo is waves and a moon in a circle. The following items are available: The Book of Tofu (Ballantine $2.95). Tofu & Soymilk Production ($17.95). The Book of Tofu: Food for Mankind (Autumn Press $7.95). The Book of Tempeh (paperback and professional hardcover editions). Tempeh Production ($13.95). The Book of Miso (Autumn Press). Miso Production. Pamphlets (5). Tofu kit. Color slide sets. Soycraft magazine (and information about Soycrafters Assoc.). Catalogs of tofu & soymilk equipment (Bean Machines). Natural nigari. Tempeh starter (contact Farm Foods). Koji & koji starter. Pressing sacks & straining bags. The Book of Kudzu. A large sidebar is titled "New-Age Foods Study Center." Address: Lafayette, California. Phone: 415-283-3161.

733. New-age Foods Study Center. 1979. Soyfoods tour of the Pacific Northwest (Itinerary, Aug. 27–Sept. 6). P.O. Box 234, Lafayette, CA 94549. 1 p. Aug. Unpublished manuscript.
• ***Summary:*** On this tour Shurtleff and Aoyagi conducted a number of public programs on soyfoods (tofu, tempeh, miso, etc.), showing color slides and sampling foods. They also did research for their forthcoming book *Tempeh Production* and held numerous media interviews. In California they visited Bean Machines, Ramagiri (home of Laurel's Kitchen), Farallones Inst. (Donna Calvaud). In Oregon, Surata Soyfoods (Benjamin Hills), Blair Island (Toby Alves), Sunbow Farm (Mia Posner), and *Rain* magazine. In Washington, Island Spring (Luke Lukoskie). Address: Lafayette, California.

734. *Vegetarian Times.*1979. Tempeh: An important soyfood for the future. No. 32. July/Aug. p. 60-61. [1 ref]
• ***Summary:*** Adapted from *The Book of Tempeh* by Shurtleff & Aoyagi.

735. Demos, Steve. 1979. Re: Making tempeh at White Wave, Inc. Letter to William Shurtleff at New-Age Foods Study Center, Sept. 2. 3 p. Handwritten.
• ***Summary:*** "Dear William and Akiko, I'm sorry for not having written sooner. I've meant to, however I've been extremely busy here at White Wave. Most of my time is taken up in tofu production, as we've been producing quite a lot lately.

"At the present moment, tempeh is a very minor product at White Wave. I make only two batches a week at 80 10 oz packages per batch. The growth of tempeh consumption in this area is very slow, as few people know about it. However we are trying to turn more people on to it, and have plans to expand our production, perhaps this winter.

"I am very interested in your new Book of Tempeh. I haven't read much of it, as yet, but plan to go through it thoroughly I'll also be interested in obtaining a copy of your book on Tempeh Production.

"The following is a description of our current mode of tempeh production. Please keep in mind it is a very small operation, and that the same equipment is also used in tofu production." The rest of the letter is that description. Address: Boulder, Colorado.

736. Krieger, Verena. 1979. Re: Thoughts on returning to Switzerland. Letter to William Shurtleff at Soyfoods Center, Sept. 17. 1 p. Typed, with signature.
• ***Summary:*** "Dear Bill, It has finally become possible for me to return to my native Switzerland (just as you told me two years ago at the first national 'soyfoods conference' [Held July 28-30, 1978, in Ann Arbor, Michigan]). I am determined to continue my work as a natural foods cook, teacher and possibly writer... What would be new here is the contribution from the Far East, especially soyfoods and seaweeds. It may take a long time for these products to spread in Europe, and especially in Switzerland, since many popular-traditional and cultural values are so much connected with cattle raising. Also, soybeans grow poorly here... Anyway, these were considerations I did not have to face, while I was using pounds and pounds of tofu, tempeh, miso, etc. in our restaurant in Chicago, and I feel I have a lot to learn and rethink at this point."

Note: In 1978-79 Verena worked at the vegetarian, natural-foods restaurant "It's Natural," owned by Brian Schaefer, at 502 & 514 Main St., Evanston, Illinois 60202 (a suburb of Chicago). Address: Frauenfeld, Switzerland. Phone: 041-22 50 34.

737. Yamamoto, Toyo. 1979. The soybean: Potential to feed the world. *Oregon Herald.* Sept. 17. p. 5, 8. [3 ref]
• ***Summary:*** An interview with William Shurtleff about soyfoods. "On Saturday night of the Labor Day weekend about 70 people cozily seated themselves at the First Methodist Church in downtown Salem [Oregon] to hear a lecture/slide show by author William Shurtleff. He discussed soybean foods, such as tempeh, tofu and miso–most of which are now available at natural foods stores in the mid-valley." The program was sponsored by Heliotrope Natural Foods in Salem. Address: Salem, Oregon.

738. *Journal American* (*Kirkland, Washington*).1979. Some say protein foods of the future are tofu and tempeh. Sept. 26. *
• ***Summary:*** About Island Spring (Vashon, Washington).

739. Esko, Wendy. 1979. Introducing macrobiotic cooking.

Tokyo: Japan Publications. 144 p. Foreword by Aveline Kushi. Preface by Edward Esko (both written June 1978). Illust. by Bonnie Harris. Index. 26 cm. Reprinted in 2006 by Square One Publishers (Long Island, NY, 240 p.).
• ***Summary:*** The author was introduced to macrobiotics in upstate New York in about 1971. This is her first book on macrobiotics. It was originally published under the title of *An Introduction to Macrobiotic Cooking* by the East West Foundation, 17 Station Street, Brookline, Massachusetts 02146. Though copyrighted in 1978, the first edition appeared in Sept. 1979. The fourth printing was May 1981.

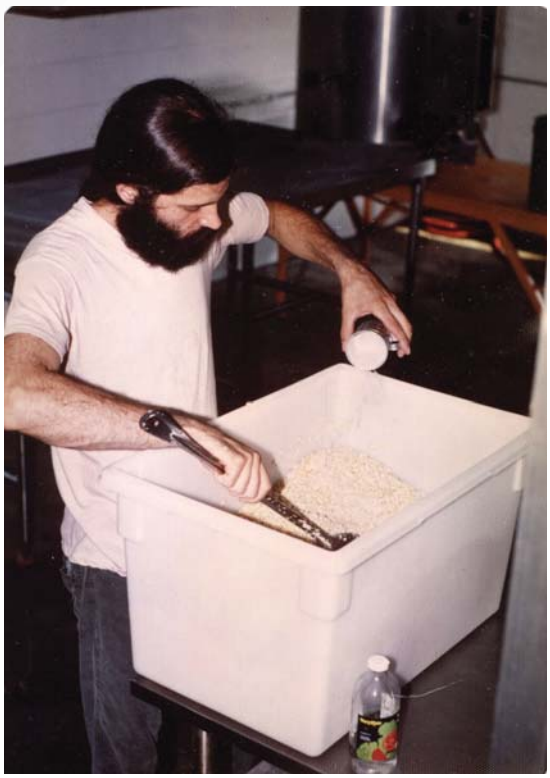
The chapter titled "Beans including tofu and natto" gives descriptions of and recipes for making: Japanese black beans (black soybeans, p. 54; "These beans are therapeutic for the sexual organs and will relieve an overly yang condition caused by too much animal food or fish.") Soybeans (p. 54. "These beans are the most yin of the bean family... It is recommended that soybeans be eaten only occasionally as a separate side dish. Because they are very yin, they should be cooked with yang vegetables such as lotus root or burdock, for balance. The best way to eat soybeans is in the form of *tofu, okara, natto, tempeh,* and, of course, miso and tamari.") Tofu, and Homemade tofu (curded with nigari, p. 54-55). Okara (p. 55-56). Tofu and corn. Tofu, onions and water cress. Dried tofu (dried-frozen, p. 57). Yuba (dried soy milk; how to make at home). Vegetables and dried soy milk (p. 57). Ganmodoki (Tofu and jinenjo patties, p. 57-58). Natto (description and how to make at home, p. 58-59).

Other soy-related recipes include: Tofu soup (p. 68). Miso soup (p. 69-70, basic, or quick). Watercress miso soup (p. 71). Daikon and sweet rice dumpling soup (with miso). Chinese cabbage and tofu miso soup (p. 71). Aveline Kushi's miso stuffed lotus root (p. 86). Tofu dressing (p. 91). Miso-tahini spread (p. 92). Miso-sesame spread (p. 92). Miso-lemon sauce (p. 93). Tofu dip (p. 93). Miso with scallions (p. 95). Tamari (description, p. 95). Tekka (made with Hatcho miso, p. 96). Miso pickles (p. 100-01). Tamari pickles (p. 101). Tofu plaster (p. 130). Ume-Sho-Kuzu drink (with umeboshi, tamari and kuzu, p. 131). Ume-sho-bancha (with tamari, p. 131). Use of tamari, miso, and tekka (p. 132).

Also includes instructions for making amasake at home (p. 116; it is a natural sweetener made from fermented sweet rice), and a recipe for Amasake bread (p. 107), instructions for making seitan at home (p. 46-47, using 3½ lb of hard spring or hard winter whole wheat flour; spring wheat flour produces a much softer texture of seitan than the winter variety), and recipes for seitan stew, seitan-barley soup, sauteed vegetables and seitan, stuffed cabbage with seitan, and seitan croquettes (p. 47-49), plus recipes for leftover seitan (p. 125). Address: East West Foundation, near Boston/ Cambridge, Massachusetts.

740. **Product Name:** Tempeh.
Manufacturer's Name: Tempeh Works (The).
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01301. Phone: 413-772-0991.
Date of Introduction: 1979. September.
Ingredients: Organically grown soybeans, water, Rhizopus culture.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated.
Nutrition: Per 4 oz.: Calories 182, protein 24 gm, carbohydrate 9 gm, fat 6 gm, sodium 11 mg, iron 3 gm. Percentage of RDA: Vitamin B-12 160%, Protein 40%, Iron 20%, calcium 10%.

New Product–Documentation: Visit to plant by Shurtleff and Aoyagi. 1979. July. They took many photos of the plant and production process, which appeared as illustrations (line



drawings) and a description of process in their book *Tempeh Production,* published in March 1980.

Note: This is the earliest known commercial soy product or tempeh product made by the Tempeh Works.

Soycraft. 1979. Summer. p. 9-10. "Greenfield, Massachusetts: Tempeh Works." Describes "what proposes to be one of the largest volume tempeh shops in the United States." Details of the process are given, but no photos. The company, founded by Michael Cohen, plans to open in mid-July.

Leviton. 1980. Soycraft. Winter. p. 36-41. "The Tempeh Works: The soyfood with culture." Contains many photos and a detailed description of the process.

Ad in *New Age.* 1980. July. p. 69. "Tempeh. The super soyfood! Made from organically grown soybeans... Tempeh, an exciting new taste in vegetarian eating, is found in your natural foods market and coop. Wholesale inquiries welcome!"

Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Michael Cohen. Poster. Back to back. 5.5 by 8.5 inches. One color. A photo shows the staff. "Tempeh Works tempeh. Makes delicious entrees in minutes."

Ad (1/3 page) in *East West Journal.* 1981. Aug. p. 63. "Tempeh: The soyfoods with culture."The ad consists largely of the tempeh label. "Ingredients: Organically grown soybeans, water, Rhizopus culture."

Label. 1982, undated. 5 by 6 inches. Brown on tan. Ad in New Age. 1982. April. p. 21. "Tempeh. The Soyfood with Culture."

Talk with Michael Cohen. 1982. June 30. His weekly tempeh production peaked at 6,800 lb in Sept. 1981; it stayed at this level for 3 weeks. Then in early 1982 five competitors appeared in his market area; his production dropped by 35%. Now sales are rebounding, having reached 4,000 to 4,500 lb/week during June 1982. In the winter of 1981-82 he expanded his incubation space by adding 650 square feet with trailers.

Talk with Michael Cohen. 1984. Jan. Their tempeh production averages 5,500 lb/week, maximum 7,000 lb/week. Their best-seller is soy tempeh, followed by 3-grain, then by non-fried tempeh burgers. 95% of their tempeh is sold refrigerated and 5% frozen. A proprietary steaming method gives a 30-40 day shelf life refrigerated.

Shurtleff & Aoyagi. 1985. The Book of Tempeh. 2nd ed. p. 152. "America's first bona fide commercial tempeh company, having its own building and specializing in tempeh, was The Tempeh Works, started in 1979."

741. **Product Name:** Tempeh.
Manufacturer's Name: Tofu Factory (The).
Manufacturer's Address: Route 1, Box 216, St. Ignatius, MT 59865. Phone: 406-745-4538.
Date of Introduction: 1979. September.
New Product–Documentation: Letter/Order from Gerald Minsk of The Tofu Factory (formerly Swan Gardens; Box 216 Rt. 1, St. Ignatius, Montana 59865). 1979. Sept. 28. He orders the books *Tofu & Soymilk Production, The Book of Tempeh, The Book of Tempeh, Vol. II.*

Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Brenda Wood; Soyfoods Center Computerized Mailing List. 1983. June 20. Brenda's name is now Brenda Adley. She and Gerald Minsk also make tofu.

742. Kreck, Carol. 1979. Tofu is 'remarkable.' *Denver Post.* Oct. 17.
• ***Summary:*** A profile of Steve Demos and White Wave. "Two years ago last week, White Wave started in a small retail space making about 300 pounds of tofu a week. Now the company has a factory at 3867 Walnut St., produces between 5,000 and 7,000 pounds of tofu a week, and operates a vegetarian delicatessen, the Cow of China, at 1738 Pearl St. in Boulder. The Cow of China also provides a place for White Wave to test the market for their other products (Polar Bean, Tempeh, etc.) Their tofu is sold at health food stores and King Soopers at $0.85 for a 14-ounce package." A photo shows George Hamel pressing the long wooden arm of the soymilk press. Address: Colorado.

743. Shurtleff, William; Aoyagi, Akiko. 1979. How to make tempeh at home. *Vegetarian Times* No. 33. Sept/Oct. p. 26-29.
• ***Summary:*** A basic description (easy-to-follow directions) in recipe format with 13 illustrations (by Akiko Aoyagi), plus a description of three types of finished tempeh (Good, unfinished, and inedible) and troubleshooting tips. Address: Lafayette, California.

744. *League for International Food Education* (*LIFE*) *Newsletter.*1979. Some recent references on fermented foods. Nov. 1. 10 p. [60 ref]
• ***Summary:*** Contents: Books (11 books, incl. 7 on fermented soyfoods by Shurtleff & Aoyagi). Articles: Tempeh (12), peanuts (3), miso (4), miscellaneous products (30). Address: 1126 Sixteenth St., N.W., Room 404, Washington, DC 20036.

745. *Recorder* (*Greenfield, Massachusetts*).1979. Soybean cake [tempeh] makers move to new location. Nov. 2. *
• ***Summary:*** About the Tempeh Works and Michael Cohen.

746. Beardsley, Nancy. 1979. Tempeh beefs up meatless diet. *Seattle Post-Intelligencer.* Nov. 28. p. D1. [1 ref]
• ***Summary:*** A nice introduction to tempeh with recipes for Tempeh Lasagne, Seasoned Crisp Tempeh, and Steam-Fry Tempeh. William Shurtleff, Akiko Aoyagi, and Luke Lukoskie visited this newspaper to promote tempeh. Photos show (1) Shurtleff and Aoyagi with tempeh recipes, their *Book of Tempeh,* and a package of Island Spring Tempeh;

(2) The inside of the Island Spring soyfoods plant. Address: Staff home economist, Washington.

747. Hannigan, Kevin J. 1979. Tempeh...a super soy. *Food Engineering* 51(11):11. Nov.
• ***Summary:*** Tempeh has endless possibilities as an engineered food.

748. Leviton, Richard; Kilroy, David. 1979. Media bibliography. Greenfield, Massachusetts: Soycrafters Association of North America. 16 p. Nov. Unpublished manuscript. 28 cm. [243 ref]
• ***Summary:*** Each page of this soyfoods (mostly tofu) bibliography is on letterhead that reads: *Soycraft: The Journal of the Soycrafters Association of North America.* Most of the articles cited were published in 1979, between May and November. However 9 articles were published from June 1976 to Feb. 1979. It is divided into 5 sections: (1) Profiles of individual soycraft companies (3 p., 38 ref). (2) Soybean and soyfoods industry (2 p., 32 ref). (3) Sanitation and soyfoods production (2 p., 18 ref). (4) Local and regional general accounts of soyfoods (8 p., 140 ref) (5) National and mass circulation coverage (1 p., 15 ref).

Note 1. How did Richard Leviton collect all these references? In an interview (2005 March 2) he recalls that New England Soy Dairy (of which he was a co-owner and where he worked) subscribed to a clipping service on the subject of soyfoods (tofu, tempeh, food uses of soybeans, soybean oil, soy based infant formula, etc.) starting in about May 1979.

Note 2. It is quite remarkable to see the level of nationwide media coverage that tofu received as early as 1979. Leviton's tireless and effective activities (organized national conference in July 1979 in Amherst, Massachusetts, wrote and published *Soycraft* magazine, and perhaps did a news release) may well have been the main reason for this positive media coverage. As of March 2005, of the 225 food-related references in this bibliography, Soyfoods Center had not seen 161, or 71.6%. Address: 305 Wells St., Greenfield, Massachusetts 01301. Phone: 413-774-5480.

749. Rodale, Robert. 1979. The amazing three-way bean. *Organic Gardening.* Nov. p. 28-35.
• ***Summary:*** Some people see soybeans as just another bean. Soycrafters see in soybeans the potential for a natural, healthful and even profitable new way of life. And one doctor even sees in soybeans a possible way of controlling cancer.

After discussing tofu and tempeh, and why one might want to become a soycrafter, Rodale continues: "What may really cause soycraft to boom, though, is new information that the eating of soy foods may give people a potent weapon in the control of cancer. Walter Troll, Ph.D., a researcher at New York University Medical Center, is about to publish details of experiments which show that experimental animals fed soybeans were able to resist the effects of chemical carcinogens (cancer-causing substances). It is already known that women living in countries where soybeans and other seeds are important sources of protein have less breast cancer. Now there is laboratory evidence showing why. Substances called protease inhibitors [or trypsin inhibitors] are the key."

"If you are interested in tofu or tempeh-making as a business, you may want to check out *Soycraft* magazine. The address is 158 Main Street #3, Greenfield, Massachusetts 01301. A one-year subscription–four issues–is $15." Photos show: Robert Rodale. Tofu being made at the New England Soy Dairy.

750. McBride, Gordon E. 1979. Re: How to make tempeh starter culture. Letter to William Shurtleff at New-Age Foods Study Center, Dec. 21. 1 p. Handwritten.
• ***Summary:*** Includes 6 photos with a description of each. McBride, who likes tempeh, grows the living tempeh starter culture on rice in 250 ml Erlenmeyer flasks, and keeps it on PDA slants. As sold, the starter is 3 inches in diameter and 1 inch thick. Address: PhD, Manager, Living Lab., Ann Arbor Biological Center, Inc., 6780 Jackson Rd., Ann Arbor, Michigan 48103. Phone: 313-761-8600.

751. Girija Bai, R.; Ramachandra Rao, T.N.; Prabha, T.N.; Sreedharan, V.P.; Sreedhara, N. 1979. Studies on tempeh. II. Nutritive value of tempeh and its supplementary value to rice diets. *Indian Food Packer* 33(6):26-33. Nov/Dec. [23 ref. Eng]
• ***Summary:*** Tempeh prepared from a mixture of equal parts (on a dry weight basis) groundnuts and soybeans, was compared with soybean tempeh with regard to: (1) effect of supplementation with the limiting amino acids methionine, lysine, and tryptophan; (2) supplementary value with rice diets to rats; (3) Intestinal gas forming properties. Address: Central Food Technological Research Inst. (CFTRI), Mysore-570013, India.

752. Obis, Clare Barrett. 1979. Vegetarian nutrition for pregnant and breast-feeding women. *Vegetarian Times* No. 34. Nov/Dec. p. 42, 44-46.
• ***Summary:*** Describes how to meet the special nutritional needs of pregnancy with a well-balanced vegetarian diet using vegetarian and vegan sources of nutrients. Contents: Introduction. Protein. Iron. Vitamin D. Vitamin A. Vitamin C. Vitamin B-6 (riboflavin). Vitamin B-12. Calcium. Supplements. Final words. Resources.

753. Shurtleff, William; Aoyagi, Akiko. 1979. American style tempeh: Our favorite recipes. *Vegetarian Times* No. 34. Nov/Dec. p. 34-35.
• ***Summary:*** Contains 9 recipes excerpted from *The Book of Tempeh.* Address: Lafayette, California.

754. Soy Plant (The). 1979. Tofu gratuity (Leaflet). Ann Arbor, Michigan. 1 p. Undated. 11 x 9 cm.
• ***Summary:*** This tiny, hand-lettered "take one" reads: "Gift certificates may be purchased at a 10% discount through January 31st 1981. Visit our retail store, 211 E. Ann, Ann Arbor, Michigan. 663-0500." An illustration shows a wheel with spokes; on each spoke is written: Tempeh, soysage, tofu, soymilk, miso. Across the diameter: "Soy foods for body & planet." In large letters across the bottom: "The Soy Plant." Address: 211 East Ann St., Ann Arbor, Michigan. Phone: (313) 663-0500.

755. Steinkraus, Keith H. 1979. Transfer of tempe technology. *League for International Food Education* (*LIFE*) *Newsletter.* Dec. p. 1-2. [1 ref]
• ***Summary:*** In 1959 the traditional method of removing soybean hulls when making tempeh involved loosening them by hand or under foot and floating them off in water, and the tempeh was fermented in wilted leaves. In 1965 Steinkraus and co-workers published a pilot plant process for making tempeh in which the hulls were removed by passing the dehydrated beans through a burr mill and fermenting the tempeh in trays. In 1974 Dr. Steinkraus visited a tempeh factory in Indonesia in which these modernizations had been implemented and the perforated plastic bags for incubating tempeh, pioneered in 1964 by Martinelli and Hesseltine, were also being used. Address: Cornell Univ., Geneva, New York 14456.

756. White Wave Soy and Natural Foods. 1979. Product price list: Winter. 3869 Walnut St., Boulder, CO 80301. 6 panels. Catalog. Dec.
• ***Summary:*** Soyfoods: Nigari tofu (bulk, packaged, doufu [extra firm Chinese style]). Salad dressings (mellow miso salad dressing, hearty miso salad dressing). Tempeh. Soysage. Tofu Mayo. Savory baked tofu. Polar bean (banana-carob soy ice cream).

The company also sells sesame products (raw tahini, roasted tahini, sesame butter, sesame salt), peanut butters (salted or unsalted; crunchy natural, creamy natural, Valencia {crunchy or creamy}), more nut and seed butters (roasted almond butter, raw cashew butter, roasted cashew butter, roasted sunflower butter), and tamaried nuts and seeds (tamaried almonds, tamaried cashews, tamaried Spanish peanuts, tamaried sunflower seeds, and tamaried nut mix [a blend of peanuts, sunflower seeds, cashews, and almonds]). Note: This is the earliest English-language document seen (July 2005) that uses the word "tamaried" to refer to nuts and seeds that have been seasoned with tamari soy sauce and then baked.

"White Wave was founded in 1977 upon the principle of supplying the Rocky Mountain region with high quality protein foods. As these foods are an extension of our own lifestyles, we offer only products we personally feel are wholesome and nutritious. It is our pleasure to guarantee the quality of all our products. All foods carrying a White Wave label are made solely by us. We thank you for supporting our business. The Folks at White Wave." Address: White Wave, 3869 Walnut St., Boulder, Colorado. Phone: 303-443-3470.

757. **Product Name:** Tempeh.
Manufacturer's Name: Bean Mountain Soy Dairy.
Manufacturer's Address: 121 W. Howard St., Boone, NC 28607. Phone: 704-264-0890.
Date of Introduction: 1979.
New Product–Documentation: Mashburn. 1980. The Sentinel. Feb. 15. p. 7. Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Jerry McKinnon.

Talk with Jon Kessler of Virginia Soyworks, then with an employee of the company. 1991. Sept. 14. The company, now named Bean Mountain Natural Foods, has just moved to 1096 New Stock Rd., Weaverville, North Carolina (phone: 704-658-2326), and has just gotten a major account with Tree of Life. John Swann is president. The company is privately owned and presently makes only tofu and tempeh.

758. Darmosuwito, Suhadi; et al. 1979. Studies on the performance of selected *Rhizopus* strains in tempe fermentation. *ASEAN Project Report.* *

759. Ebine, Hideo. 1979. Tenpe ni tsuite [On tempeh]. *Nihon Shoyu Kenkyujo Zasshi* (*J. of the Japan Soy Sauce Research Institute*) 5(3):121-23. [Jap]

760. Gandjar, Indrawati; Slamet, Dewi Sabita. 1979. The amino acid composition of non-soybean legume tempe. Presented at International Symposium on Microbiological Aspects of Food Storage, Processing, and Fermentation in Tropical Asia. Held 10-13 Dec. 1979 in Bogor, Indonesia. * Address: Nutrition Research & Development Center, Dep. of Health, Indonesia.

761. Noranizam, H.M.L. 1979. Studies of *Rhizopus* isolated from tempe and soy sauce. BSc Honors Project, University of Malaya. Unpublished manuscript. *

762. **Product Name:** Tempeh.
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: 3555 Randolph Rd., Cleveland Heights, OH 44121. Phone: 216-382-7494.
Date of Introduction: 1979.
Ingredients: Organically grown soybeans, water, Rhizopus culture.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1980. 4 by 6 inches. Black, red, green, and blue on white. Rainbow and tower

motif. "No Cholesterol. Highest Known Vegetable Source of B-12." 8 oz.

Form filled out by Lynne McAlister and Jeff Narten. ca. 1982. The company started in Sept. 1982. They are at 3555 Randolph Rd., Cleveland Heights, Ohio.

Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7. He started production at home, at this address, with Lynn McAlister, his wife.

763. Sutedja, Lenny; Roestamsjah, -; Suprapto, M.S. 1979. Lipid hydrolyses during tempeh fermentation. Paper presented at The International Symposium on Microbiological Aspects of Food Storage, Processing, and Fermentation in Tropical Asia. 30 p. Held at Bogor in 1979. *

764. Tanuwidjaja, Lindajati; Ambjah, K. 1979. Pembuatan inokulum tempe dengan kultur campuran [Preparation of tempeh inoculum using mixed cultures]. In: Proceeding Seminar Teknologi Pangan. IV. See p. 189-203. [Ind]* Address: 1. National Inst. for Chemistry, Indonesian Inst. of Sciences, Bandung, Indonesia.

765. Timotins, K.H.; Iskandar, S.T. 1979. Changes during the second phase of soybean tempeh fermentation. Paper presented at The International Symposium on Microbiological Aspects of Food Storage, Processing, and Fermentation in Tropical Asia. 27 p. Held at Bogor in 1979. *

766. **Product Name:** Tempeh.
Manufacturer's Name: Yellow Bean Vegetarian Foods.
Manufacturer's Address: 15309 Mack Ave., Detroit, MI 48224.
Date of Introduction: 1979.
New Product–Documentation: Letter from Carol Ann Huang. 1979. Undated [May]. "We've begun making tempeh now. It's been going real good. We've had our store open for 1½ months now and things are growing stronger all the time... We converted our double door refrigerator into a [tempeh] incubator." They make tempeh in 15 lb batches. "We're getting close to serving food out of our store now. Getting the kitchen up to code and insurance and all that."

Letter/Order for 1 case (34 books) of *The Book of Tempeh* from Yellow Bean Trading Co. 1979. Sept. 21. They are located at the address shown above.

767. Abjah, Koesbianti. 1979. Studi perbandingan aktivitas proteolytik dan amilolytik kapang Rhizopus dan isolasi khamir dari tempe [Comparative study on the proteolytic and amylolytic activity of *Rhizopus* enzymes, and the isolation of yeasts from tempeh]. Thesis (Skripsi), Bagian Biologi Institut Teknologi Bandung, Bandung, Indonesia. 88 p. PBITB. [Ind]* Address: Bandung, Indonesia.

768. Aoki, Hiroshi; Ito, Kiyoe. 1979. Chôri to daizu [Cooking and soybeans]. Gakken Shoin K.K., Tokyo. 173 p. Illust. Index. 22 cm. [151 ref. Jap]
• ***Summary:*** Contents. I. Cooking and soybeans. II. Soybean molecules and soybean protein. III. Cooking and traditional soy protein foods. 1. Cooked whole soybeans (nimame), green vegetable soybeans (yude-mame, edamame), soy sprouts. 2. Roasted soy flour (kinako). 3. Tofu. 4. Deep-fried tofu pouches and tofu burgers (aburaage and ganmodoki). 5. Dried frozen tofu (kori-dofu). 6. Yuba. 7. Natto. 8. Tempeh. 9. Soymilk. 10. Miso (Miso soup, miso-ni, ae-mono). 11. Shoyu. IV. Cooking and new soy protein products. Address: 1. Prof., Otsuma Joshi Daigaku; 2. Prof., Tokyo Gaku Gei Dai.

769. Arbianto, Purwo. 1979. Bongkrek food poisoning in Java. In: P. Matangkasombu, ed. 1979. Proceedings of the Fifth International Conference on Global Impacts of Applied Microbiology. Bangkok: GIAM V Secretariat. xxxviii + 535 p. See p. 371-74. Held 21-26 Nov. 1977 in Bangkok, Thailand. [5 ref]
• ***Summary:*** Bongkrek food poisoning outbreaks were first reported in 1895 and 1901 and are still happening periodically today. A table shows the number of casualties due to bongkrek food poisoning each year from 1951 to 1975. During these 25 years, 7,216 people were poisoned and 850 died. Thus 11.8% of those poisoned died, and on average 34 people a year died. In 1975, the worst year, 1,036 people were poisoned and 125 people died. Officially the production of tempe bongkrek is outlawed. Address: Team Bioteknologi, Departemen Kimia, Institut Teknologi, Bandung, Indonesia.

770. Gomez, M.I.; Kothary, M. 1979. Studies on production of red-kidney-bean tempeh. *J. of Plant Foods* 3(3):191-98. [18 ref]
• ***Summary:*** "Red kidney beans of the Canadian Wonder variety can be used as a substrate for production of a fermented tempeh-like product using *Rhizopus oligosporus.*" Incubation at ambient tempeh takes 48 hours. Using tempeh instead of whole beans reduces cooking time and fuel use. Address: Dep. of Food Science & Technology, Univ. of Nairobi, P.O. Box 20953, Nairobi, Kenya.

771. Ko Swan Djien; Hesseltine, C.W. 1979. Tempe and related foods. *Economic Microbiology* 4:115-40. A.H. Rose, ed. Microbial Biomass. [65 ref]
• ***Summary:*** Contents: Introduction: Appearance and preparation, production, literature. Inoculum: Tempe mold, traditional inoculum, pure-culture inoculum. Production methods: Basic procedure, raw material, preparation of the soybeans, packaging, incubation and mould growth. Keeping

qualities and preserving methods. Changes in chemical composition. Nutritive value. Other tempe-type processes: Tropical Products Institute process, oncom (ontjom), natto, thua-nao, Tate and Lyle process.

"Meanwhile, in Indonesia, the attitude towards tempe has gradually changed over the last 15 years. Although most people like tempe, it was formerly considered as an inferior food, mainly because it is less expensive than other protein foods like meat, fish and eggs; another reason was that products of low quality were sometimes sold at the market. But, during the last decade through studies by universities as well as by government agencies, more attention has been paid to this product" (p. 119). Address: 1. Dep. of Food Science, Agricultural Univ., Wageningen, Netherlands; 2. NRRC, Peoria, Illinois.

772. Ko Swan Djien; Kelholt, A.J.; Kampelmacher, E.H. 1979. Inhibition of toxin production in tempe bongkrek. In: P. Matangkasombu, ed. 1979. Proceedings of the Fifth International Conference on Global Impacts of Applied Microbiology. Bangkok: GIAM V Secretariat. xxxviii + 535 p. See p. 375-88. Held 21-26 Nov. 1977 in Bangkok, Thailand. [14 ref. Eng]

• ***Summary:*** Salt (NaCl) was added to tempe bongkrek to effectively inhibit toxin production. Tempe bongkrek is made of partly defatted coconut residue which remains after coconut meat is pressed to obtain oil, or when shredded coconut meat is extracted with water to obtain coconut milk. Outbreaks of food poisoning by tempe bongkrek still occur periodically. During the latest large outbreak, shortly after the new year in 1977, more than 400 persons were involved and more than 70 victims died. Address: Dep. of Food Science, Agricultural Univ., Wageningen, Netherlands.

773. Nakano, Masahiro. 1979. Tezukuri no kenkô shokuhin: Hakkô riyô no subete [Handmade healthy fermented foods]. Tokyo: Nosan Gyoson Bunka Kyokai. 227 p. Illust. 18 cm. [Jap; eng+]

• ***Summary:*** Describes how to prepare homemade soymilk cheese (p. 139-42), soymilk yogurt (p. 155), tempeh, and miso (16-39, 84-91). Address: Tokyo, Japan.

774. National Academy of Sciences, National Research Council, Board of Science and Technology for International Development, Commission on International Relations, Advisory Committee on Technology Innovation. 1979. Microbial processes: Promising technologies for developing countries. Washington, DC. xii + 198 p. Illust. No index. 23 cm.

• ***Summary:*** Soy-related chapters include: 1. Raw materials for microbial processes. In 1977 an estimated 13,842,000 metric tons of soybeans were grown in developing countries. Soybeans were number 15 on a list of 22 major food crops grown in developing countries, and accounted for 1.59% of the total production. The largest crops produced were paddy/rice (21.36% of total), cassava (11.87%), wheat (10.90%), maize/corn (8.41%), and banana/plantain (6.33%). 2. Food and animal feed. Discusses production of meatlike flavors using miso and shoyu, the koji method of producing enzymes, and Indonesian tempeh.

3. Soil microbes in plant health and nutrition. "Mycorrhizal fungi: Most plants, both wild and cultivated, have roots infected with fungi that increase nutrient and water uptake and may also protect the root from certain diseases. These infected roots are called mycorrhizae. Although the mycorrhizal fungi probably increase uptake of all the essential elements, they are usually most important in improving phosphorus nutrition. Phosphate is generally present in the soil in low concentrations and it is also highly immobile. Strands of fungal hyphae grow out from mycorrhizae and greatly increase the volume of soil from which phosphorus is obtained. So mycorrhizal plants, in general, can grow and thrive in soils much lower in phosphate and other essential nutrients than a comparable nonmycorrhizal plant. Many plants are so dependent on mycorrhizal fungi for nutrient uptake that they may starve if these fungi are absent. There are a number of types of mycorrhizae. The two that occur on the most economically important crops, the endomycorrhizae and the ectomycorrhizae, are discussed."

4. Nitrogen fixation. "Air is four-fifths nitrogen, yet it is the absence of this particular element that most commonly limits food production. Neither man, animals, nor higher plants can use elemental nitrogen; it must first be 'fixed,' that is, combined with other elements such as hydrogen, carbon, or oxygen before it can be assimilated.

"Certain bacteria and algae have the ability to utilize (fix) gaseous nitrogen from the air. Some microorganisms work symbiotically in nodules on the roots of plants, with the plant providing food and energy for the bacteria, which, in turn, fix nitrogen from the air for their host...

"Bacteria that fix nitrogen in nodules on the roots of leguminous plants are called rhizobia...

"Leguminous plants have been known for centuries to enrich soils, but the reason was not understood until 1886 when two German scientists, Hellriegel and Wilfarth, found that the bacteria in the nodules on the leguminous root brought about nitrogen fixation. Nitrogen-fixing microorganisms fix an estimated 175 million metric tons of nitrogen annually, or about 70% of our total supply. The remainder is produced in chemical fertilizer factories." The nitrogen fixed by the soybean-rhizobium association is about 60-80 kg/ha/year. 5. Microbial insect control agents. Green cloverworm on soybeans can be controlled by *Bacillus thuringiensis.* 10. Pure cultures for microbial processes. Discusses world culture collections. Address: Washington, DC; Peoria, Illinois.

775. Nuryanti, Endang. 1979. Pengaruh penggunaan ragi tempe dari beberapa daerah di pulau Jawa pada pembuatan tempe kedele [Effect on soy tempeh processing of using tempeh starter (ragi tempe) from several regions in Java]. Thesis (Skripsi), Fakultas Teknologi Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia. 37 p. [Ind]*
Address: Yogyakarta, Indonesia.

776. Peppler, Henry J.; Perlman, D. eds. 1979. Microbial technology. 2nd ed. Vol. 1. Microbial processes. Vol. 2. Fermentation technology. New York, NY: Academic Press. Vol. 1, 544 p. Vol. 2, 536 p. Subject index.
• ***Summary:*** Contents of Vol. 1: 1. Beer brewing. 2. Cheese. 3. Distilled beverages. 4. Mold modified foods, by Hwa L. Wang and C.W. Hesseltine (p. 95-129, cited separately; incl. soy sauce, miso, hamanatto, sufu, tempeh). 5. Wine. 6. Vinegar. 7. Ketogenic fermentation processes. 8. Mushroom fermentation. 9. Inocula for blue-veined cheese and blue cheese flavor. 10. Microorganisms for waste treatment. 11. Elementary principles of microbial reaction engineering. 12. Microbial culture selection. 13. Methods for laboratory fermentations. 14. Instrumentation of fermentation systems. 15. Computer applications in fermentation technology. 16. General procedures for isolation of fermentation products. 17. Use of immobilized cell systems to prepare fine chemicals. 18. Economics of fermentation processes. 19. Fermentation processes and products: Problems in patenting.
Address: 1. Universal Foods Corp., Milwaukee, Wisconsin; 2. School of Pharmacy, Univ. of Wisconsin, Madison.

777. Riker, Tom; Roberts, Richard. 1979. Directory of natural and health foods: A sourcebook for dietary revolution. New York, NY: Putnam (A Paragon Book). 320 p. Index. 37 cm.
• ***Summary:*** The first part of this book (p. 7-49) consists of essays on natural foods and nutrition (some reprinted). Part two is a commercial catalog/directory of natural foods available in 1979; it lists and describes (with may photos and labels) products from most of the major U.S. natural foods manufacturers. An Index (p. 293-308) lists participating companies alphabetically.

Soy-related products include: Hain Super-E Soy Oil and Crude [unrefined] Soy Oil (Los Angeles, California, p. 55). Health Valley Soy Moo (Montebello, California, p. 56). Edward & Sons Miso-Cup (Union, New Jersey, p. 57). Family Orchards Fruit & Nut mixes, incl. Back Packer+*, Hi-Fiber Mix+, Hi-Iron Mix+, Hi-Protein Mix+*, Hiker's Helper, Mixed Nuts*, Mountain Munchies*, Tamari Mixed Nuts* (+ = contains Soy Nuts; * = contains Tamari Peanuts) (Berkeley, California, p. 60-61). Niblack Tamari Pumpkin Seeds (Pepitas), Tamari Roasted Sunflower Seeds, Liquid Lecithin, Granular Lecithin (Rochester, New York, p. 72-73). Arrowhead Mills Unrefined Soybean Oil (Hereford, Texas, p. 75). Good Morning New England Granola incl. Cashew-Raisin Bran-ola (with okara soy fiber), Happy Trails Mix (with roasted soynuts) (Amherst, Massachusetts, p. 79). Elam's Soy Flour (Broadview, Illinois, p. 81).

A long section on Erewhon and its products (p. 84-108) is probably the reproduction of an Erewhon catalog. Erewhon is now located at 3 East Street, Cambridge, MA 02141. Following several pages about the company and its philosophy and standards, each of its major products is discussed in detail, often with nutritional analyses. A label for Soy Flour (organically-grown stone-ground, 24 oz.) is shown; the main recommended use is for making soy milk! A major part of the presentation is titled "Japanese food guide." Products described include: Umeboshi (2 pages): Plums pickled in brine (umeboshi). Umeboshi paste. Plum concentrate (*bainiku ekisu*). Miso (2 pages): Hatcho, waka-Hatcho, soybean, barley, brown rice, rice, and natto miso varieties. Tekka (made with Hatcho miso). Sweets made from mizu ame [rice syrup]. Nigari. Gomashio. Koji starters for various types of miso or shoyu. Goma-muso (60% barley miso and 40% whole sesame seed butter). *Gomamiso furikake* (with barley miso, whole roasted sesame seeds, and shredded nori seaweed). Kombu candy. Kokkoh. Dried tofu (*Kohya-dofu*). Brown rice sake. Mirin. Gluten cakes (*Kuruma-fu*). Seitan (Gluten cooked in shoyu). Rice crackers seasoned with tamari soy sauce. Kuzu (3 pages). Tamari and shoyu (4 pages; Johsen Shoyu is made in Sendai and tamari is made by San-jirushi Co.). Seaweeds (4 pages): Kanten, arame, hijiki, kombu, ne-kombu, nori, seasoned nori, kanten, kanten flakes, wakame, and mekabu.

Good Food brand Soy-Millet Bread (Austin, Texas, p. 120). Arrowhead Mills Bulgur-Soy Grits (p. 121). Erewhon Morning Cereal, and Infant Cereal (each containing soy beans). Chico-San Black Soybeans (imported), and Azuki Beans (Dainagon imported small red), and Lima Soy Sauce (Chico, California, p. 126-27). Arrowhead Mills 7 Grain Cereal, and Deaf Smith Crunch (granola-type cold cereal) (each contains soybeans, p. 130).

The section on pages 188-197 is titled "Soy." It lists Farm Foods Tempeh Kit, Tempeh Starter, Natural Nigari for Curding Tofu, Soyflour, Whole Cleaned Soybeans, Good for Ya Textured Vegetable Protein (Summertown, Tennessee, p. 189). New England Soy Dairy Tofu (with many tofu recipes, Greenfield, Massachusetts, p. 192-96).

The Redwood Sprouter Co. sprouter containing Soy Sprouts (1976, Austin, Texas, p. 202-04). Worthington Foods (a photo shows their line of 38 products). Millstone Burger-Like (with soy flour and TVP), Wheat Fries (with wheat gluten), Tender Cuts (with wheat protein and soy flour) (Penryn, California, p. 222-23). Sunrise Health Products Lecithin Granules (p. 274-75).

778. Smith, Elizabeth Bernice. 1979. Vegetarian meal-planing guide: A lacto-ovo-vegetarian diet. Winnipeg, Manitoba, Canada: Hyperion Press Ltd. 104 p. Illust. (some

color). 21 x 22 cm. [57+ ref]
• ***Summary:*** At head of title: "Dr. Elizabeth Smith's New World of Eating." Table 5e (p. 25) lists calories for meat alternates group. Soybean sprouts, miso, soybean curd (tofu), soybean milk, and TVP are moderate calorie, while soybeans and soy grits are high calorie.

Page 47 notes: "Generally speaking, legumes are moderately deficient in methionine. Soybeans are an exception, as are their by-products, tempeh (fermented), tofu (the curd formed for soya), and soybean milk. All these are roughly equivalent in quality to cow's milk.

Page 49 notes that when breast feeding is not possible, soyamilk may be formulated as a very satisfactory substitute; vitamin B-12 must supplement it in pill form. "An infant who cannot tolerate cow's milk because of allergy and cannot be breast fed may accept a soybean formula until 3 to 4 months of age. At weaning, according to Fomon, the child should continue to receive by cup either soybean formula or soybean milk fortified with vitamin B-12.

Pages 54-56 describe in detail how to sprout soybeans at home, and how to prepare homemade soymilk and tofu (soybean curd). It is advised that fermented soybean products such as miso and tempeh not be produced at home "as the control of the fermentation process by specific micro-organisms is too difficult to achieve without specialized training and equipment."

Soy-related recipes include: American soybean loaf (with soaked, ground soybeans, p. 76). Soybeans printanier (with cooked soybeans). Soya sesame loaf. Soya cheese balls (with cooked, seasoned soybeans). Soybean casserole (p. 77). Sprouted soybean Creole. Sprouted soybeans au gratin. Bean sprout chop suey (with tofu, p. 77). Skillet soya sprouts and beans (p. 78). Soybean stroganov (p. 78). Address: Winnipeg, Manitoba, Canada.

779. Sundjojo, -. 1979. Mempelajari peranan penggodokan pada pembuatan tempe kedelai [Study of the effects of boiling on soy tempeh processing]. Thesis (Skripsi), Fakultas Teknologi Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia (College of Agricultural Technology, Gadjah Mada University). 49 p. [Ind]*
Address: Yogyakarta, Indonesia.

780. Voldeng, Harvey D. 1979. Soybeans in Canada–Past, present and future. Based on an article [sic, manuscript] by Dr. H. Voldeng. In: 1979. Fats and Oils in Canada: Annual Review. Ottawa, Ontario, Canada: Grain Marketing Office, Dept. of Industry, Trade and Commerce, Agriculture Canada. [vi] + 95 p. See p. 1-10. Chapt. 1. [7 ref]
• ***Summary:*** Contents: Introduction. Introduction of soybeans to Canada. Importance of the soybean [worldwide]. Utilization. Food uses of soybeans: Oriental foods–Soy milk, tofu, sufu, miso, soy sauce, tempeh, Hamanatto, natto. Western ingredients–Full fat flour, defatted flour, soy protein concentrates (70% protein), soy protein isolate (more than 90% protein), textured soybean protein. Soybeans in Ontario. Development of short season varieties. Soybeans in Quebec and the Maritimes. Soybeans in the Prairies (southern Manitoba and Alberta).

A table shows soybean acreage in Ontario's leading counties in 1978. Kent 205,000. Essex 192,000. Lambton 170,000. Elgin 63,000. Middlesex 40,000. Other 7,000. Total (Ontario) 705,000 acres.

Soybeans grown in Ontario can be crushed at three plants: (1) Victory Soya Mills (owned by Procter and Gamble) in Toronto. (2) Canadian Vegetable Oil Processing Limited (owned by Canada Packers) in Hamilton. (3) The recently completed Maple Leaf Monarch plant (affiliated with Unilever Corporation) in Windsor. Total crushing capacity in Ontario is about 35 million bushels per year.

The CSP Foods Plant in Altona, Manitoba, has in some years crushed limited amounts of soybeans imported from the U.S.

"Development of short season varieties: The justification for the effort to develop a large acreage outside of southwestern Ontario as been the magnitude of imports of soybeans, meal and oil. This has been and continues to be sizeable. The situation (in metric tons = tonnes) is outlined below for the 1977/78 crop year: (1) Whole soybeans: Production 527,361. Imports 262,835. exports 64,173. Domestic crushing 728,400.

(2) Soybean oil: Imports 28,100. Exports 1,400. Domestic production 125,600.

(3) Soybean meal: Imports 376,300. Exports 45,600. Domestic production 575,400. Source: *Fats and Oils in Canada, Annual Review,* 1978.

Letter (e-mail) from Dr. H. Voldeng of Agriculture and Agri-Foods Canada. 2010. Feb. 16. The original "article" was not an article but a manuscript that was sent to the publishers of this volume; they reduced the length slightly. It was never published separately, no longer exists, and cannot be cited separately. Address: Agriculture Canada, Ottawa, Ontario.

781. Wang, Hwa L.; Hesseltine, C.W. 1979. Mold-modified foods. In: H.J. Peppler and D. Perlman, eds. 1979. Microbial Technology. 2nd ed. Vol. 2. Fermentation Technology. New York: Academic Press. 544 p. See Vol. 1, p. 95-129. [90 ref]
• ***Summary:*** Volume 1. Microbial processes. Volume 2. Fermentation technology. Contents: 1. Introduction. 2. Soy sauce. 3. Miso. 4. Hamanatto. 5. Sufu [fermented tofu]. 6. Tempeh. 7. Ang-kak (red rice, used as a color agent). 8. Absence of mycotoxins in fermented foods. 9. Conclusions.

For each food is given: General description, method of preparation, composition [chemical / nutritional]. In addition for tempeh is given: Tempeh-like products, biochemistry and physiology of *Rhizopus oligosporus,* changes occurring during fermentation, nutritional value.

"Soy sauce "is known as chiang-yu on China, shoyu in Japan, kecap in Indonesia, kanjang in Korea, toyo in the Philippines, and see-iew in Thailand. In the Western World the product is often referred to as soy sauce." Japan is the leader worldwide in sauce production; it has the largest fermentation plant and uses the most advanced technology.

Hamanatto: Products similar to Japan's hamanatto are known as tou-shih in China, tao-si in the Philippines, and tao-tjo [sic] in the East Indies [Indonesia]. A typical process for making hamanatto in Japan, based on information supplied by Dr. T. Kaneko of Nagoya Univ., Japan, is as follows: Wash soybeans, then soak, steam until soft, drain, and cool. Mix with parched wheat flour in the ratio of 2 parts soybeans to 1 part flour. Inoculate the soybeans with a short- or medium-stalked strain of *Aspergillus oryzae.* Incubate for 1-2 days until the beans are covered with a fragrant mycelium and have become soybean koji. Pack the soybeans in a container [wooden keg] with (for example) 2.5 kg soybean koji, 650 gm salt, 3.6 liters water and some freshly sliced gingerroot. Cover the container tightly and age under pressure for 6-12 months. Remove beans from liquid and dry them in the sun to give hamanatto. The composition of the brine may differ among manufacturers.; thus the finished hamanatto differs somewhat in taste and appearance. "Japanese hamanatto is rather soft, having a high moisture content. Chinese tou-shih has a much lower moisture content... and therefore is not so soft. Tao-tjo tends to have a sweet taste because sugar is often added to the brine."

Shoyu in Japan: Although there are more than 4,000 shoyu makers in Japan, the largest 4-5 companies produce about 50% of the total. Address: NRRC, Peoria, Illinois.

782. *Manna Bulletin.*1979--. Serial/periodical. Meeuwenlaan 70, 1012 JK Amsterdam, Netherlands. Editor: Sjon Welters. Illust. 21 cm. [Dut]
• ***Summary:*** This is a magazine about natural foods, macrobiotics, and alternative lifestyles. Soyfoods Center owns Vol. 3, No. 2 (June 1979), and Vol. 4, No. 3 (autumn 1982). In the former issue, the advisors are Adelbert Nelissen and Willem de Ridder. The editors are Hans den Hoed, Wieke Nelissen, etc. The latter issue contains one article titled "Macrobiotic Economics and the Practice of Manna" (a photo shows Adelbert Nelissen, Manna director), and another titled "Fermented products, an essential supplement to a vegetarian (*plantaardig*) diet." Page 12 shows an ad for Witte Wonder Products (2 Riemerstraat 186, 2513 EZ Den Haag), producers of tofu and seitan.

Talk with Sjon Welters. 1994. April 4. He was once the editor of this publication. He thinks it stopped being published in about 1984-1985. Address: Amsterdam, Netherlands.

783. Greenwood, Rebecca. 1980. Try fried tempeh in diet. *Daily Camera* (*Boulder, Colorado*). Jan. 2.
• ***Summary:*** Includes a recipe from The Book of Tempeh.

784. Pickarski, Ron. 1980. Re: Favorite tempeh recipes. Letter to William Shurtleff at Soyfoods Center, Feb. 11. 2 p. Handwritten.
• ***Summary:*** The author sends a copyrighted recipe for Tempeh Loaf and offers to send a recipe for Tempeh Wellington as soon as it is copyrighted. He offers to let Shurtleff use them in his forthcoming book *Tempeh Production.* The author's *Gourmet Vegetarian Cookbook,* which will use classical French and ethnic foods in a gourmet manner, will go to press later this year. Address: Br. Ron, OFM, CWC, Saint Paschal Franciscan Friary, 3400 Saint Paschal Dr., Oak Brook, Illinois 60521. Phone: 312-654-4210.

785. Mashburn, Rick. 1980. From beans to 'cheese.' *Sentinel* (*The*) (*Winston-Salem, North Carolina*). Feb. 15. p. 7. [1 ref]
• ***Summary:*** About Jerry MacKinnon and Bean Mountain Soy Dairy of Boone, North Carolina. The shop makes 1,000 lb/week of tofu plus some tempeh and soymilk. MacKinnon left a tofu business he started in Ann Arbor with four other people 2 years ago when it grew too big. "MacKinnon seems reluctant to start sermonizing on the virtues of tofu. He'd much rather hand out a copy of a chapter from *The Book of Tofu,* by William Shurtleff. Crowell, however, is a more zealous missionary." Concerning the future of tofu, he notes: "As soon as General Foods realize Americans are gonna eat tofu, we'll be out of business." Four photos show Jerry MacKinnon, with beard and hat, cooking 50 lb of ground soybeans in steam-jacketed cooker. A portrait shows Marc Crowell. A label for the company's tofu product.

786. McBride, Gordon E. 1980. Re: Samples of tempeh starter culture. Letter to William Shurtleff at New-Age Foods Study Center, Feb. 18. 1 p.
• ***Summary:*** "Under separate cover I am enclosing 10 cultures of *Rhizopus oligosporus* for your evaluation." The culture is alive and grown in Petri dishes, which can be easily shipped. The spores have a high percentage of viability compared to lyophilized [freeze-dried] spores. "The disadvantage is that the shelf life will be shorter than lyophilized spores, but the people at the local Soy Plant inform me that they get good results from our cultures after storing them for a month in the refrigerator." The price (not including shipping): $4.25 each; $3.80 for 5 or more cultures; $3.50 for 10 or more. "This seems to be a considerable saving over The Farm's price, since they charge around $22.00 for enough starter to inoculate 100 lbs of dry soybeans. Based on the Soy Plant's data, ten of our cultures ($35.00) should inoculate 240 lbs. of dry soybeans. Moreover our product should have much better spore viability."

Note: Gordon was manager of the "Living Department,"

which sold things like live frogs for use as teaching materials in biology classes. His PhD degree was in fresh water algae and he wrote his thesis on the evolution of land plants. Address: PhD, Manager, Living Department, Ann Arbor Biological Center, Inc. (subsidiary of Harcourt Brace Jovanovich, Inc.), 6780 Jackson Rd., Ann Arbor, Michigan 48103. Phone: 313-761-8600.

787. New-age Foods Study Center. 1980. Catalog of publications & materials by William Shurtleff & Akiko Aoyagi [mail order]. P.O. Box 234, Lafayette, CA 94549. 20 panels. Feb. 20.
• ***Summary:*** This catalog, folded like a road map, is printed with brown and dark orange ink on white paper. The Japanese-style logo is waves and a moon in a circle. In addition to the many books and pamphlets in the previous catalog, the following have been added: Soyfoods: Protein source of the future... now (1 panel). Many quotations from book reviews. Books about world hunger (1 panel). New-Age Foods Study Center (1 panel). About the authors (1 panel, autobiographical). Photos show William Shurtleff & Akiko Aoyagi. Address: Lafayette, California. Phone: 415-283-3161.

788. Cone, Joe. 1980. Tip of the tongue [Tempeh and Surata Soyfoods]. *Oregon Daily Emerald.* Feb. 22. [1 ref]
• ***Summary:*** Combines an introduction to tempeh with a description of how it is made by Benjamin Hills of Surata Soyfoods, a cooperatively owned food business with 6 full-time members in dowtown Eugene, Oregon. Surata now makes 300 10-ounce bags weekly; each wholesales for $0.80. "Surata tempeh is available in the freezer case of most food and community markets in Eugene, including the University Food-Op. The Homefried Truckstop and Zoo-Zoo's Cafe regularly feature tempeh and tofu dishes."

789. Leviton, Richard. 1980. The soyfood with culture: The Tempeh Works. *Soycraft* (*Colrain, Massachusetts*) 1(2):36-41. Winter.
• ***Summary:*** An in-depth article about how tempeh is made at The Tempeh Works, in Greenfield, Massachusetts. The company is owned by Michael Cohen (age 29) and his wife, Shelley. The article begins: "I love making tofu because its a mystical process, but tempeh is more of a challenge, its a more complex process, though routine." He adds: "Our goal now is to produce a mild-tasting, pure white tempeh, not sharp in taste, a tempeh pleasing to a majority of people."

Large photos (by Frank Ward) show: (1) Michael Cohen proudly displaying a tray of fresh tempeh. (2) Barry Baldwin air-drying cooked and split soybeans. (3) A worker pouring a bucket of split, soaked, and dehulled soybeans into a cooker. (4) The same worker drying the cooked soybeans in a centrifugal extractor (centrifuge). (5) A working tending soybeans as they are emptied from the cooker onto a screen

drying table, with its overhead fan–the old way of drying the soybeans before the centrifuge was developed. (6) Heat sealing a perforated plastic bag of inoculated soybeans using a small heat sealer. (7) Michael Cohen and a woman worker holding a metal tray on which flattened bags of tempeh will be incubated. The trays will then be placed in a rolling rack. (8) Many finished 8 oz bags of tempeh, each bearing "The Tempeh Works" label. A pack of Tempeh Recipes is in the upper right corner.

Note: This is the earliest document seen (Sept. 2011) that refers to tempeh as "The soyfood with culture"–a phrase that soon became widely used in connection with tempeh. Address: Colrain, Massachusetts.

790. Leviton, Richard; Shurtleff, William. 1980. Estimates of production and sales of tofu and other soyfoods in the USA and Canada (News release). Soycrafters Assoc. of North America, 305 Wells St., Greenfield, Massachusetts 01301. 1 p. Feb.
• ***Summary:*** Early statistics compiled on the U.S. soyfoods industry: 188 tofu companies, employing 680 people, used 13,500,000 lb of soybeans to produce 33,750,000 pounds of tofu that retailed for $33,750,000.

Other soyfood manufacturers (including 27 tempeh companies and 5 miso companies), employing 225 people, used 4,500,000 lb of soybeans to produce 11,250,000 pounds

of other soyfoods that retailed for $11,250,000. The figures were compiled largely by Shurtleff, who gave Soycrafters Assoc. permission to use them. On 8 Feb. 1980 Leviton also sent a letter to Linda Madl, Soybean Bluebook, American Soybean Assoc. with a request to publish these statistics; she never did. Address: 1. Sunrise Farm, Heath Rd., Colrain, Massachusetts 01340; 2. New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

791. **Product Name:** Tempeh.
Manufacturer's Name: Monterey Bay Soyfoods.
Manufacturer's Address: 335 Pennsylvania Ave., Santa Cruz, CA 95062. Phone: 408-423-2256.
Date of Introduction: 1980. February.
How Stored: Refrigerated.
New Product–Documentation: Talk with Jeremiah Ridenour. 1988. Aug. 31. This was the first commercial soy product made by Jeremiah or by Monterey Bay Soyfoods.

792. *Soycraft* (*Colrain, Massachusetts*).1980. Soyfoods deli update. 1(2):10. Winter.
• ***Summary:*** Discusses Yellow Bean Trading Co. (Detroit, Michigan), The Tofu Shop (Rochester, New York), and The Cow of China (Boulder, Colorado), and The Soy Plant Deli (Ann Arbor, Michigan).

"The Yellow Bean Trading Company of Detroit, Michigan, began business in September 1978, with a truck, garage, and cooler, as Timothy and Carol Huang delivered tofu, tempeh, soysage, and soymilk, made by the Ann Arbor Soy Plant, around the metropolitan area. But in March 1979, they opened a retail delicatessen because they 'wanted to teach people about soyfoods by letting them taste them, which is better than reading about them in books.' The deli retails groceries, juices, herbs, teas, dry grains, bulk tofu, bottled soymilk, nori rolls, tofu carob creme pies, and tofu salad. The Yellow Bean has seating for fourteen and they are planning to introduce hot food items, such as tofu spinach pies, tofu lasagna, rice with tempeh, and bean and vegetable dishes." Though currently losing money, the deli grosses about $600 each six-day week.

Greg Weaver of The Tofu Shop in Rochester reports that August 1979 was their biggest month all year; they grossed $2,000/week. Autumn sales averaged about $1,700/week. During the World Series in October they invented the Not Dog–a hot dog based on baked tofu.

Steve Fiering of the Soy Plant deli in Ann Arbor reports steady sales of about $1,000 a week. Steve Demos at the Cow of China deli in Boulder reports that retail sales peaked in August at $450/day. Now they range from $1,700 to $2,000/week.

793. *Vegetarian Times.*1980. Brother Ron Pickarski: Bringing vegetarianism into the gourmet limelight. No. 35. Jan/Feb. p. 28-32, 34-35.
• ***Summary:*** This cover story on Brother Ron Pickarski, a Franciscan brother and a world-class vegan chef, contains a nice portrait of him. Another photo shows an associate chef carving a portion of Tempeh Wellington–an entree served in his Escoffier Dinner Menu. Soy-related recipes include: Tofu dip (p. 34). Dairyless, eggless quiche (with tofu, p. 34). Mushroom stroganoff (with tofu cream, p. 34). Curried tofu and bananas (p. 35).

794. Island Spring Inc. 1980. Can you make a living making tempeh? (Ad). In: William Shurtleff and Akiko Akiko. 1980. Tempeh Production: The Book of Tempeh, Volume II. Lafayette, California: New-Age Foods Study Center. 176 p. See p. 171.
• ***Summary:*** This quarter-page black-and-white ad is for the Soycrafter's Apprenticeship Program, a professional 21-day intensive "hands-on" course in the commercial production and marketing of tempeh, tofu, soymilk, and related soyfoods. Address: P.O. Box 747, Vashon Island, Washington 98070. Phone: (206) 622-6448.

795. Keough, Carol. 1980. Tempeh–Really good, really cheap food: In place of meat, it fills the bill for protein but cuts the bill for groceries. *Organic Gardening* 27:122-28. March.
• ***Summary:*** Introduces tempeh, describes how to make it, and gives recipes. Contains many photos.

796. O'Neill, Kevin. 1980. Tempe: A traditional food for tomorrow. *Indonesia Circle* (*Univ. of London*) No. 21. March. p. 54-59. [13 ref]
• ***Summary:*** An interesting introduction to tempeh. "Nothing certain is known of its introduction into Indonesia but one might guess that it was during the time of regular trade between South China and Indonesia starting about A.D. 1000. One Sundanese name for soya-bean is *kacang jepun* (Japanese bean) which might be significant."

"Pure culture fermentation of *Rhizopus* [to make tempe] was developed in the United States early in the 1960s.

"Editor's note: It has recently come to our attention that Dr. J. Hedger and Mr. T. Basuki of the Department of Botany and Microbiology, University College of Wales, Aberystwyth, have been experimenting with *tempe* production and, indeed, plan to start a *tempe* factory in Britain. Mr. Basuki has produced a four-page roneo leaflet, *Tempe–an Indonesian fermented soybean food,* which provides a clear and concise guide for the home *tempe*-maker, and Professor Hedger wrote a script for the BBC2 program "Tomorrow's world", on *tempe* which was broadcast in the summer of 1979...

"Finally, readers will be interested to know that ready-made *tempe* can sometimes be bought at Lee's Emporium, Dyne Road, off Kilburn High Road, in north-west London. I.C. Glover." Address: American Indonesian Chamber of

Commerce.

797. Shurtleff, William; Aoyagi, Akiko. 1980. Tasty homemade tempeh. *East West Journal.* March. p. 62-67.
• ***Summary:*** Gives an introduction to tempeh, a detailed description of how to make tempeh at home (with 8 illustrations), and four favorite tempeh recipes. Address: Lafayette, California.

798. Shurtleff, William; Aoyagi, Akiko. 1980. Tempeh production: The book of tempeh, volume II. A craft and technical manual. Lafayette, California: New-Age Foods Study Center (Renamed Soyfoods Center in Sept. 1980). 176 p. Illust. by Akiko Aoyagi Shurtleff. Index. March. 28 cm. [46 ref]
• ***Summary:*** Contents: Preface. 1. How to start a tempeh shop. 2. Setting up shop: Community or kitchen shop, fire cooker shop, steam cooker plant, modern factory, tropical village shop, tropical caldron plant. 3. Ingredients. 4. Principles of tempeh production. 5. Making tempeh in North America. 6. Making tempeh in Indonesia. 7. Making specialty tempehs: Introduction, specialty soy tempehs, other legume tempehs, grain (or seed) & soy tempehs, grain tempehs, okara tempeh, soy (or grain) & okara tempehs. 8. Quantity tempeh recipes & the soy deli. 9. Making tempeh starter. Appendices: A. Resources: People and institutions connected with tempeh production. B. Tempeh shops in the West. C. Measures, weights & equivalents. Bibliography. New-Age Foods study center. D. Index.

Note 1. This is the earliest known English-language book devoted entirely to tempeh production.

Note 2. On page 10 we read: "For more information about the natural low-tech soyfoods industry and its publication *Soyfoods,* contact the Soycrafters Association of North America,..." This is the earliest English-language document seen (Aug. 2011) that contains the term "low-tech" in connection with soy, or the term "low-tech soyfoods." Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

799. *Santa Cruz Sentinel* (*California*).1980. Workshop-lecture on tofu and tempeh Monday. April 30. p. 32. [3 ref]
• ***Summary:*** This news release explains that William Shurtleff and Akiko Aoyagi, authors of 3 best-selling books, will present a program and workshop on Monday, May 5, from 7:30 to 9:30 p.m. at Santa Cruz High School Auditorium. Donation is $1. "Sponsoring the lecture Monday is Monterey Bay Soy Foods whose proprietors, Jeremiah Ridenour and Kevin Van Slooten, plan to provide the community with fresh bulk tofu and other soy products." Photos show Shurtleff and Aoyagi. Note 1. This is the first program on Shurtleff & Aoyagi's Soyfoods America Tour 1980.

Note 2. This is the earliest document seen that mentions Jeremiah Ridenour in connection with soyfoods.

800. Java Murni Restaurant. 1980. April. New soyfoods restaurant or deli. 4509 Adams St., Carlsbad, CA 92008.
• ***Summary:*** Questionnaire filled out by owner of restaurant or deli. 1982. Lists the company's most popular soy-based menu items in descending order of popularity. The highest weekly total sales over the past 6-2 months, the month that this occurred, and why. The average weekly sales during this period. Average hourly wages paid to workers. The business startup cost (amount of money it cost to get the business started). Current profitability status. Plans for the future. Advice the owner would give to someone starting a similar business.

Poster sent by Doug Fiske. 1981. Dec. "Prepare now for Java Murni's vegetarian X-mas dinner. Dec. 26 and Dec. 27. 5-7 or 7:15-10 pm. Contains the menu and an illustration of a shadow puppet. Soy-related dishes include: Appetizers: Gulung Rebung (bamboo shoots wrapped in crispy tofu). Tofu Kembang (tofu flowers). Salad: Gado-gado (with peanut dressing). Entree: Tempeh Treat (tempeh braised in Indonesian soy and safflower oil). Tofu-Saus-Richa (tofu in sweet-and-sour spicy sauce). Chah Tempeh (mixed-tempeh-vegetables). Keringan Tempeh (sweet-piquant tempeh). Satay Tempeh (bbq tempeh). Soyex Malakka (soy cubes in malakka sauce).

Vegetarian menu. 1982. Shurtleff & Aoyagi. 1982. Report on Soyfoods Delis, Cafes & Restaurants. p. 3. Address: Carlsbad, California. Phone: 714-434-4131.

801. Shyeh, Ben Jo; Rodda, E.D.; Nelson, A.I. 1980. Evaluation of new soybean dehuller. *Transactions of the ASAE* (*American Society of Agricultural Engineers*) 23(2):523-28. March/April. [4 ref]
• ***Summary:*** An evaluation of a new soybean dehuller (see Nelson, Singh, and Singh, 1976 U.S. Patent 3,981,234) using a roller and stationary concave plate gave dehulling efficiencies up to 88%. Best results were obtained with a preheating treatment at 93ºC (200ºF) for 15 minutes. The dehulling operation was followed by a rubber roller treatment to loosen adhering hulls. Sizing of the beans into two size ranges was found desirable. Address: Food Science Dep., Univ. of Illinois, Urbana, IL.

802. **Product Name:** Yuba Rolls, and Stuffed Agé Pouches.
Manufacturer's Name: Soy Plant (The).
Manufacturer's Address: 211 East Ann St., Ann Arbor, MI 48104. Phone: 313-663-0500.
Date of Introduction: 1980. April.
New Product–Documentation: Talk with Steve Fiering. 1988. June 10. These were developed by Jura McDowell, who was a good cook. The yuba rolls were about 5 inches long and a little less than 1 inch in diameter. He made the yuba (but it was never sold as such) then use it as an outer

TEMPEH PRODUCTION

THE BOOK OF TEMPEH : VOLUME II

WILLIAM SHURTLEFF & AKIKO AOYAGI

wrapping around a filling with ground tempeh and soysage. The Agé Pouches were made by deep-frying tofu to make pouches, then opening and stuffing them with a delicious mixture of ground tempeh, and perhaps soysage, nuts, and sweet white miso. They were sold fresh in the deli, and they sold very well. Note: This is the 2nd earliest commercial soy product seen (Sept. 2011) in which tempeh is used as an ingredient.

803. Jerram, Elsie. 1980. Tempeh makes local debut. *Monterey Peninsula Herald* (*California*). May 14. p. 25.
• ***Summary:*** Based on a lecture by Shurtleff and Aoyagi. Address: Editor, Food Page.

804. *Iowa City Press-Citizen.*1980. Tofu, tempeh workshop set. May 20. p. 7A.
• ***Summary:*** "Want to learn how to cook with tofu and tempeh? William Shurtleff and Akiko Aoyagi, authors of books on preparing the soybean products, will present a program and workshop from 7:30 to 9:30 p.m. Thursday [May 22] at the Unitarian Church Auditorium, 10 S. Gilbert St." in Iowa City... The program is sponsored by the New Pioneer Cooperative Society. Photos show Shurtleff and Aoyagi. Address: Iowa.

805. *State Journal* (*Lansing, Michigan*).1980. Annual soy day to promote bean long on protein. May 27. Living Today / Lifestyle section.
• ***Summary:*** Len Stuttman is in charge of the Mid-Michigan "Soy to the World Day" which will be celebrated at a program on June 2 at 7:30 p.m. at the United Ministries in Higher Education, 1118 S. Harrison, East Lansing. His company, INARI Ltd. makes soynut snacks by the ton. "Authors William Shurtleff and Akiko Aoyagi Shurtleff will be the featured speakers, showing slides and explaining how to make soyfoods at home. They will prepare and serve a number of their favorite recipes in addition to discussing soy foods from a nutritional point of view... The program is sponsored locally by, among others, area food cooperatives, Michigan State University's Food Science and Microbiology Club, Tri-County Office on Aging, several area bookstores, INARI, and Unitarian Universalist Church. Admission is free. The Ingham County Task Force on Hunger and Nutrition will sponsor a vegetarian potluck at United Ministries beginning at 6:15 p.m. Those attending are to bring a vegetarian dish and recipe.

"On Tuesday, June 3, Shurtleff will present a program for the Tri-County Office on Aging senior citizen cooks on alternative ways of working protein into meals via soybeans."

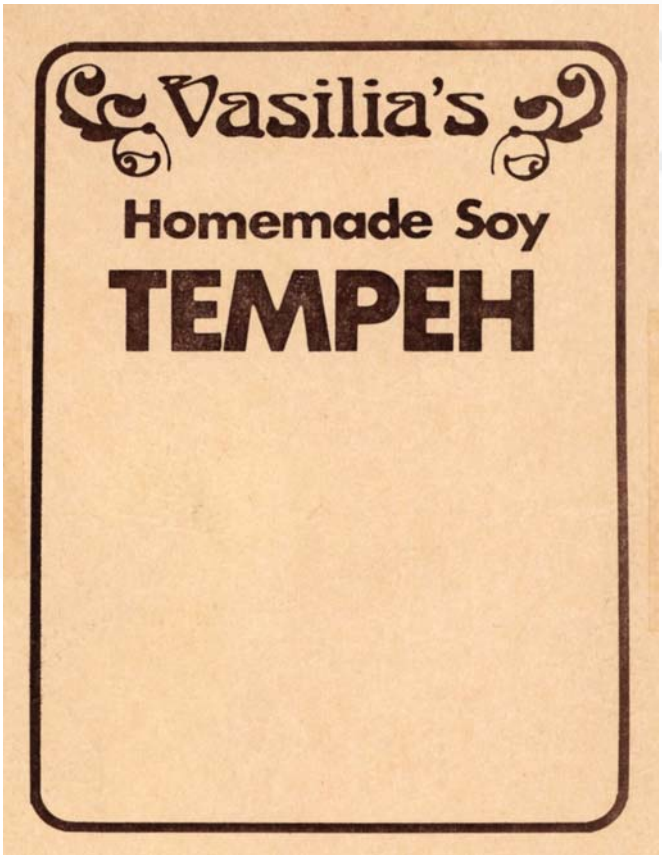
Note: This is the earliest published document seen (Sept. 1998) that contains the phrase "Soy to the World," which was coined by Len Stuttman for this event and used later that year for marketing his company's gift packs of soynuts.

806. Greenwood, Rebecca. 1980. Variety is possible with tofu, tempeh dishes. *Daily Camera* (*Boulder, Colorado*). May 28.
• ***Summary:*** Based on a lecture by William Shurtleff to 200 people sponsored by White Wave.

807. Owen, Sri. 1980. Tempe: A Javanese health food comes West. *PPC* (*Petits Propos Culinaires, London*) No. 5. p. 13-18. May. [Eng]
• ***Summary:*** Describes how the author (a woman) grew up in Padang Panjang (West Sumatra), then central Java (during World War II), her interest in tempeh there and in London. "Tempe is becoming in Britain one of those things of which people have vaguely heard but which remain teasingly mysterious. Even in Holland, where it is quite easy to buy, and in North America, where making tempe at home is a popular hobby for health-food lovers, it cannot yet be called a household word... A few people are now making tempe in Britain, and anyone who is seriously interested should write Dr. John Hedger, Department of Botany and Microbiology, The University College of Wales, Aberystwyth. Ready-made tempe can sometimes be bought at Lee's Emporium, Dyne Road, off Kilburn High Road in North West London." Tempeh recipes follow, starting with Tempe Goreng Bacem. Address: 96 High St., Wimbledon Village, London, SW19 5EG England. Publisher is Prospect Books, 45 Lamont Rd., London SW10 0HU.

808. Robertson, Valerie. 1980. Early history of Soyfoods Unlimited, Inc.–a large, pioneering tempeh making company in San Leandro, California.
• ***Summary:*** In Sept. 2011 Bill Shurtleff asked Valerie Robertson, with help from John and Gary Robertson, to reach back 30 years and (with the help of dated documents from those days) to try to reconstruct the origins of Soyfoods Unlimited–a pioneer tempeh maker in California. As Valerie recalls: "I think I first met you and Akiko at Eco House in Walnut Creek, run by Mark Maloney (later Mark Westwind); we kept our bees there and I met you one day when all three of us happened to be there. Then I saw an ad in the *Contra Costa Times* from Soyfoods Center asking for volunteers. I called and started doing work for you both, first doing office work–filing, folding pamphlets and then testing recipes and eating–tempeh!!! You were both very interested in tempeh because your *Book of Tempeh* had recently been published.

"Gary recalls that we were all at your house and you asked Gary (who was a contractor) and John (who was the Biomedical Director at John Muir Medical Center)–'What do you want to do? Are you happy with what you are doing now or would you maybe like to do something else?' You kind of put a bug in their ear. We talked about



doing something with tempeh and we started making and eating tempeh.

"We made our own tempeh at our home in Walnut Creek (see photo) using an incubator from John Muir Hospital. It was not hard to make and turned out like magic. Starting in 1981 we sold the tempeh we made at home under the label Vasilia's Homemade Soy Tempeh. My ancestors are Greek and 'Vasilia' is the Greek word for Valerie. Akiko designed the 'Vasilia's' label and we had it printed up. I taught tempeh and tofu cooking classes at a health food store in nearby Concord called The Harvest House. Actually, Akiko came to one of my cooking classes with me as my 'helper.' So I had an outlet via Harvest House and classes to sell tempeh.

"We started to get really interested in starting a tempeh company in the San Francisco Bay Area. Above all it was the tempeh itself that convinced us to do it. 1. We *loved* tempeh. 2. We made excellent tempeh at home. 3. We wholeheartedly believed it was a excellent protein food for vegetarians and all others. We believed in tempeh. It tasted so good, and the texture was amazing. It sold itself (proven during countless demos in stores). We had the desire and ambition to give it a try with a lot of sweat equity (eventually drilling out the concrete for drains, building incubation rooms, setting up a lab etc.).

"But back to the story: You and Akiko were about to leave on a speaking tour, which you called "1980 Soyfoods America Tour," to promote your books and tempeh, and to attend the University of Illinois soyfoods course and the 3rd annual Soyfoods Association of North American conference at the University of Illinois in Champaign-Urbana, Illinois. You both wanted to serve your favorite tempeh recipe during intermission to everyone at each talk. So Akiko asked me to help her make Tempeh Cacciatore (chunks of tempeh in a seasoned tomato sauce) and to "can" these in quart Mason jars. We had a ball together in your tiny kitchen and ended up canning 110 quart jars.

"On May 5, 1980, you and Akiko left Lafayette, California, on your tour, with your big white Dodge van loaded with books, canned tempeh, etc. You were planning to be gone for 3 months. At about this time we decided that we definitely wanted to start a company making tempeh. I think you (Bill) came up with the name, 'Soyfoods Unlimited.' It ended up being a corporation, incorporated in Nov. 1980 as Soyfoods Unlimited, Inc. The 'Inc.' part was costly; we had to paint a lawyer's house in Lafayette in exchange for the Inc.! It also (as you know) protected us as individuals.

"I decided to fly to Illinois to attend the SANA conference to learn as much as I could about making tempeh and the new soyfoods movement; John and Gary were busy with their work and could not go. On July 9-13, 1980, the Third Annual SANA Conference was held at the University of Illinois. It was a big success in every way. About 270-285 people from all over the world attended. I met Dr. Clifford Hesseltine and talked with him about tempeh and our ideas. He was very helpful and encouraging.

"On Aug. 3, 1980, you and Akiko returned to Lafayette from Illinois and your tour. You had given 27 programs and traveled 9,000 miles. At each program you served your favorite tofu and your favorite tempeh recipe, than asked for a show of hands as to which one people liked best–without exception tempeh was the favorite by a 2 to 1 ratio. We were ready to go.

"In about Sept. 1980 we signed the lease on a large building suitable for food processing in San Leandro, California. The first 3 months were rent-free. We knew we would need plenty of money to start the kind of company we envisioned. Gary invested $100,000 cash and John put in more than $35,000 by taking a second mortgage on our home on San Miguel Drive in Walnut Creek. The money started to flow out and our sweat equity began to flow in–John with his engineering mind and logic; Gary with his construction skills, and our knowledge of recipe development. We tested many recipes at home first. Murphy's Law was in full force, as every step in the process took much longer than expected.

"On Oct. 3, Akiko finished designing for us a new Soyfoods Unlimited letterhead, with promotional materials and even aprons for demos. The logo was like a soybean leaf with three leaves, one for each of the three of us (see photo).

"On Oct. 16, 1980, we finished a new 8-panel brochure titled "What is Tempeh?"–a joint venture of the Robertsons and Shurtleffs. We both had the rights to use it as we wished.

"Finally, on Feb. 15, 1981, the three of us begin making tempeh in our state-of-the -American-art $100,000 plant in San Leandro, California. The efficient, 1,850-square-foot operation, had a capacity of 10,000 pounds a week.

A photo shows Valerie seated near some tempeh on a table at her home in Walnut Creek, California. Valerie and John were married. John was Gary's older brother. All three lived in the same large home in Walnut Creek.

"Later that year, on July 8-12, 1981, the 4th Annual Soycrafters Conference was held at Colorado State University, Fort Collins, Colorado. I drove out with you and Akiko and Kazuko Aoyagi and Maria-Elena Nava of

THE MIRACLE OF FERMENTATION

The key to tempeh's wonderful flavor, meaty texture, and excellent nutritional value lies in the process of fermentation with the *Rhizopus* mold culture. Just as the miracle of fermentation brings us cheeses, yogurt, wines, beer, miso, natural soy sauce, and a host of other foods, it also brings us tempeh. The molds used to make tempeh are closely related to mushrooms, also prized for their wonderful aroma and flavor. And molds are used to make various cheeses, miso, and soy sauce. But why is a beneficial mold deliberately used in food? What does it do?

First the mycelium binds the loose soybeans into a firm, textured food, which can be sliced and used with great versatility, easily replacing meats, which are high in cholesterol, fats, and cost. The mycelium also gives us the flavor and aroma of sauteed mushrooms. But perhaps even more important, the mold creates enzymes which serve to break down or predigest the protein, fats, and carbohydrates in the tempeh, making them easier for the body to assimilate. The gas-causing oligosaccharides found in regular whole beans are virtually eliminated and the levels of various important vitamins (especially B-12, B-6, B-3, and folic acid) are increased by a factor of four or more. The mold also produces a mild natural antibiotic, which is thought to increase our resistance to some intestinal diseases. Finally the fermentation saves us fuel energy by reducing the cooking time from 4 to 6 hours required for whole soybeans to only 45 to 60 minutes while making the tempeh followed by about 3 minutes of deep- or shallow-frying, or 10 to 15 minutes of simmering in soups or steaming.

BUYING AND STORING TEMPEH

Tempeh is now sold in the West at a growing number of natural and health food stores. Look for it in the frozen or refrigerated foods section, or in the ready-to-eat forms at delicatessens. When buying fresh tempeh, see that the beans are bound together into a firm, compact cake by a dense, uniform white mycelium. It should have a pleasant, clean, mushroomy aroma. Some gray or black spots are normal sporulation and do not indicate spoilage. There is no reason to trim off the dark areas. Refrigerated, tempeh will keep for an average of ten days; frozen, it will keep for months. We recommend that tempeh be kept frozen, until you are ready to use it. Then remove it from the freezer and allow to thaw in the package for 45 minutes at room temperature. The tempeh can then be used in your favorite recipes.

Foods for Health — Soyfoods Unlimited®

WHAT IS TEMPEH?

Tempeh (pronounced TEM-pay) is a delicious fermented (cultured) food consisting of tender cooked soybeans (or occasionally other legumes, cereal grains, seeds, or a mixture of these) bound together by a dense cottony mycelium of fragrant white *Rhizopus* mold into compact ¾-inch-thick cakes or patties. Tempeh is usually sliced and fried, baked, or steamed. When fried, the surface is crisp and golden brown, and the flavor is most often compared to that of southern fried chicken, veal cutlets, or fish sticks. Tempeh is a natural meatless backbone of the diet in Indonesia, where it is made daily in 41,000 shops. It is now increasingly available at reasonable prices throughout North America.

With body you can sink your teeth into and a savory flavor, tempeh is unique in its ability to serve as a satisfying main course in place of meat, poultry, seafoods, or cheese, and to become a key source of protein in vegetarian diets. Convenient in that it requires only a few minutes of cooking, tempeh is also as versatile as it is nutritious; it can be used in literally hundreds of delectable Western-style or Indonesian recipes. You can serve it in place of meat in Tempeh Burgers, Tempeh Lettuce and Tomato sandwiches, Cutlets, Sloppy Joe Tempeh, Crisp Tempeh, Tempeh Cacciatore, Mock Chicken or Tuna Salads, or applesauce-topped Tempeh Chops. It adds a slightly nutty flavor to pizza, casseroles, spaghetti, tacos, or stir-fried rice. Pureed, it works like a soft cheese to make creamy dressings, spreads, and guacamole. Probably the most popular way to serve tempeh (and also the simplest), is as Coriander & Garlic Crisp Tempeh or Seasoned Crisp Tempeh.

Mexico, stopping overnight at your cabin at Lake Tahoe and sleeping out one night in a "snake farm" in the desert.

"Our company did well, launched many delicious tempeh products, and introduced many innovations.

Note: They were the first company to do dry dehulling and hull removal from their soybeans prior to cooking; for this they used a simple and ingenious mill and vacuum cleaner system designed by the Department of Food Science at the University of Illinois but modified and enlarged by the Robertsons. They started selling frozen soy tempeh, but after 2-3 months were selling 90% of their tempeh refrigerated, after steaming. In Sept. 1981 they introduced America's first nonfried tempeh burger, which they vacuum packed. In Jan. 1982 they started air-freighting 1,800 pounds a month of their tempeh burgers to the East Coast. In June 1983 Lonnie "Lon" Stromnes of Namaste Marketing began to work as their full-time marketing director.

"White Wave was a major tempeh maker at that time. In 1986 we met Steve Demos (founder and CEO of White Wave) at Spenger's restaurant in Berkeley and asked him if he would be interested in buying our company. White Wave acquired Soyfoods Unlimited, Inc. on Dec. 1, 1986 and each of the three of us Robertsons ended up owning 1% of White Wave.

"By acquiring Soyfoods Unlimited, White Wave became the largest manufacturer of tempeh in the United States. And he got our greatly superior process for making tempeh, the ability to make his own tempeh starter, our excellent recipes, our list of our distributors, a much greater presence for White Wave products on the West Coast, and much more. He also took on our debt! He thanked us for offering our business and our secrets to him instead of folding up. He is Greek, just like me.

"On May 7, 2002, Dean Foods acquired the remaining 64% of White Wave that it did not already own. At that point we sold our shares of White Wave stock to Dean Foods. Our stocks split and each share became 9,860 shares. We were each bought out at $145.00 a share. Not bad!

"The home I am living in today on the big island of Hawaii was paid for by the sale of the White Wave stock. I only wish I made a deal for endless tempeh!! I love tempeh!"

"I still eat tempeh all the time and still love it. I buy White Wave tempeh out here in Hawaii. I think Turtle Island also has a great white tempeh. I'm so glad it is available here in Hawaii at all the health food stores."

809. Shurtleff, William; Aoyagi, Akiko. 1980. Soyfoods America Tour: May 5 to June 10; July 25 to Aug. 3, 1980 (Log and trip report–unpublished, including Itinerary with map). Lafayette, California: New-Age Foods Study Center. Unpublished log.

• ***Summary:*** This trip had five purposes: (1) To introduce tempeh to America; (2) To promote the authors' newly published *Book of Tempeh.* Harper & Row, the publisher, paid most of the trip expenses; (3) For William Shurtleff to attend the University of Illinois Short Course in Soybean Processing; (4) To visit and study soyfoods companies in America; (5) To introduce people to the many advantages of a meatless / vegetarian diet.

A photo shows: Shortly before the trip, Akiko (left) and Valerie Robertson (right) (working in the Shurtleff's small home kitchen) "canned" many quart Mason jars of Tempeh Cacciatore to serve at the intermission of each lecture / presentation.

Includes the name and address of 37 people and organizations visited. Many of these were pioneers in the soyfoods and natural foods movement: April 25–Optimum Foods (Napa, California). April 27–David Burns (Sebastopol, CA). May 5–Jeremiah Ridenour of Monterey Bay Soyfoods (Santa Cruz, CA). May 6–Thelma Dalman, Foodservice Director for the Santa Cruz City Schools, *Monterey Peninsula Herald,* Ted & Marie Fehring (Carmel), Paula Welch Terui of Jack and the Beanstalk (Carmel Valley, CA). May 8–Al Jacobson of Garden of Eatin', Mr. Kaye Dunham of Tumaro's, Hugh Roberts of Meals for Millions. May 9–Eddie Okita of Okita Enterprises, and Noritoshi Kanai of Mutual Trading Co. (Los Angeles, CA). May 10–Kay Glass (La Cañada, CA). May 11–Frazier Farms natural foods supermarket (Escondido, CA), Bill Walton vegetarian and basketball star (San Diego, CA; we stay with Craig Wright and Andrew Solony of TriLife; they hope to market Bill Walton's tofu under the TriLife brand). May 12–Clare Quinn of The Farm (Tucson, Arizona; her check bounced so we never got paid). May 13–Kathryn Bennett of Southwest Soyfoods (Santa Fe, New Mexico), Tracy McCallum, Taos. May 14–Leslie Wertz (Alamosa, Colorado). May 16–Stay with Christie and John Baker (Boulder, Colorado). May 17–Steve Demos of White Wave Soyfoods and Good Belly Deli. May 18–Sanford and Rebecca Greenwood of East West Center (Boulder, Colorado). May 19–Judson Harper and the low cost extrusion cooker program at Colorado State Univ., Carol Hargadine of Nupro Foods & Soywaze Tofu (Fort Collins, CO). May 21–Gale Randall of the Indonesian Tempeh Co. (Palmyra, Nebraska). May 22–David Tucker of New Pioneer Co-op Society (Iowa City). May 23–George Strayer of Edible Soy Products (Makers of Pro-Nuts, May 23) and Agricultural Exports (Hudson, and Cedar Falls, Iowa). May 24–Cedar Falls (Iowa) and Minneapolis media. May 25–Pat Aylward and Jamie Stunkard of Joy of Soy Tofu (Minneapolis, Minnesota). May 27–Richard Cihoski (Duluth, MN). May 28–Chris Burant of Bountiful Bean Plant and Jehan Ziegler of Higher Ground Cultured Foods (Madison, Wisconsin). May 29–Danji Fukushima of Kikkoman Foods (Walworth, Wisconsin), Diane Loomans of The Magic Bean Co-op (Milwaukee, Wisconsin). May 30–Susan Dart (Lake Forest, Wisconsin), Research staff of Kraft Foods (Glenview, Illinois), Brian Schaefer of It's Natural (Evanston, Illinois). May 31–Paul Obis of *Vegetarian Times* magazine (with Brother Ron Pickarski) (Oak Park, Illinois). June 2–Lou Richard of Fearn Soya Foods, Leonard and Irene Stuttman of INARI, Ltd. June 3–John Gingrich of The Soy Plant. June 4–Tim and Carol Ann Huang of Yellow Bean Trading Co. (Detroit, Michigan). June 5–Glen Blix and Charles D. Howes of Loma Linda Foods (Mt. Vernon, Ohio; furthest point east on tour). June 6–Warren Hartman of Worthington Foods (Worthington, Ohio). June 7–Mick Vissman and Bill Lutz of Hip Pocket Tofu Deli and Rain Star (Columbus, Ohio), Ed Willwerth of Soya Food Products (Cincinnati, Ohio). June 8–Jay McKinney of Simply Soyfoods (Bloomington, Indiana). June 9–Lynn Adolphson and Bob Thompson of Archer Daniels Midland Co., and Grant Smith of A.E. Staley Mfg. Co. (Decatur, Illinois). June 10-11–Les Karplus of Corn Country Foods and Strawberry Fields. June 11–William Thompson and John Santa of INTSOY (Champaign, Illinois).

During the INTSOY Short Course: July 6–We did a program hosted by Patricia Mutch at Andrews University (Berrien Springs, Michigan). July 9-13–Third Annual Soycrafters Association of North America conference was held at the University of Illinois, produced by Richard Leviton. There were 270-285 attendees, and it made good money.

People at the University of Illinois we met during the course: Dr. William Thompson, Frances Van Duyne, Harold Kauffman, John Erdman, L.S. Wei, A.I. Nelson, M.P. Steinberg, Munir Cheryan, Ted Hymowitz, Woody Yeh.

Return trip after course: July 28–Bob Davis of Light Foods (St. Louis, Missouri). July 30–James Lowrie of Iowa State University (Ames, Iowa). Aug. 2–Lake Tahoe. Aug. 4–Home in Lafayette, CA.

At most of the public classes/lectures on this trip, Shurtleff and Aoyagi served their favorite tempeh and tofu dishes. They wanted to find out how Americans liked tempeh, so they asked for a show of hands as to which the attendees liked best. The tempeh dish was usually Tempeh Cacciatore, and the results were, on average, that the tempeh was preferred by a ratio of 2 to 1 over the tofu.

On this trip, Shurtleff and Aoyagi did 27 public programs, had 28 media interviews and appearances, traveled 9,000 miles, earned $13,000 gross income and $8,500 net income. Address: P.O. Box 234, Lafayette, California 94549.

810. Battin, Sandy. 1980. Tofu is cheap, tasty, high in protein, too. *Herald* (*Duluth, Minnesota*). June 4. p. 1D, 5D. Living & Food section. [2 ref]

• ***Summary:*** An introduction to tofu and soybeans, with several recipes, including Creamy tofu dressing with curry. William Shurtleff and Akiko Aoyagi recently conducted a program on tofu in Duluth, hosted and sponsored by Richard Cihosky, a Duluth city planner. A large photo shows Shurtleff and Aoyagi with dishes of Tempeh sloppy Joes and a Creamy tofu dip for vegetables. They are holding their books on tofu and tempeh.

811. Chiavetta, Lee. 1980. Protein-rich soybean may be wise solution to world food crisis. *Iowa City Press-Citizen.* June 9. p. 8. [3 ref]

• ***Summary:*** William Shurtleff (who calls himself "the Johnny Appleseed of tofu") and his wife, Japanese painter and cook, Akiko Aoyagi, discussed soyfoods and global food problems before a soyfood workshop sponsored by the New Pioneer Food Cooperative. Shurtleff said the audience

response is generally quite good, even in this beef-and-pork country. Address: Staff Writer, Iowa.

812. Tufford, Carolyn. 1980. Versatile vegetable assumes many uses and may be the answer to world hunger. *Herald-Tribune* (*Bloomington, Indiana*). June 11.
• ***Summary:*** A summary of a speech which William Shurtleff and Akiko Aoyagi presented about soybeans and soyfoods, especially tempeh and tofu, to about 100 persons of all ages at the Whittenburger Auditorium in Bloomington. Simply Soyfoods, a Bloomington-based company, provided recipes for tofu burgers and tofu onion dip. Address: Asst. Lifestyle Editor.

813. *Consumer Reports.*1980. Vegetarianism: Can you get by without meat? 45(6):357-61. June.
• ***Summary:*** Large sidebars include "Soybeans–the 'meat' that grows on vines," two sample menus for one day–one vegan and one with milk and eggs, and "The vitamin B-12 brouhaha" (tempeh is listed as a source). See also "Meatless meats" in this same issue.

"According to a recent survey, some seven million people in the U.S. now consider themselves vegetarians–nearly three times the number estimated a generation ago." Health is the reason most often cited by U.S. vegetarians. They believe that foregoing meat is better for them.
The word "vegetarian" was coined in 1842 by English vegetarians to describe people, such as themselves, who ate no meat, fish, or fowl. Address: Mt. Vernon, New York.

814. *Consumer Reports.*1980. Soybeans–the "meat" that grows on vines. 45(6):360. June.
• ***Summary:*** This sidebar to the article "Vegetarianism: Can you get by without meat?" gives a brief description of the soybean and its food uses. "Roasted soybeans [soynuts] can be a delicious snack food." A small amount of soy flour added to bread or pasta dough appreciably increases those foods' protein content. Sprouted soybeans can be eaten cooked or as a salad vegetable and are a good source of vitamin C.

"Soybeans can be made into a milk that, when fortified, can supply nutrients usually obtained from cow's milk. That's important for total vegetarians or those allergic to milk protein. Soy milk can be made into a cheese: soybean curd, or tofu, familiar to many as the little white cubes floating in the soup at a Chinese restaurant." Also mentions soy sauce, miso, tempeh, and meat extenders or meat analogs.

815. **Product Name:** Living Tempeh Starter [Kit Size 15 x 60 mm Petri dish, or Professional Size 15 x 100 mm Petri dish], Koji Starter for Miso (40 gm) [Light Rice, Red Rice, Barley, or Soybean Koji], Shoyu Koji Starter (60 gm), Natural Nigari (Tofu Coagulant).
Manufacturer's Name: GEM Cultures.
Manufacturer's Address: 30301 Sherwood Rd., Fort Bragg, CA 95437. Phone: 707-964-2922.
Date of Introduction: 1980. June.
New Product–Documentation: Article and ad in Soyfoods. 1980. Summer. p. 4-5. "New Source of Tempeh Starter." "Gordon McBride, PhD, former manager of the Living Culture Department at Ann Arbor Biological Center [Inc. in Michigan], and his wife, Betty Stechmeyer, B.S., announced the formation of GEM Cultures, which will provide high-quality tempeh starter cultures at reasonable prices."

Letter and catalog from GEM Cultures to Tempeh producers. 1980. July. Offers a free sample of professional size Living Tempeh Starter (a pure culture of *Rhizopus oligosporus*).

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 55. This starter, sold live, was grown on agar in petri dishes.

Letter from Betty L. Stechmeyer of GEM Cultures. 1991. Oct. 18. These four basic products were introduced in June 1980. For a while, they tried to import commercial shoyu and miso cultures from Nihon Jozo Kogyo but it never worked, so they ended up ordering via Mitoku.

816. Hesseltine, C.W.; Wang, H.L. 1980. The importance of traditional fermented foods. *BioScience* 30(6):402-04. June. [12 ref]
• ***Summary:*** Table 1 gives, for each food, the name, area or country, microorganism used, substrate, nature and uses. The following soy-related foods are included: Soy sauce (chiang-yu, shoyu, toyo, kanjang, kecap, see-ieu), miso (chiang, doenjang, soybean paste, tauco), Hamanatto (toushih, tao-si, tao-tjo [sic, tao-tjo = tauco is Indonesian-style miso]), sufu (fu-ru, fu-ju, tou-fu-ju, bean cake, Chinese cheese), tempeh, bongkrek, ontjom (oncom), natto. Address: NRRC, Peoria, Illinois.

817. **Product Name:** Tempeh.
Manufacturer's Name: Noble Bean.
Manufacturer's Address: (1) 38 Grange Ave., Chinatown, Toronto, ONT, Canada; (2) From Jan. 1984–293 Augusta Ave. (in Kensington Market, near Oxford St.), Toronto, ON M5T 2M2.
Date of Introduction: 1980. June.
Ingredients: Soybeans, water, culture.
Wt/Vol., Packaging, Price: 12 oz perforated plastic bag (not vacuum packed). In spring 1982 an 8.5 oz size was introduced.
How Stored: Frozen.
New Product–Documentation: Label. 1985, undated. 5.25 inches square. Green on yellow. "An excellent source of protein. Culturing fine tempeh since 1979." 227 gm. Recipes for Tempeh Shish Kebab, Indonesian Fried Tempeh, Nutritional Yeast and Tempeh Casserole; Letter from Allan Brown. 1985. Aug. 7. "I have been making tempeh since

1979. [He started making it commercially on The Farm in Lanark, Ontario.] We bought Robert Walker's equipment in 1980. We just moved back to the country, near Plenty Canada. We're at R.R. #1, McDonalds Corners, ONT, K0G 1M0, Canada."

Talk with John Gabriel, former tempeh maker and member of The Farm, now living in Nevada City, California. 1992. April 28. Allan Brown is now making 200 lb/day of tempeh, which makes him the biggest tempeh maker in Canada.

Talk with Allan and Susan Brown. 1998. May 11, followed by letters from Allan and Susan. Their company is still named Noble Bean, not Noble Beans. They first began making tempeh commercially in mid-1979 at The Farm in Lanark, Ontario. After about 6 months, by the time Alan and Susan were ready to leave The Farm, Robert Walker had suffered a stroke and his tempeh-making equipment was up for sale. So as the Browns moved to Toronto, they bought Robert's equipment. They located a small shop at 38 Grange Ave., in the heart of Toronto's Chinatown, and founded Noble Bean. There they began making tempeh in about June of 1980. They produced 200/300 lb/week. Their first distributor was Ital Foods, a Rastafarian community that made vegetarian sandwiches and distributed them, along with Noble Bean's tempeh, to natural food stores. Susan writes: "When we began to make tempeh in Toronto, I made the starter. I sterilized bottles of rice in a pressure cooker, and inoculated them with spores from the Tempeh Lab in Summertown, Tennessee (made by Cynthia Bates). We incubated them in our tempeh incubator. In 1983 I started using a larger autoclave to prepare the rice medium. When our second son, Marty Brown, was born (on April 13, 1988), we began buying bulk inoculant from the Tempeh Lab, as we still do."

Allan writes: "In the fall of 1983 we moved back to The Farm near Lanark, Ontario, to have a home birth. We brought a happening scene with us–six freezers and a strong market in Toronto 225 miles away. We were feeling out what things were like and discovered much dissention and competitive vibes among the men (Plenty vs. Farm Foods, etc.). After one week we knew we weren't going to stay. It was coming apart at the seams. But while we were there amongst good friends, Noble Bean was a community business for a short while. Our first son, Casey Brown, was born at the community on Nov. 6, 1983. We left in Jan. 1984, when Casey was 2 months old, and moved back to Toronto, where we rented a house at 293 Augusta Ave. (two doors from Oxford St., postal code M5T 2M2) in Kensington Market. This was the ethnic food center of Toronto. At our house on Augusta, we had our tempeh shop on the first floor, and we lived upstairs. We were then distributing to 40 stores weekly. We also distributed tofu burgers from La Soyarie of Ottawa, Ontario. In late 1984, EcoFarms began distributing our tempeh to farther-flung stores in Ontario."

In June 1985, after about 5 years in Toronto, they bought ten acres of land near McDonalds Corners (not far from The Farm in Lanark, Ontario), and moved Noble Bean onto that land.

Note 1. This is the earliest soyfoods company seen (Sept. 2011) that has the term "Noble Bean" in the company name.

Note 2. This is the earliest known commercial soy- or tempeh product made by Noble Bean in Canada.

818. Shurtleff, William; Aoyagi, Akiko. 1980. Kicking the meat habit with soyfoods. *Vegetarian Times* No. 38. June. p. 30-31.
• ***Summary:*** Contains recipes for: Tofu steak. Tofu burgers. Teriyaki tofu. Tofu cutlets. Tofu Italian meatballs. Tempeh burger. Sloppy Joe tempeh. Tofu jerky (marinated in teriyaki sauce, then baked). Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

819. Shurtleff, William. 1980. Look out Big Mac–tempeh: Making it at home. *CSC Reports* (*Elkins Park, Pennsylvania*) 2(2):4, 10. Spring/Summer. Cover story. [1 ref]
• ***Summary:*** A detailed description of how to make tempeh at home with six illustrations (line drawings) and three recipes. Large photos of William Shurtleff and Akiko Aoyagi are on the cover of this issue. Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

820. Soycrafters Assoc. of North America. 1980. Estimated soyfoods industry statistics (News release). Sunrise Farm, Heath Rd., Colrain, MA 01340. 1 p. June.
• ***Summary:*** Raw soybean usage, number of companies, employees, food production, wholesale value, and retail value are given for tofu, other soyfoods (mainly tempeh and miso), and total. Based in part on statistics gathered by Soyfoods Center. Address: Colrain, Massachusetts.

821. Steinkraus, Keith H. 1980. Introduction: Food from microbes. *BioScience* 30(6):384-86. June. [12 ref]
• ***Summary:*** Contents: Meat analogs. The role of plants. Microbe production. Fermented foods: Tempeh, miso, soy sauce. Address: New York State Agric. Exp. Station, Geneva, NY 14456.

822. Thompson, William N. 1980. History of work with soy and views on the potential of soyfoods around the world (Interview). Conducted by William Shurtleff of Soyfoods Center, July 3. 3 p. transcript.
• ***Summary:*** 1. What is your background and how did you become interested in soy and INTSOY? Ans: He grew up on a farm in Illinois when soy was still a very small crop. In college, he was an ag economist, specializing in farm management, with work on the economics of various types of cropping systems. In 1965 he helped to develop an

agricultural university in Sierra Leone, This experience was very valuable in orienting him toward the problems of the developing world. Since then, most of his work has been on these problems. He has had short-term assignments in India, Nepal, and Thailand, where he developed research and education organizations. He is the first director of Intsoy. He had no special interest in soy before joining Intsoy except that soy and maize are major crops in Illinois. He is mainly an administrator, not a technical man. His major role has been to develop an institutional structure to make knowledge on soy available worldwide.

2. What do you feel are the two or three main advancements that INTSOY has made worldwide? 1. Facilitate worldwide network to improve communications among people interested in soy. Regional conferences, newsletter, publication series, training courses at the Univ. of Illinois. 2. Focus on the key problems of soy in tropical countries. Intsoy has more impact in India than in any other country. The India program started in 1965 (funded by US AID) with the cooperation of Indian food scientists and agronomists, specially at Pantnagar and Bareilly. The two university development projects in India were in Madhya Pradesh and Uttar Pradesh. Then the Coordinated Research Project on Soybeans was developed–both utilization and production. The results were exciting. Intsoy grew out of that program as the potential became clear. Now India has 1 million acres in soybeans. Develop soybean varieties that will grow in areas where it was formerly not thought possible. Develop new Maturity Groups 0 and 00 to the north and 9 and 10 to the south as soybeans are grown ever closer to the equator. Work on soybean diseases (mosaic virus), pest control. Intsoy has done more work in soybean production than in utilization. It is hard to get financing for utilization.

New soybean countries working with Intsoy: Ecuador now has 30,000 acres of soybeans, Egypt 50,000 acres, Ivory Coast, Pakistan (good yields), Colombia, Guatemala (work with Plenty from Tennessee), Indonesia, Thailand, Zambia, Kenya, Ghana, and Nigeria. 3. The method for boiling and processing whole soybeans using sodium bicarbonate has been a breakthrough. Soy + cereals make low-cost infant foods.

3. Do you feel that in 20 to 30 years most countries in the world will be growing and processing soybeans. Yes, he thinks that, in the next 15-30 years, most developing countries will have soybeans growing somewhere in their country. This will take adaptive research domestically. Some areas and climate in most countries are suited to soybeans, which can now be grown under a wide range of conditions. The soybean is a high producer of both energy (calories) and protein per hectare.

4. What are your views on low-technology soyfoods in Third World Countries? Which particular foods do you feel will become widely used in South Asia, South America, and Africa. Intsoy's primary orientation is low-tech–using less capital and more labor. The Sri Lanka program is medium- to low-tech. Intsoy is proud of that program and its training activities. There is great potential to expand soybean utilization in this way.

5. How do you feel about the use of soy in livestock feeds in poor countries? Is there a danger that the upper classes will use most of the soy protein to make their meat leaving little for direct food use? This is not much of a problem since prices for soy will always be low for use as livestock feed. We should use soy to help as many people as possible. The more affluent, with economic and political power, will consume more animal proteins and soy. Soy will easily find its way into feed. We need strategies to get soy to the poor–those who need it most. It can also be used in feeds for animals of the poor. Intsoy's bias is to help soy find its way into the diets of low-income people. We must be very careful with the crop that is displaced, so that a net gain results. In India, the soybean fit in as a monsoon crop where no other crop was grown. Beware of the Brazil problem. Intsoy did some variety testing in the Amazon in Brazil. They now have varieties that yield very well in northern Brazil. Brazil has lifted some technologies from the U.S., such as highly mechanized farms, but this will not work in northeastern Brazil. There has been aggressive government support and subsidies for soy in Brazil. Dr. Thompson has lots of respect for Brazil and the government's support for agricultural development. Now they need to work on nutrition and food uses. The main problem for Intsoy is to figure out how soy can met the needs of a particular country or region; not to get soy growing everywhere.

6. Are you aware of a deemphasizing of the role of protein in the diet in Third World countries? How might this affect soy? If we grow enough grains, will the protein take care of itself? Soy fits in nicely with the Green Revolution, although this revolution has led to a decrease in legume production in India. This leads to more funding for IRRI and less for soy. But there is still a problem of protein in some countries that have done a lot to meet calorie needs. It is an oversimplification to say that a diet with adequate calories will contain enough protein. Indians now realize this. They now want more dairy milk–the white revolution.

7. Recent findings at MIT and INCAP have shown that for humans soy protein is approximately equal in quality to that of milk and meats. How long do you think it will be before this finding has an impact in America and the Third World? Dairy milk is no longer considered to contain higher quality protein than soymilk. Dr. Thompson thinks this research data is solid. Perhaps more important, we can produce 4 times as much protein from a unit area of land in the form of soymilk than of dairy milk. So the key problems are acceptability and cost.

In the U.S., as with margarine replacing butter, there is a gradual move toward vegetable proteins. That move is faster in the Third World where people have less choice with

their food dollars. Dr. Thompson thinks that when people are introduced to soyfoods in the Third World, they will generally like them, and buy or make them. They are not as resistant to change as we might think–as shown clearly in the Sri Lanka program. Moreover, ingredients like ground whole soybeans or soy flour can be added to baked goods or tortillas where people are not aware that they are eating a more nutritional food.

8. How might the Soycrafters Association and our New-Age Foods Study Center cooperate with INTSOY? Specific projects? He thinks our two organizations are more oriented toward the USA, whereas Intsoy is oriented toward the Third World. Yet he sees good opportunities for cooperation–as in Intsoy learning more about traditional Asian soyfoods such as tofu, tempeh, miso, etc. He hopes our two organizations can have more of an impact on the Third World. Les Ferrier has done lots of overseas utilization work. Maybe we could be on a technical advisory committee (TAC).

9. Would you favor legislation requiring 5-10% fortification of items such as baked goods and chapaties in poor countries growing soybeans if this did not decrease the acceptability of the foods. How might it affect cost? Is there any such legislation?

10. Any other comments? Intsoy's annual budget is less than $2 million, including $850,000 from AID for Urbana and Puerto Rico. IRRI's budget is about $15 million. Part of the reason for the difference is due to the reevaluation of the importance of protein in human diets. Address: Director, INTSOY, Univ. of Illinois at Urbana-Champaign, Urbana, Illinois.

823. United Press International (UPI). 1980. Soy foods heralded as key to survival. *Toronto Star* (*Ontario, Canada*). July 28. p. C4.
• ***Summary:*** "Urbana, Illinois (UPI)–If the 1980s are the years of tofu, the '90s belong to tempeh and miso." These foods are believed to hold the key to world hunger problems.

The article is a summary of the Soyfoods Association of North America's annual meeting, at the University of Illinois. Speakers included William Shurtleff, Dr. Clifford Hesseltine, Richard Leviton.

824. Dosti, Rose. 1980. Tempeh: An old food moves out of ethnic kitchens. Tofu's Indonesian cousin is making L.A. debut. Soy food takes many forms. *Los Angeles Times.* July 31. Part VII. p. 1. Part VIII. p. 16, 18 (p. J18, K18).
• ***Summary:*** This two-part article is a good introduction to tempeh (pronounced tempay), "which follows on the heels of the rising popularity enjoyed by its non-fermented cousin, tofu (soy bean curd),..." Discusses the work of William Shurtleff and Akiko Aoyagi in introducing tempeh and other soyfoods to America. Janto M. Khoe is the Filipino owner of Bali Foods (4219-B Alderson Ave., Baldwin Park, California). It took him 4 years to develop a method which produces the firm tempeh that Indonesians prize. Contains six recipes: Tempeh with batter. Tempeh egg rolls. Scrambled tempeh. Tempeh croquettes. Crisp tempeh snack. Tempeh vegetable soup. Photos show: Fresh, thick cakes of tempeh, sliced and cubed. A table full of tofu dishes. Mr. Khoe and his wife, Erna Lauw.

Part II, titled "Soy food takes many forms," discusses the nutritional value of tempeh, how to store, cut, and cook fresh tempeh, how to reconstitute dry tempeh, and where to buy tempeh in the greater Los Angeles area. Address: Times staff writer.

825. American Dietetic Association. 1980. Position paper on the vegetarian approach to eating. *J. of the American Dietetic Association* 77(1):61-70. July. [54 ref]
• ***Summary:*** This position paper is surprisingly supportive of a lacto-ovo vegetarian diet, although the ADA continues to feel that combining proteins is important. It states that "a growing body of scientific evidence supports a positive relationship between the consumption of a plant-based diet and the prevention of certain diseases," including coronary heart disease, osteoporosis, and gastrointestinal and reproductive cancers.

Contents: Introduction. Definition of terms: Vegetarian, vegetarianism, traditional vegetarians, total vegetarians or vegans, lacto-vegetarians, semi-vegetarians or partial vegetarians, new vegetarians (since 1960, incl. yogic vegetarians, Hare Krishnas or Krishnas, Sufis, Sikhs, Macrobiotics), fruitarians, raw food eaters, individualistic vegetarians, alternative life style diet. Other terms which relate to vegetarianism: Natural foods, organic foods, unrefined foods, unprocessed foods, health foods, meat analogs (look and taste like meat), nutritional or food yeast, milk substitute (alternate) (usually based on soy. "Calcium, zinc, vitamins A, B-12, D, and K, and thiamin are all substantially lower (or missing) in these home-made products than in breast milk or other proprietary formulas"), fermented foods (incl. soy sauce, miso, tempeh–may contain some vitamin B-12), seaweeds and algae.

Vegetarianism past and present: Historical perspectives (omnivorous diets), vegetarianism in the U.S. today (it is more popular than at any time in the nation's history). Nutrition issues: Proteins, energy, carbohydrates and fats, vitamins and minerals (vitamins B-12 and D, calcium and riboflavin, iron and phytic acid, zinc and phytates). Groups with special physiologic risks: Pregnant and lactating women, infants and children (lacto-ovo- and lacto-vegetarian diets, vegan diets–the use of properly fortified soy milk is strongly recommended, vitamins and minerals), adults with special health problems (lactose intolerance, diabetes mellitus). Implications of vegetarian diets for health promotion and prevention and treatment of disease: Coronary heart disease, cancer, obesity, dental caries, osteoporosis. Menu planning guidelines for vegetarians. Meat analogs.

Summary. The President's page: Esther A. Winterfeldt, PhD, RD, on "Position papers."

"Macrobiotics–persons who consume vegan or vegetarian diets which involve extensive non-animal food avoidances, use of unprocessed, unrefined, 'natural', and 'organic' foods; and also, in some forms, fluid restriction. Tamari, miso, and various seaweeds are used extensively and are believed to be endowed with special properties.

"Vegetarianism–past and present: The American Dietetic Association recognizes that most of mankind for much of human history has subsisted on near-vegetarian diets. The vast majority of the population of the world today continues to eat vegetarian or semi-vegetarian diets for economic, philosophical, religious, cultural, or other reasons. The matter of motivation is crucial, because it affects the diet adopted, adherence to it, and other characteristics of life style."

"Nutrition issues: The American Dietetic Association affirms that a well planned diet, consisting of a variety of largely unrefined plant foods supplemented with some milk and eggs (lacto-ovo vegetarian diet) meets all known nutrient needs. Furthermore, a total plant dietary can be made adequate by careful planning, giving proper attention to specific nutrients which may be in a less available form or in lower concentration or absent in plant foods."

Note: This is the earliest English-language document seen (June 2002) that uses the term "plant-based diet" to refer to one that contains no animal products.

826. Everybody's Vegetarian Restaurant. 1980. July. New soyfoods restaurant or deli. 120 21st Ave. North, Nashville, Tennessee.
• ***Summary:*** Menu sent by Richard Leviton, obtained while visiting the restaurant. 1982. April.

Leviton, Richard. 1982. "Everybody's Restaurant. The Farm brings soyfoods to Nashville." *Soyfoods.* Summer. p. 38-39.

Shurtleff & Aoyagi. 1982. Report on Soyfoods Delis, Cafes & Restaurants. p. 3. Started July 1980 by members of The Farm, in Summertown, Tennessee. Address: Nashville, Tennessee. Phone: 329-2000.

827. Island Spring Inc. 1980. Can you make a living making tofu? (Ad). *Soyfoods* 1(3):8. Summer.
• ***Summary:*** This quarter-page black-and-white ad is for the Soycrafter's Apprenticeship Program, a professional 21-day intensive "hands-on" course in the commercial production and marketing of tempeh, tofu, soymilk, and related soyfoods. Address: P.O. Box 747, Vashon Island, Washington 98070. Phone: (206) 622-6448.

828. Leviton, Richard. 1980. Effective soyfoods marketing: "We want to do for tofu what flavors did for yogurt." *Soyfoods* 1(3):46-51. Summer.
• ***Summary:*** Discusses the tofu marketing strategies of: (1) Steve Demos at White Wave (Boulder, Colorado); he makes 7,500 lb/week of tofu and tofu products; (2) John Paino of Nasoya Foods (Leominster, Massachusetts). Nasoya makes four tofu spreads and a tofu mayonnaise; (3) Luke Lukoskie of Island Spring, Inc. (Vashon, Washington). Each week the company produces 10,000 lb of tofu, five flavors of Soyfreeze (soymilk ice cream), soyloaf, tempeh, soymilk, and spicy Korean tofu; (4) Madeline Fox, director of Marketing at the New England Soy Dairy (Greenfield, Massachusetts).

Photos show: (1) Tom Timmins (rear view) addressing a soyfoods press conference audience in Boston. (2) A waiter in a black bow tie setting up the tofu buffet at the Seventh Inn.

Note: This is an earliest document seen comparing the marketing of tofu to yogurt (the dairy product) in the title. Address: Colrain, Massachusetts.

829. New-Age Foods. 1980. Calling all soycrafters... Start your own soyfoods business. Tofu, soymilk, tempeh, miso. Here are the books that show you how! (Ad). *Soyfoods* 1(3):45. Summer.
• ***Summary:*** This 2/3 page ad is for three books by Shurtleff and Aoyagi: *Tofu & Soymilk Production. Tempeh Production. Miso Production.*

"Since publication in 1976 of *The Book of Tofu* by William Shurtleff & Akiko Aoyagi (there are now a quarter million copies in print), more than 120 new tofu shops and soy dairies have been started in North America. Based on the authors' *Book of Tempeh* and *Book of Miso,* many new tempeh and miso shops have also come into being. The founders of these shops have joined to form the Soycrafters Association of North America. Indeed a growing number of people are joining the Soyfoods Revolution and finding that the soycrafting arts offer just the type of creative, satisfying, and financially rewarding work and way of life they have long been seeking–plus an opportunity to make a vital contribution to the future.

"Three beautiful technical manuals: Based on over seven years of research with master craftsmen and modern producers in the U.S. and around the world, Shurtleff and Aoyagi have prepared three beautiful craft and technical manuals, containing all the information you'll need to start and run your own soyfoods business on any of various scales and budgets from low-cost community shops up to large modern plants. These books, used to start virtually all the shops mentioned above, each come in a handsome large (8½ by 11-inch) format, filled with informative illustrations."

A brief description is given of each, along with the price, and a photo of the cover. "Free with each book: A list of all tofu, tempeh, or miso shops in the West, and applications for the Soycrafters Apprenticeship program, Soycrafters Assoc. of North America, and *Soyfoods Magazine."* Address: New-

Age Foods, P.O. Box 234, Lafayette, California.

830. Shurtleff, William. 1980. Soyfoods in America 1980: Progress, problems, challenges. Opening remarks to the 1980 Soycrafters Conference at the University of Illinois. Opening paper presented at Third Annual Soycrafters Conference, Urbana, Illinois. July 9. 14 p. Unpublished manuscript.
• ***Summary:*** The full text of this presentation has been transcribed. Ten trends and the major events of the past 12 months are reviewed. The key challenge is still to build a strong Soycrafters Association. Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

831. *Soyfoods.*1980. Centrifuge proves efficient in tempeh production. 1(3):40. Summer.
• ***Summary:*** The Tempeh Works (Greenfield, Massachusetts) has purchased a laundry extractor to spin dry their cooked soybeans for tempeh production. This centrifuge works much better than the simple drying table with overhead fans described in *Soycraft* (1(2):39–Winter 1980). The extractor was purchased used for less than $1,000. It dewaters the beans in 2 minutes.

Island Spring (Vashon, Washington) also uses a centrifuge for making tempeh; theirs cost $225 from a junk dealer who buys equipment lots from Army surplus. A photo shows a long-haired production worker at The Tempeh Works with their centrifuge.

832. *Soyfoods.*1980. Soyfoods to the American taste: An interview with Drs. Clifford Hesseltine and Hwa L. Wang. 1(3):58-62. Summer. [1 ref]
• ***Summary:*** Dr. Hesseltine has just returned from a six-week to East Asia. In Taiwan he studied soy sauce fermentation and gave advice on setting up a national collection of microorganisms used in soybean fermentations. In Indonesia he attended an international symposium on various aspects of fermentation as a method a processing foods, with an emphasis on soybeans in Southeast Asia. "These people look to us in the West as far as science is concerned. Suddenly we see scientific institutions in the U.. and now in Europe being interested in high protein foods made from soybeans. The East Asians follow and say, 'Well, if its very interesting for the West, then we should be interested in it.'" There is increasing interest in traditional, lightly-processed soyfoods.

Way back in 1963 the NRRL did research on making tempeh perforated plastic bags. Today, "on the island of Java, 90 percent of tempeh is now produced using plastic bags, including the tempeh I saw being sold on the street,..."

Dr. Wang, who was born and raised in China, recently returned there to visit family. She noted: "To me, it is a very sad story... "Even tofu is rationed now. You can't buy tofu every day, probably once a week." "Soy sauce is not hard to get. Miso never had as much importance as in Japan... Tofu and soymilk are the two foods that were very common before. We stayed at a hotel and we only had soymilk once a week, in the morning for breakfast. And tofu, I don't even remember having eaten any."

"Dr. Hesseltine: Natto is one of the most rapidly growing fermented soyfoods in Japan, which surprised me, over something like miso. Natto has become more popular because it's supposed to be the great aid for digestion. In the new form, natto is much more acceptable as a food because the old, traditional type is sticky (it's a real mess) and this isn't. This is coated, so what you get is like small peanuts coated with powder; they don't stick to your hands."

Dr. Hesseltine: "What I saw in Taiwan really fascinated me–pressed tofu sheets [*pai-yeh*]. "We would like to see the soycrafters making some recommendations [for us] as to practical areas of research for soybeans."

Portrait photos show (1) Dr. Clifford Hesseltine. (2) Dr. H.L. Wang. Two photos of each, seated. Address: NRRC, Peoria, Illinois.

833. *Soyfoods.*1980. New source of tempeh starter. 1(3):4. Summer. [1 ref]
• ***Summary:*** "Gordon McBride, PhD, former manager of the Living Culture Department at Ann Arbor Biological Center, and his wife, Betty Stechmeyer, B.S., announced the formation of GEM Cultures which will provide high-quality tempeh starter cultures at reasonable prices."

A ¼-page ad for their Living Tempeh Starter (LTS) is on p. 5.

834. Wagner, Martha. 1980. Tempeh: Food for the future. *New Age Journal* (*Boston, Massachusetts*). July. p. 68-71.
• ***Summary:*** An introduction to tempeh with 5 recipes. Address: Eugene, Oregon.

835. Wang, H.L. 1980. Enhancement of nutritive factors in fermented foods. Paper presented at the International Fermentation Symposium, London, Canada. July 21-23. 9 p. Address: NRRC, Peoria, Illinois.

836. Palmer, Jane. 1980. Yogurt's success inspires tofu backers. Soybean product adapts to main dishes, desserts. *World-Herald* (*Omaha, Nebraska*). Aug. 6. p. 17.
• ***Summary:*** William Shurtleff and Akiko Aoyagi were in Omaha, Nebraska, last week to present a program on tofu and tempeh, two soybean products. Contains three tofu recipes: Tofu burgers. Creamy tofu dressing. Tofu cheesecake. Photos show Shurtleff and Aoyagi. Note: This is an second earliest document seen comparing the marketing of tofu to yogurt (the dairy product) in the title.

837. *Journal Star* (*Peoria, Illinois*).1980. Tempeh, tofu, miso may replace hot dog. Aug. 11.
• ***Summary:*** At a recent national conference held at the University of Illinois, William Shurtleff discussed the

potential and possible future of these three foods. His remarks were supported by those of Dr. Clifford Hesseltine, a microbiologist at the USDA's research laboratory in Peoria, Illinois. Hesseltine added that the use of tempeh is growing "at a phenomenal rate."

838. Huey, Pamela J. 1980. Conference sees future for tofu, tempeh, miso. *Hartford Courant* (*Connecticut*). Aug. 13. p. 1A.
• ***Summary:*** "If the 1980s are the years of tofu, the '90s belong to tempeh and miso. All three are soybean products long used as staple foods in several Asian countries." William Shurtleff spoke about these foods at a recent national conference at the University of Illinois.

Eight years ago tofu was largely unknown in the United States. During the past four years, the number of tofu makers in the U.S. has gone from 60 to 240, according to Shurtleff.

"Tempeh is a fermented soy food held together by the fibers of the tempeh culture. It has a meaty texture and flavor." Dr. Clifford Hesseltine spoke about tempeh, whose use is growing "at a phenomenal rate."

"Shurtleff is convinced the system of feeding animals for slaughter is the major reason for hunger in the world. Soy foods are a logical replacement for the feedlot system, he said." Address: United Press International (UPI).

839. Zilliken, Fritz W. Z-L Limited Partnership (Janesville, Wisconsin). 1980. Antioxidants, antioxidant compositions and methods of preparing and using same. *U.S. Patent* 4,218,489. Aug. 19. 8 p. Application filed 17 Jan. 1979. [10 ref]
• ***Summary:*** "This is a division of application Serial No. 804,594, now U.S. Patent No. 4,157,984, filed June 8, 1977." It describes the process for recovery of a steroid-type antioxidant, ergostadientriol, from the lipids of tempeh. This antioxidant has exceptional antioxidative properties when used in combination with isoflavones. Address: Remangen, West Germany.

840. **Product Name:** Higher Ground Tempeh.
Manufacturer's Name: Higher Ground Cultured Foods.
Manufacturer's Address: Box 3128, Madison, WI 53704. Phone: 608-257-7010.
Date of Introduction: 1980. August.
New Product–Documentation: Label. 1980, dated. 4.5 by 7 inches. Black on yellow. Leaflet. 1980, undated. 8.5 by 11 inches. Black on yellow. "Have you tasted tempeh? The front introduces tempeh and the company. The back gives recipes and eating suggestions: Tempeh burger. Tempeh croutons. Tempeh and mushroom sauce. Tempeh stir fry. Dragon food. Barbequed [Barbecued] tempeh. Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Jehan Ziegler. Address listed as 812 Jennifer St., Madison, Wisconsin 53703. Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Peter Ziegler. Address is now 2049 Atwood Ave., Madison, WI 53704. Phone: 608-241-8700. Letter from Peter Ziegler. 1982. Dec. 10. Sends copy of new cookbook, which was primarily Clare's project. "Business is good." Address is now P.O. Box 3128, Madison, WI 53704. Phone: 608-249-6306.

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 51. In January 1984 60% of their tempeh was sold refrigerated. It was vacuum packed, but not pasteurized. Shelf life was 2.5 weeks.

841. **Product Name:** Island Spring Tempeh Burgers.
Manufacturer's Name: Island Spring, Inc.
Manufacturer's Address: P.O. Box 747, Vashon, WA 98070.
Date of Introduction: 1980. August.
New Product–Documentation: Letter from Luke Lukoskie. 1982. July 18. He started selling tempeh burgers in Aug. 1980; Shurtleff & Aoyagi. 1985. History of Tempeh. p. 56. These were "America's (and the world's) first commercial tempeh burgers, made on a small scale in individual petri dishes." Form filled out by Yvonne Kuperberg. 1988. Oct. 1. These were sold only in bulk. No labels in existence.

842. Norton, Reggi; Wagner, Martha. 1980. The soy of cooking: A tofu and tempeh recipe book. White Crane, P.O. Box 3081, Eugene, OR 97403. 24 p. Aug. Illust. No index. 22 cm.
• ***Summary:*** Contents. Introduction. Recipes: Salads and dressings. Lunches and light meals. Main courses. 5. Desserts. Address: Eugene, Oregon.

843. **Product Name:** Tempeh.
Manufacturer's Name: Pacific Tempeh.
Manufacturer's Address: 1508 62nd St., Emeryville, CA 94608. Phone: 415-655-4441.
Date of Introduction: 1980. August.
New Product–Documentation: This company was founded by Travis Burgeson. His initial interest was in making okara tempeh. Label. 1980, undated. Black and white on yellow. Label, 1983, undated. 3.5 by 4.5 inches. Red and brown on white.

Leaflet. About 1980, undated. "Pacific Tempeh: A Cultured Soyfood." 4.5 by 8.5 inches. Black on beige. Contents: What is tempeh? It tastes good! Recipes for: Deep-fried tempeh. Pan-fried tempeh. Seasoned tempeh. Sweet and sour tempeh. Tempeh burgers. Tempeh salad spread.

Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Travis Burgeson. Ad in Whole Life Times. 1982. Aug. "It tastes good!" Shurtleff & Aoyagi. 1985. History of Tempeh. p. 51-52. America's second true tempeh company and the first to sell vacuum packed tempeh. It was refrigerated, not frozen.

844. Dosti, Rose. 1980. Fermented bean cake, tempeh, cousin of tofu. *Hartford Courant* (*Connecticut*). Sept. 10. p. 17A.
• ***Summary:*** This is an abbreviated form of an article by the same author titled "Tempeh: An old food moves out of ethnic kitchens," that appeared in the *Los Angeles Times* on July 31 (Part VII. p. 1. Part VIII. p. 16, 18). Gives 4 tempeh recipes. Address: Los Angeles Times.

845. Sass, Lorna J. 1980. A couple on a tofu mission in the West. *New York Times.* Sept. 24. p. C3. Reprinted in the San Francisco Chronicle. Nov. 12. p. 22.
• ***Summary:*** About William Shurtleff and Akiko Aoyagi, authors of *The Book of Tofu.* A large photo shows each person. "The two people most responsible for catapulting tofu from the wok into the frying pan are William Shurtleff and Akiko Aoyagi." In the early 1970s they began to work on introducing this inexpensive foodstuff, high in protein and free of cholesterol, to the United States. Concerned that there is a world food crisis, they are committed to the philosophy expressed in the book *Diet for a Small Planet,* that if people in Western cultures relied on beans and grains rather than meat, the problem would start to improve. Shurtleff says that they wanted to find a way to make soy foods appealing to Big Mac [hamburger] fans. "'We decided to try to do for tofu and other soy foods what Johnny Appleseed did for apples.'"

A graduate of Stanford University in physics and industrial engineering, Shurtleff first became interested in natural foods and a healthy diet starting in 1968, while living at the Tassajara Zen Mountain Center near Carmel Valley, California. In 1971 he went to live in Japan where, as a student with little money, he found he could eat for as little as 30 cents a day by relying on tofu as his major source of protein. There he met Miss Akiko Aoyagi, a Tokyo-born fashion designer who was also fine cook. Using the seven different types of Japanese tofu, she prepared her favorite tofu recipes for him. A turning point came when they shared a meal at Japan's oldest haute cuisine tofu restaurant [Sasa-no-yuki, in Tokyo].

At the time they had no publishing experience and only about $100 between them. Yet within several weeks they had found a publisher and were hired on a part-time basis by an American company to do interpreting, that paid enough to free them to research the subject thoroughly for the next four years.

In December 1975 their first book, *The Book of Tofu,* as published by Autumn Press, a small publisher originally headquartered in Japan and now in Massachusetts, interested in both tofu and vegetarianism. The book was received so enthusiastically–over 100,000 copies are now in print, that Ballantine Books decided last year to publish a revised mass market pocket-book edition.

In 1975 they founded the New-Age Foods Study Center, with offices in Tokyo and Lafayette. Their center has published three volumes: *Tofu and Soymilk Production* ($17.95), *Tempeh Production* ($15.95), and *Miso Production* ($17.95). These books are directed at people interested in manufacturing "soy foods." In 1978 they helped to found the Soycrafters Association of North America. Last July the association held its third annual conference.

Lorna Sass is also the "general editor of the forthcoming reprint series of significant historical cook books." Address: Culinary historian, New York.

846. Hesseltine, C.W.; Wang, Hwa L. 1980. Fermented foods. *Food Trade Review* 50(9):473-79. Sept.; 50(10):543-45. Oct. [4 ref]
• ***Summary:*** Discusses shoyu, tempeh, wheat soya tempeh, sufu, natto, koji, miso, ragi, and soy yogurt. Address: USDA NRRC, Peoria, Illinois.

847. **Product Name:** Soybean Tempeh.
Manufacturer's Name: Kingdom Foods.
Manufacturer's Address: 3704 Jennifer St., P.O. Box 28431, Washington, DC 20005. Phone: 202-244-3895.
Date of Introduction: 1980. September.
New Product–Documentation: Order form filled out by Eileen Judge, Kingdom Foods, P.O. Box 28431, Washington, DC 20005. 1981. Nov. 20. She orders 100 "What is tempeh?" pamphlets. Letter of 11 Jan. 1981. "For all correspondence please use my home address: 3704 Jennifer St. NW, Washington, DC."

Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Eileen Judge. Label. 1982, undated. 6 inches square. Purple and yellow on clear plastic. Recipe for Chili Con Tempeh.

Leviton. 1982. Soyfoods. Summer. p. 33. Eileen Judge traces her shop's origins to September 1980 when she began to make tempeh at home for a few customers. She secured her present plant at 513 Morse St. N.E., Washington, DC 20002 in December 1981.

Soyfoods Center Computerized Mailing List. 1982. July 23. Gives address as 513 Morse St. N.E. Phone: 202-543-7107.

Washington Post. 1983. March 2. p. E1, E3. Soybeans with Pizazz.

Talk with Eileen Judge. 1990. Sept. 25. She started selling tempeh in the fall of 1980 to a local co-op. She initially made it in her home.

848. Redwood Valley Soyfoods Unlimited. 1980. [Real Food Tofu Shop and Café] (News release). 8473 East Rd., Redwood Valley, CA 95470. 1 p. Sept.
• ***Summary:*** "Redwood Valley Soyfoods Unlimited is proud to announce their opening of the Real Food Tofu Shop and Cafe. It is a 14-seat restaurant serving lunch and dinner with deli products featuring our Brightsong Tofu." The tofu shop is behind the cafe. The wholesale food processing kitchen

manufactures Tofu Cheesecake, Soy Juice, Tofu Treat, Tofu Dips and Dressings, Marinated Salad, Soyannaise, Soy Loaf, frozen dinners and various sandwiches. "The cafe is the only one of its type west of Colorado."

Note 1. A pink leaflet titled Brightsong. The Real Food Tofu Café, gives details: Air conditioned. Smoke free. 8473 East Road, Redwood Valley. Sandwiches $2.00: Tofunafish, Baked-spice tofu, Missing egg salad, Happy Chicken Salad, Hummous, Tofummus, Stuffed mochi. Not dogs. Burgers $2.50: Tempeh, Tofu, Soysage. Desserts: Creamies, Cheesecake, Cookies, Ice Bean, Banana Split, Frozen Joy. Salads: Missing Egg... Drinks: Soy shake, soymilk, Spirulina smoothies.

Note 2. This is the earliest document seen (Sept. 2011) that mentions "Redwood Valley Soyfoods Unlimited."

Note 3. On 31 Oct. 1979 Brightsong Tofu ordered *The Book of Tempeh* (professional edition) and *Tempeh Production* (Vol. II, manuscript). Address: Redwood Valley, California.

849. Shurtleff, William; Aoyagi, Akiko. 1980. The soyfoods explosion–Here come soyfoods: Tofu & tempeh. *CSC Reports* (*Elkins Park, Pennsylvania*) 2(3):8. Fall/Winter. [1 ref]

• ***Summary:*** This full-page article describes how to make tofu at home, and gives recipes for Tofu cheesecake (with strawberry topping), and Tofu fruit whip. Also tells how to make a tempeh incubator, with illustration. Address: New-Age Foods Study Center, P.O. Box 234, Lafayette, California 94549.

850. **Product Name:** Tofu, and Tempeh.
Manufacturer's Name: Taos Tofu & Tempeh.
Manufacturer's Address: Box 137, Arroyo Seco, NM 87514. Phone: 505-776-2971.
Date of Introduction: 1980. September.
How Stored: Refrigerated.
New Product–Documentation: Soyfoods Center. 1980. Sept. Tofu shops and soy dairies in the West (2 pages, typeset). Gives the company's name, address, and phone number. Owner: Tracy McCallum.

851. Wagner, Martha. 1980. Okara: The little-known superfood & soy cookbooks. *New Age Journal* (*Boston, Massachusetts*). Sept. p. 69, 71.

• ***Summary:*** Part I is about Okara, which is defined as "the pulp left behind when soymilk is strained to make tofu. As a by-product, it is a free food for tofu makers and people who make soymilk at home or on a commercial scale... Fluffy, cream-colored okara is easily as versatile as tofu. Some American tofu shops are now using okara to make 'soysage,' a spicy, meatlike food. It can be used in yeasted and quick breads; just substitute packed okara for a third of the flour called for... Dry-roast okara in the oven and you have the makings for granola or a crumb crust."

Part II is a brief review of some soy cookbooks, of which there has been a proliferation in the past few years. "It all began in 1975 with *The Book of Tofu* (Autumn Press, $8.95). With this tome of 300-plus pages, including over 500 recipes, William Shurtleff and Akiko Aoyagi introduced tofu to America. A fascinating book, attractively illustrated;... the condensed, revised 1979 paperback edition (Ballantine $2.95) has a more manageable amount of material (including 250 recipes) and is still packed with information..." Other books reviewed: The Tofu Cookbook, by Kathy Bauer and Juel Andersen (Rodale Press). The Farm Vegetarian Cookbook. Tofu Goes West, by Gary Landgrebe (Fresh Press, $4.95). The Great American Tofu Cookbook, by Patricia Gaddis McGruter (Autumn Press, $6.95).

"Shurtleff and Aoyagi have recently followed up their tofu classic with The Book of Tempeh (Harper & Row, $6.95)... a thoroughly researched and fascinating book." Contains two illustrations reprinted, with permission, from *The Book of Tofu.*

852. *San Francisco Bay Guardian.*1980. 4th Annual New Earth Exposition: "Living lightly on the earth" (Ad). Oct. 16-23. p. 13 (Ad).

• ***Summary:*** "Transportation. Shelter. Energy. Health. Food. Growth. Wilderness. Gardening. Environment. Exhibits, marketplace, lectures, films, demonstrations, entertainment."

"Highlights:... Delicious natural foods to eat: Soy ice cream, sushi, tofu, tempeh, mochi, fresh juices, organic burritos." Lectures:... Soyfoods (Bill Shurtleff).

"October 17-19, 25-26. 2 weekends. Fort Mason Center, San Francisco."

853. Stocker, Carol. 1980. Living. *Boston Globe.* Oct. 22.

• ***Summary:*** Nancy Kerr (a nutritionist with the states WIC program) is trying to help people who can't afford meat every night to find alternatives that are healthy and grown in Massachusetts in season. The state currently imports 80-90% of its food. For 2 years, Kerr was co-manager of the Yellow Sun Natural Foods Coop in Amherst, Mass. Now she is part of Nut Ed, a nutrition education group, which supports local food companies such as the New England Soy Dairy and the Tempeh Works, two businesses in Greenfield that produce soybean products–including tofu and tempeh. Address: Massachusetts.

854. Mayer, Jean; Goldberg, Jeanne. 1980. Nutrition. *Washington Post.* Oct. 23. p. E20.

• ***Summary:*** "Q: I have followed a vegan-type vegetarian diet and have eaten no animal products for several years. After reading in your recent column that such a diet can eventually produce vitamin B-12 deficiency, my mother became extremely upset. Could you please reassure her that since I am using a variety of fermented soy foods, like miso

and tempeh, as well as several sea vegetables, I am getting all the B-12 I need?"

"A: Unfortunately, we cannot provide that reassurance." Fermented foods, may indeed provide some vitamin B12 from microorganisms, but the amount is variable depending on the particular product and the process by which it is made. Likewise with sea plants. Reliable sources include traditional vitamin supplements, and a special type of yeast grown on vitamin-B-12.

855. Hesseltine, C.W. 1980. Re: Sufu, tempeh, vitamin B-12. Letter to William Shurtleff at Soyfoods Center, Oct. 24. 2 p. Typed, with signature on letterhead.
• ***Summary:*** Thanks for the two beautiful slides. "We didn't have any slides of the actual production of sufu."

Tempeh should be cooked before it is eaten since the *Rhizopus* mold "is still alive and there are members of the Mucorales which can grow in the body of diabetics and those using anticancer drugs that reduce resistance. They apparently get in by growing in breaks in the skin and lining of the digestive tract." So, like other soyfoods, tempeh should not be eaten as a raw food. Address: Chief, Fermentation Lab., USDA/NRRL, Peoria, Illinois.

856. Business Trend Analysts, Inc. 1980. The health and natural food market: An analysis of current performance & future prospects. Dix Hills, New York. viii + 234 p. Oct. No index. 28 cm. Spiral bound. Project director: Amadee Bender. [9 ref]
• ***Summary:*** Section 12 (p. 85-113) of this study is titled "Soyfoods & Other Soy Products." It consists largely of statistics compiled by the Soyfoods Center and Soycrafters Association of North America. On pages 95-110 is published, without permission, complete lists of all U.S. tofu shops, tempeh shops, and miso and koji manufacturers from books copyrighted by Shurtleff and Aoyagi. Acknowledgement of the source of all this information is given only at the bottom of tables, on the last page of the plagiarized list of manufacturers, and in Appendix 6, page 234. No permission was obtained from the Soyfoods Center to use any of this material.

On page 113 is a table on U.S. lecithin production from 1976 to 1979, based partly on U.S. Census figures. Production averaged about 60 million lb/year, worth $19 to $23 million. The estimated percentage consumed for health purposes rose from a estimated 2.5% worth $500,000 in 1976 to an estimated 5.5% worth $1.3 million in 1979.

Page 232 lists the largest health food wholesalers in the USA: Balanced Foods Inc. (Ridgefield, New Jersey), Landstrom Distributing (San Francisco, California), Erewhon, Inc. (Cambridge, Massachusetts), Health Foods Inc. (Des Plaines, Illinois), Kahan & Lessin Co. (Compton, California), Nature's Best (Torrance, California), and Tree of Life Inc. (St. Augustine, Florida). Address: Dix Hills, New York.

857. *Nutrition News* (*Pomona, California*).1980. Soyfoods from the magic bean. 3(10):1-4.
• ***Summary:*** Discusses the nutritional value of soybeans, meat analogs, tofu, tempeh, miso, soy sauce, and TVP.

858. Raintree, John B. 1980. Leucaena tempe. *League for International Food Education* (*LIFE*) *Newsletter.* Oct. p. 1-2.
• ***Summary:*** Describes the process for making tempeh lamtoro from leucaena seeds over a 3-day period. Address: Farming Systems Program, International Inst. of Tropical Agriculture, Ibadan, Nigeria.

859. Shurtleff, William; Aoyagi, Akiko. 1980. What is tempeh? (Brochure). Soyfoods Center, P.O. Box 234, Lafayette, CA 94549 USA. 8 panels. Oct.
• ***Summary:*** Contents: Introduction. Rich in protein and vitamin B-12. Tempeh comes west (a brief history). How tempeh is made. The miracle of fermentation. Buying and storing tempeh. Favorite tempeh recipes: Contains 11 recipes.

Note: This leaflet was first produced as a joint venture between Soyfoods Center and Soyfoods Unlimited of San Leandro, California. From May 1981 to June 1984 seven tempeh companies purchased the rights to print an unlimited number of these leaflets under their own logo. These included Soyfoods Unlimited (San Leandro, California), Tempeh Bros. (Metro New York), Kingdom Foods (Washington, DC), Star Soyfoods (Sandpoint, Idaho), Surata Soyfoods (Eugene, Oregon), and North Coast Tempeh Corp. (Cleveland, Ohio). Address: Lafayette, California. Phone: 415-283-2991.

860. Wang, H.L.; Swain, E.W.; Hesseltine, C.W. 1980. Phytase of molds used in Oriental food fermentation. *J. of Food Science* 45(5):1262-66. Sept/Oct. [26 ref]
• ***Summary:*** "Except for *Mucor dispersus* NRRL 3103 and *Actinomucor elegans* NRRL 3104, all the other molds tested produced both extra- and intracellular phytase." Molds were tested that make the following fermented foods: Sufu, tempeh, Lao-chao, soy sauce, and miso. Address: NRRC, Peoria, Illinois.

861. **Product Name:** Tempeh Brothers Tempeh.
Manufacturer's Name: Appropriate Foods, Inc.
Manufacturer's Address: P.O. Box 57, Sea Cliff, NY 11579. Plant in Bayside, NY. Phone: 516-676-0242.
Date of Introduction: 1980. November.
Ingredients: Organic soybeans, water, vinegar, rhizopus oligosporus culture.
Wt/Vol., Packaging, Price: 8 oz in pre-printed poly bag.
How Stored: Refrigerated or frozen.
Nutrition: Per 4 oz.: Calories 190, protein 20 gm,

carbohydrate 8 gm, fat 8 gm, sodium 10 mg (8.8 mg/100 gm).
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Dave Sibek. Postcard announcement. 1981. March. "Introducing Tempeh Brothers Tempeh. A fresh and delicious soy tempeh produced daily in the New York Metro Area." Label. 1982. Feb. 1. 5 by 6 inches. Red, blue, and orange on clear plastic. "High in B-12. Low in Sodium. No Cholesterol. High in Protein."

Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Dave Sibek. Address is now 137 New Hyde Park Rd., Franklin Square, NY 11010. Phone: 516-352-7222. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 51. Interview with Robert Werz. 1987. Sept. 9.

Note: This is the earliest known commercial tempeh product Appropriate Foods Inc. or Tempeh Brothers.

862. ASEAN Sub-Committee on Protein. ed. 1980. Report on the Second ASEAN Workshop on Solid Substrate Fermentation. Kuala Lumpur, Malaysia. 415 p. Held 27-29 Nov. 1980 at Kuala Lumpur, Malaysia. 29 cm. [100+ ref]
• ***Summary:*** This the 10th workshop organized by the ASEAN Sub-Committee on Protein and the second workshop in the series on solid substrate fermentation. The first was held in May 1978 at Bandung, Indonesia. The protein project, which has a newsletter and is directed toward the development of small industries, has been active since 1974. Members of the Main Organising Committee include Prof. Ho Coy Choke (Chairman), Dr. Ahmad Zaharudin Idrus, and Ms. Yeoh Quee Lan. At the back is a directory of participants (p. 411-15). Address: Malaysia.

863. Esko, Edward; Esko, Wendy. 1980. Macrobiotic cooking for everyone. Tokyo: Japan Publications, Inc. 272 p. Nov. Foreword by William Tara, Director, Community Health Foundation, London, England. 26 cm. [50 ref]
• ***Summary:*** The authors studied in Japan (mostly Kyoto), from Sept. 1978 to May 1979, at which time they returned to Boston. In the summer of 1979 "more than 100 delegates from various regional centers throughout the United States and Canada met in Boston for the first North American Congress of Macrobiotics." Part I of this book discusses the theory of macrobiotics and Part II gives recipes. Unfortunately, the book has no index, and the bibliography gives no years of publication. There are chapters on: Seitan, fu, and noodles (incl. soba), and Sea vegetables.

Soy-related recipes include: Brown rice and soybeans (p. 90). Miso soft rice (p. 96). Somen with deep-fried tofu (p. 118). Kenchin soup (with deep-fried tofu cubes and tamari, p. 130). Okara soup (p. 132). Miso soups (p. 137-143; 12 recipes are given plus a long letter from Jan Belleme, about how she and her husband, John, who arrived in Japan in late October 1979, are now living with the Onozaki family and studying miso-making there–p. 138-39). Sauteed cucumbers and miso (p. 154). Boiled cabbage, sweet corn, and tofu (p. 155). Udon-vegetable bane (with deep-fried tofu, p. 159). Steamed kale and tofu (p. 161). How to make sprouts (incl. soybean sprouts, p. 177).

Chapter 5 is titled "Bean dishes, including tofu and natto." It states (p. 178-79, without citing the source) that "In China and Japan there is a proverb, 'A man who eats too many beans becomes a fool.'... Lima beans and soybeans are both very yin, and require thorough chewing. They should be eaten only on occasion and in small quantities... Kombu can be placed on the bottom of the pot when cooking chickpeas, soybeans, lima beans or kidney, pinto and navy beans. I have found that kombu definitely improves their flavor, and because of its high mineral content, creates a very balanced dish." To pressure cook soybeans so that they do not clog the steam escape valve, first boil them for 30 minutes. Skim the foam off the top as it rises, and when no more foam rises to the surface you may place them in a pressure cooker and continue cooking until done. Recipes include: Japanese black beans (black soybeans). Soybeans with kombu and burdock. Soybeans with lotus root and salmon. Following a long discussion of tofu, Homemade tofu. Tofu with scallions. Tofu with bonito flake broth. Baked tofu with miso/lemon sauce. Broiled tofu. Tofu loaf. Steamed tofu rolls. Deep-fried tofu cakes. Aburage (Age or deep-fried tofu). Stuffed age pouches. Okara. Okara croquettes. Sautéed natto. Natto rice or noodles. Natto tempura. Dried natto.

Hijiki with soybeans (p. 193). Hijiki and deep-fried tofu (p. 194). Tempuraed tofu-nori rolls (p. 198). Koi-koku (Carp miso soup, p. 220). Daikon and tamari. Scallion miso. Green peppers and miso (p. 224). Miso condiments (p. 226). Tamari. Moromi (p. 227). Rutabaga-tamari pickles (p. 233). Quick miso pickles (p. 234). Tofu tamari dressing (p. 236). Tofu-sesame dressing. Shiro-miso-tofu dressing. Miso dressing (p. 237). Tamari-lemon dressing. Tamari-rice vinegar dressing. Miso-tahini dressing (p. 238). Miso-rice vinegar dressing. Miso walnut dressing. Miso-tahini spread. Sesame miso spread. Miso-nut spread (p. 239). Lentil-miso spread. Lima bean miso spread (p. 240). Tofu dip (p. 243). Amazake (p. 247-48). Clear broth soup with tofu & scallions (p. 253). The glossary lists many soy products plus azuki beans, sea vegetables (many types), gluten, koji, kuzu, mochi, natto, nigari, okara, seitan, tekka, tempeh, umeboshi, unohana (okara), and yuba.

Macrobiotic periodicals include: *East West Journal* (Brookline, Massachusetts). *Kushi Institute Study Guide and Kushi Inst. Newsletter* (Brookline, MA). *The Order of the Universe* (East West Foundation, Brookline, MA). *The Macrobiotic Review* (East West Foundation, Baltimore, Maryland). *Spiral* (Community Health Foundation, London). *Le Compas* (Paris). Note: The date each periodical began publication is not given.

The lengthy section on seitan (p. 110-13) gives a

detailed recipe for making seitan at home using the short method and 3½ lb hard spring wheat flour or hard red winter wheat flour. The broth is made with kombu and tamari. Seitan recipes include: Seitan stew. Seitan fried rice. Stuffed mushrooms (with sauce). Stuffed squash or Hokkaido pumpkin. Address: Boston, Massachusetts.

864. Gery, Michael E.C. 1980. Tempeh: A tempting soyfood with culture. *New Roots* (*Amherst, Massachusetts*) No. 12. Nov. p. 50-53.
• ***Summary:*** A long sidebar tells about Michael Cohen and The Tempeh Works of Greenfield, Massachusetts. "The Tempeh Works in Greenfield, Mass. produced 300 pounds of tempeh per week when Cohen opened the business in the fall of 1979. A year later it makes more than 3,000 pounds per week." The Tempeh Works buys its soybeans from the New England Soy Dairy. Photos show Cohen holding a tray of fresh tempeh, a man at Tempeh Works making tempeh, and the Tempeh Works label. Address: Ashfield, Massachusetts.

865. Hartadi, Sri. 1980. Inoculum preparation for tempe and soysauce fermentation. In: ASEAN Sub-Committee on Protein, ed. 1980. Report on the Second ASEAN Workshop on Solid Substrate Fermentation. 415 p. See p. 256-62. Held 27-29 Nov. 1980 at Kuala Lumpur, Malaysia. [9 ref]
• ***Summary:*** Usar is the Indonesian name of the inoculum used to make tempeh. It consists of strains of *Rhizopus* molds, plus yeast and bacteria. It is prepared by placing inoculated soybeans on leaves of *Hibiscus* species, *Tectona grandis, Musa paradisiaca,* or *Bambusa* species. There are two ways of making tempeh inoculum: The traditional usar method in which the mold is grown on soybeans on leaves, and the powdered form inoculum, in which it is grown on rice.

Most of the soysauce made in Indonesia does not use special inoculum. However two new methods have been developed; growing a powdered inoculum on rice and rice bran, or a fresh inoculum on soybeans. Address: Dep. of Microbiology, Faculty of Agriculture, Gadjah Mada Univ., Yogykarta, Indonesia.

866. Karim, Mohamad Ismail Adbul. 1980. The role of microorganisms in food fermentation with special reference to Malaysian fermented foods. In: ASEAN Sub-Committee on Protein, ed. 1980. Report on the Second ASEAN Workshop on Solid Substrate Fermentation. Kuala Lumpur, Malaysia. 415 p. See p. 31-64. [27 ref. Eng]
• ***Summary:*** Traditional Malaysian fermented soyfoods include kicap (soy sauce), tempeh, and taucu (Malaysian miso). Fermentation is considered by most small-scale processors as more of an art than a science. The secrets of the processes have been passed down in the family from one generation to another. Much of the flavor of fermented soy products comes from fatty acids (glutamic acid, propionic acid, butyric acid, etc.), ammonia, and amines.

In Malaysia, the manufacture of soy sauce is normally done by small establishments using traditional methods. Boiled soybeans are cooled then mixed with 40-50% by weight of wheat flour. The mixture is spread onto large shallow bamboo trays (90 cm diameter and 5 cm deep) to a depth of 5 cm. The trays, which are used repeatedly, harbor many useful microorganisms. The trays are then stacked in tiers 15-30 cm apart on wooden racks for 7-10 days. The mixture is broken up and turned every 2 days to allow aeration. At the end of the fermentation, the white mycelium-impregnated mass, with its spores turning yellow and greenish yellow, is filled into earthenware jars (190 liters capacity) and covered with brine solution of 15-20% concentration. The jars are exposed to the sun and covered with lids at night or whenever it rains. The brine mixture is allowed to ferment for 2 to 24 months depending on the quality of the sauce needed. At the end of the fermentation period, the resulting dark liquid (soy sauce) is removed by siphoning or straining through a cheese cloth or suitable strainer. The sauce is then bottled. Sometimes sugar or benzoic acid (a preservative) is added to the sauce before bottling. A sauce could also be cooked and thickened with caramel (up to 80%) and bottled as thick sauce for sale. The production of thin sauce requires a short fermentation (1½-6 months) whereas thick sauce requires a longer fermentation (6-24 months). The extraction process could be repeated 4 to 6 times by topping the remaining mash with brine solution (10-14%) after each extraction.

Soybean paste or tauco is made in essentially the same way as soy sauce except that broken soybeans are used and the liquid is not removed. The final product is reddish brown. Most Malaysian tauco is not sun-dried, but is packed into wide-mouth jars in its moist paste form. Address: Jakatan Sains dan Teknologi Makanan, Universiti Pertanian Malaysia, Serdang, Selangor, Malaysia.

867. Sastraatmadja, D.D.; Saono, S.; Brotonegoro, S. 1980. Oncom and oncom-like products prepared by using pure cultures of molds. In: ASEAN Sub-Committee on Protein, ed. 1980. Report on the Second ASEAN Workshop on Solid Substrate Fermentation. Kuala Lumpur, Malaysia. 415 p. See p. 263-72. [12 ref]
• ***Summary:*** Oncom is one of the traditional Indonesian fermented foods that is widely produced and consumed in West Java. The substrate consists of various proportions of peanut presscake, the solid residue of tapioca flour (*onggok*), and the solid residue of tahu (soybean curd [which is okara]) fermented by *Neurospora sitophila* (*N. intermedia*). Because these residues are cheap and still contain a significant amount of protein, oncom is thus a good, inexpensive food.

Altogether 122 mold strains were studied, comprising 13 strains of *Neurospora* spp., 15 strains of *Mucor* spp., 9 strains of *Rhizopus* spp., and 85 other strains which are most

likely *Mucor* or *Rhizopus* species. *Mucor* species gave the best oncom after 24 hours, but *Rhizopus* species gave the best oncom after 48 hours. Address: National Biological Inst., Bogor, Indonesia.

868. Sutedja, L.; Roestamsjah, -; Gunawan, C. 1980. The effect of moisture content on oncom fermentation utilizing mixed substrates. In: ASEAN Sub-Committee on Protein, ed. 1980. Report on the Second ASEAN Workshop on Solid Substrate Fermentation. Kuala Lumpur, Malaysia. 415 p. See p. 301-25. [12 ref]
• ***Summary:*** Good quality oncom was prepared using a mixture of 2 parts peanut presscake (53-61% moisture), 2 parts "soybean curd waste" [okara] (75-82% moisture), and 1 part bulgur wheat (64-66% moisture). Each was steamed for at least 30 minutes before inoculation.

Note: This is the earliest English-language document seen (Oct. 2001) that uses the word "residue" or the term "soybean curd waste" to refer to okara. Address: National Inst. for Chemistry, Indonesian Inst. of Sciences, Indonesia.

869. Ferretti, Fred. 1980. Gastronomes' Christmas visions: Oysters, crabmeat, a live goat [and tofu]. *New York Times*. Dec. 3. p. C1, C8. [2 ref]
• ***Summary:*** Various food authorities were asked: "After truffles, foie gras and caviar, what would you like for Christmas?" Alice Waters of Chez Panisse wanted "a live goat so I could get warm goats milk every morning into which I would melt Swiss chocolate. What a breakfast!" James Beard wanted choice Dungeness crab meat from the West Coast. "Finally a wish for enough food for the '15 to 20 million people starving throughout the world' was expressed by William Shurtleff, who with his wife Akiko Aoyagi wrote 'The Book of Tofu' and 'The Book of Miso.' And, he added, the realization by Americans that their diet is exceedingly harmful would be a fine Christmas gift." Other than that Shurtleff said he could think of nothing else but tofu (bean curd) or tempeh (cakes made of soy) as things he wanted for Christmas 'Anything else, he said, 'would be insignificant.' Contains a cartoon of Shurtleff, Julia Child, and others.

870. Martin, Dale. 1980. New age eatery owners hope to attract diners from all over the state to tofu cafe in Redwood Valley. *Daily Journal* (*Ukiah, California*). Dec. 4. p. 2-3. [1 ref]
• ***Summary:*** The article begins: "Redwood Valley may be an unlikely place to open a tofu shop and cafe, but store owners Dik and Sharon Rose are hoping this new age eatery will catch on and attract diners from all over the area. Tofu is becoming quite a business these days, as more and more people are starting to discover the cheap, nutritious, and versatile soybean product... tofu is finding its way into the American mainstream. It isn't just a health food any more."

"Tofu, made from curdled soybean milk, is also called bean curd. A complete protein, the custardy textured product has been hailed as being highly digestible and an excellent diet food. With meat prices going up and up, many meat eaters as well as vegetarians are increasing their tofu intake.

"Dik and Sharon Rose bought into the tofu dream in June [1980], when they took over Brightsong Tofu in Redwood Valley from its former owner, David Patton. The shop is now in its third year of production. Through increased advertising and hard work, the Roses tripled the output of the shop in five months. The shop is now producing 1300 pounds of tofu a week... The Roses currently employ two workers who make the tofu by hand with wellwater, fresh soybeans and 'a lot of care and love,' according to Dik."

Until a few months ago, Brightsong was the only tofu shop between South San Francisco and Eugene, Oregon. But now there is a new shop in Marin and one opening soon in Arcata.

"Dik and Sharon became interested in tofu after hearing a lecture in 1976 by the 'gurus' of the soybean product, William Shurtleff and Akiko Aoyagi, who wrote 'The Book of Tofu.' After visiting a shop in Oregon, the Roses came to Mendocino County where they discovered 'Brightsong' for sale in the spring."

The Real Food Tofu Cafe seats 14. "The cafe's menu offers such dishes as spiced baked tofu sandwiches, tofu burgers, brown rice tofu burritos, 'soyannaise' spread and tofu cheesecake." Tempeh is also served.

Photos show: (1) Sharon Rose (with long curly hair) standing at the front counter, with a large menu on the wall behind her. Menu items include cheese cake, ice bean cone, soy juice, spirulina, vege herb tofu. (2) A grinder, out of which ground soybeans are dropping into a 5-gallon plastic bucket labeled Brightsong Tofu. (3) A large, round curding basin: "After the nigari is added, the tofu solidifies and separates into curds and whey." (4) Dik Rose, with beard and pony tail, cutting tofu into cakes. (5) Cakes of tofu cooling in water in a stainless steel sink.

Note 1. This is the earliest dated document seen that mentions Brightsong Tofu. Note 2. This is the earliest document seen that mentions Dik or Sharon Rose in connection with this company.

871. Soyfoods Center. 1980. Catalog: Publications & materials by William Shurtleff & Akiko Aoyagi [mail order]. P.O. Box 234, Lafayette, CA 94549. 20 panels. Dec. 8.
• ***Summary:*** On 17 Sept. 1980, the name of New-Age Foods Study Center was changed to Soyfoods Center. This catalog, folded like a road map, is printed with brown and light green ink on white paper. 12,500 copies were printed. Address: Lafayette, California. Phone: 415-283-3161.

872. Ferretti, Fred. 1980. The gastronomes' Christmas wish list. *Chicago Tribune.* Dec. 11. p. W_B2, or S_B2, or N_B2.

[2 ref]
• ***Summary:*** This article (under a slightly different title) first appeared in the New York Times (3 Dec. 1980, p. C1).

873. Anderson, Eugene N. 1980. Re: Soybeans, tofu, and tempeh. Letter to William Shurtleff at Soyfoods Center, Dec. 12–in reply to inquiry. 2 p. Typed, with signature on letterhead. [4 ref]
• ***Summary:*** A sinophile, he is collaborating with Dr. Paul Buell (an historian at Western Washington University, Bellingham, WA) on various books on Chinese agriculture, including an economic botany. "We are currently working on the soybean article for this and drawing heavily on your books. He is an inveterate tofu maker who lives by your books."

The spices in real curry are fascinating and much different from those in the "nauseating and disgusting 'curry powder' of commerce."

He is aware of some spectacularly fine Chinese books on vegetarian soyfoods cookery, written by Buddhist religious groups. "Most of the Chinese cookbooks in English are obscene and should be banned as pornography."

It is now known that the old Shen Nung Herbal is from ca. 100 A.D.

"Tempe I assume to be an application to soybeans of earlier technology used on coconut. Incidentally the soybean was introduced to the Malay world by people from the Fujian-Guangdong border between Xinmen (Amoy) and Swatow (Shandou), as shown by the distinctive dialect words borrowed into Malay (*bahasa Indonesia, bahasa Malaysia*)–*taohu, taugé, taucho, tausi,* etc. These are also in Indonesian and Filipino–though tausi could be from Cantonese. These are direct borrowings of precisely the dialect forms of the border area, the southern dialects of the Southern Min or Hokkien language. Tauhu, for instance, is their pronunciation of tofu (doufu in standard Chinese). One word I can't explain is *kecap* (formerly spelled ketjap and so pronounced), the Malay word for soy sauce. It seems to have referred earlier to quite a different, local brew. It has nothing whatever to do with ketchup.

"The latest soy news is yet another proof that peasant techniques have their reasons. It now appears that soybeans have a huge amount of phytate, amounting to up to several percent of the bean. Phytate (the distinctive ion of phytic acid) takes up calcium, zinc magnesium, niacin and other chemically active items in food and makes chemical compounds that humans can't digest effectively. Thus the calcium, niacin, etc., of food is lost. This leads to calcium deficiency, zinc deficiency (as with whole-grain wheat bread eaters in the Near East), or worst of all, pellagra (corn is classically associated with pellagra because it's high in phytate and low in niacin). But of course if you add calcium or magnesium or the like to your food, it takes up the phytate and you're OK. Heat also destroys some of it. Micro-organisms such as yeasts and *Aspergillus* can also destroy it, having appropriate enzymes. Thus processing soybeans with gypsum, nigari or fungal fermentation wipes out this danger." Address: Dep. of Anthropology, Univ. of California, Riverside, CA 92521.

874. Bau, H.M.; Debry, G. 1980. L'art de l'utilisation du soja: Habitudes et traditions [The art of soya utilization: Customs and traditions]. *Cahiers de Nutrition et de Dietetique* 15(4):277-84. Oct/Dec. [40 ref. Fre; eng]
• ***Summary:*** "For many centuries, soybeans have meant meat, milk, cheese, bread, and oil to the people of Asia. Because of their great food value, they not only have long had a definite place in the oriental diet but now belong in the diet of America and of the entire world. In Europe, the use of soybean products in the quotidian diet is still limited, however it is sure that they will be an important factor in the balanced diet of the future."

Note 1. Soyfoods Center has a 16-page English-language translation of this article.

Note 2. *Webster's Dictionary* defines quotidian (derived from the French *quot* = as many as + *dies* = day) as "occurring every day." Address: University of Nancy, France.

875. Gerratt, David. 1980. The selling of soyfoods [Interviews with Tom Timmins of New England Soy dairy, Michael Cohen of Tempeh Works, and Martin Strasman of Nature's Table]. *Sprouts: The Newsletter of Western Mass Co-ops* (*Hatfield, Massachusetts*) 2(7):4-5. Dec.
• ***Summary:*** Tom Timmins started his career in natural foods as a manager of the Yellow Sun Food Co-op in Amherst, in 1973. He was introduced to tofu through his work at the Equinox, Amherst's first natural foods restaurant. In 1974 the Equinox started serving tofu, which was purchased through a local Chinese restaurant, which was in turn supplied from Boston's Chinatown. "In 1976, while working for a local natural foods distributor [Llama, Toucan & Crow], Tom was turned on to *The Book of Tofu.* It excited him to such a degree that by the next year he began to work on the Laughing Grasshopper Tofu Shop, together with Richard (Ira) Leviton... The New England Soy Dairy now employs 40 people and sells over 100,000 lb/month of tofu (25,000 lb/week by Jan. 1980).

Michael Cohen, a vegetarian since 1971, stopped eating foods containing *any* animal products in 1975. He too was involved with the Equinox restaurant when it first opened and was introduced to tofu there and at The Farm in Tennessee. In 1978, after 6 months at The Farm, he returned to what had become the New England Soy Dairy. But he decided to leave for personal reasons to start his own tempeh business.

876. Heltova, Olivia. 1980. Tempeh de soya. El alimento de

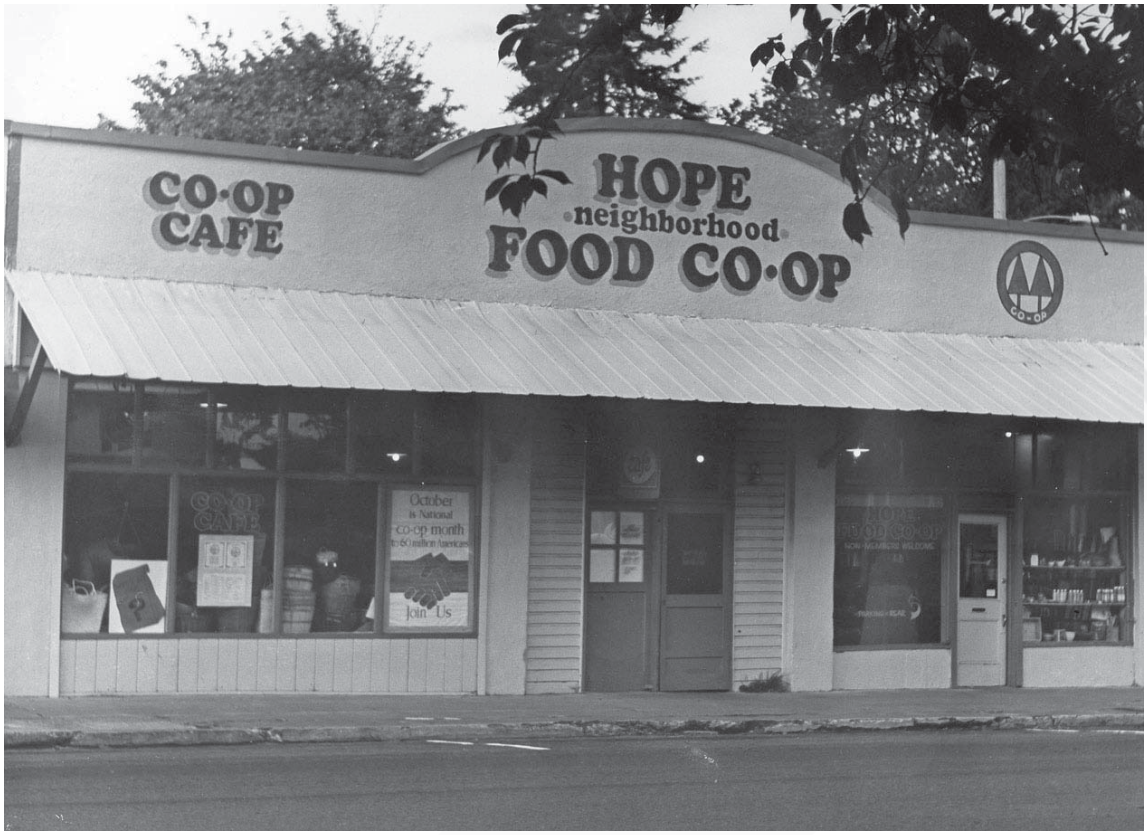
Indonesia [Soy tempeh. The food from Indonesia]. *Natura* (*Mexico*). Dec. p. 58-71. [Spa]
• ***Summary:*** An introduction to tempeh in Spanish, with illustrated instructions on how to make it at home, and six recipes. Address: Mexico.

877. Photograph of Seth Tibbott at the Hope Co-op in Forest Grove, Oregon. 1980.
• ***Summary:*** See next page. (1) View of the outside of the co-op building, circa 1980. (2) Seth standing in front of his tempeh incubator in the Hope Co-op, Dec. 1980.
Sent by Seth Tibbott of Turtle Island Foods, Feb. 2011.

878. Rivai, Abdul. 1980. Optimization of tempeh manufacture from eight soybean varieties and from okara. MSc thesis, Dep. of Food Science & Nutrition, University of Minnesota, St. Paul, MN. vii + 63 p. Dec. Illust. No index. 28 cm. [55 ref]
• ***Summary:*** Contents: Abstract. Acknowledgments. List of tables and figures. Introduction. Materials and methods: Materials, preparing PDA slants, spore mass production, enumeration of mold spore viability, preparation of soybeans, preparation of okara, tempeh fermentation, preparation of samples for sensory testing, soybean characteristics. Results and discussion: Starter culture, tempeh fermentation–general observation, taste test results, whole soybean tempeh, conclusions. Appendix I. Appendix II. References.
The author returned to Indonesia in about early 1981 and in July 1982 was teaching at Padjadjaran University in Bandung. Address: Univ. of Minnesota, St. Paul.

879. Tofu Shop (The). 1980. December. New soyfoods restaurant or deli. 768 18th St., Arcata, CA 95521.
• ***Summary:*** Matthew Schmit. 1981 Feb. 13. "Fresh tofu comes to Northern Cal." "The Tofu Shop of Arcata, California, officially opened its doors on December 12, 1980..."
Questionnaire filled out by owner of restaurant or deli. 1982. Restaurant opened for business in Dec. 1980. Lists the company's most popular soy-based menu items in descending order of popularity: 1. Tofuburger (authentic). 2. Tofu-vegetable sushi rolls. 3. Tofu spinach turnovers. 4. Tofu pumpkin pie. 5. Tofu cream pie. 6. Tofu vegetable patties. 7. Tofu tahini salad. 8. Tofu potato salad. 9. Carob soy pudding. 10. Happy-dragon soydrink. The highest weekly total sales over the past 6-2 months: $1,200 in Oct. 1981 because of deli expansion and return of students to Humboldt State. The average weekly deli sales during this period: $850. Note: The company also sells $850/week wholesale. Average hourly wages paid to workers: $3.50. The business startup cost (amount of money it cost to get the business started): $11,000. Current profitability status: Profitable. Plans for the future: Deli display cooler, steam table for hot food, tempeh production. Advice the owner would give to someone starting a similar business: Choose the perfect community. Prepare a detailed business prospectus. Obtain sufficient capital (plus some extra). Prepare for at least one year of double-time work. Love soyfoods. Be professional. Other: "Our goal has been to develop a model for the 'all-American neighborhood tofu shop,' which produces its own fresh tofu and other soy products; where the neighbor down the street can grab a quick bite on the run, or pick up staple groceries (tofu, soymilk, soy margarine, bread, etc.) for home cooking. A large portion of our business is from people who walk to our shop. A balance of wholesale / retail and deli foods / groceries makes small scale tofu production feasible."
Shurtleff & Aoyagi. 1982. Report on Soyfoods Delis, Cafes & Restaurants. p. 3. Started in Dec. 1980 by Matthew & Suzanne Schmit, who formerly ran Far Pavilions in Telluride, Colorado.
Packet from Matthew Schmit. 2002. Sept. 24. He encloses three original, undated menus, all vegetarian: (1) Earliest, printed in about 1982, is dark blue ink on tan paper. 8½ by 11 inches. Printed back to back, folded into three panels. The menu is on the inside 3 panels. On the 1st panel: Welcome! The Tofu Shop Deli and Grocery. A nice (3 by 2¼ inch) illustration of "The Tofu Shop Specialty Grocery and Deli" appears in the center. "We make our own tofu fresh daily..." (2) Similar. Printed in about 1987. Blue ink on light beige paper. Prices have risen a little. (3) Larger. Printed in about 1992, green ink on beige recycled paper, 8½ by 14 inches, folded into 4 panels on each side. More menu items in these categories: Green salads. Deli salads. Tofu salads. Burgers. Sandwiches. House specialties. Soups & sides. Beverages. Tofu cold-cuts. Address: Arcata, California.

880. **Product Name:** Soy Tempeh.
Manufacturer's Name: Turtle Island Soy Dairy.
Manufacturer's Address: c/o Hope Co-op, 2017 21st Ave., Forest Grove, OR 97116.
Date of Introduction: 1980. December.
Ingredients: Organically grown soybeans, water, apple cider vinegar, *Rhizopus oligosporus* (tempeh starter), rice [on which the starter was grown].
Wt/Vol., Packaging, Price: 8 oz plastic bag. Retails for $0.99.
How Stored: Frozen.
New Product–Documentation: Letter/Order for the book *Tempeh Production* ($10.95 + postage) from Seth Tibbott. 1979. Oct. 2. He is at Rt. 1, Box 311, Gaston, Oregon 97119.
Yvonne Rothert. 1981. The Oregonian. June 24. "Use of soybean well known, but here comes tempeh." Tibbott first made tempeh at home in Tennessee 1977, and commercially in December 1980; Letter from Seth Tibbott. 1981. Aug. 21. Label for Soy Tempeh enclosed.
Talk with Seth Tibbott of Turtle Island. 1984. Jan. 17. Their tempeh is pre-steamed to pasteurize it. Half is sold refrigerated (nearby), half frozen (shipped far away). Their



best-selling product is soy tempeh, followed by five-grain tempeh.

Voice of the Turtle (Husum, Washington). 1989. Feb. "Turtle Tempeh still high in B-12! According to two separate tests of our products completed in the fall of 1988, Turtle Island Tempeh has one of the highest Vitamin B-12 contents reported in the country... In 1985, Turtle Island Tempeh was found to contain 2.5 mcg. of B-12. Wanting further verification we sent two more samples to the lab and were told in December 1988 that our tempeh contained 5.4 mcg. of B-12 per 4 oz." Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Seth Tibbott. Address is now P.O. Box 218, Husum, WA 98623. Phone: 509-493-2004.

Talk with Seth Tibbott. 1990. March 2. He has sent samples of tempeh from one batch to 3 professional laboratories for nutritional analyses. The results have varied widely. For example, vitamin B-12 has ranged from almost zero to 4-5 mcg/100 gm. Sylvia Ruth Grey, a macrobiotic microbiologist and B-12 researcher, thinks this is because cobalt in U.S. soils is being depleted. B-12 is dependent on cobalt in soybeans.

Talk with Seth Tibbott. 1990. Aug. 15. Seth has new equipment, a new plant in Husum or Hood River, and new labels. Last year his production doubled. He now makes on average 2,000 lb/week of tempeh, but sometimes as much as 3,000 lb/week.

Note: This is the earliest known commercial soy product made by Turtle Island.

881. **Product Name:** Tempeh.
Manufacturer's Name: Bodhi Farm Tempeh Co.
Manufacturer's Address: 2480 Channon, NSW, Australia.
Date of Introduction: 1980.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: John Seed. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 32. This was one of the first two tempeh shops in Australia.

882. **Product Name:** Tempeh.
Manufacturer's Name: Bountiful Bean Plant.
Manufacturer's Address: 903 Williamson St., Madison, WI 53703.
Date of Introduction: 1980.
How Stored: Refrigerated or frozen.
New Product–Documentation: James Lubbe. 1988. March. Abbreviated History of the Bountiful Bean. This product started as a deli item in about 1980 but it is not clear when it was first made by the Bountiful Bean.

Leaflet and Label sent by Paul Olson, new owner of Bountiful Bean Soyfoods. 1993. Nov. 19. The company still makes tempeh. Label. 4 by 4.5 inches. Orange, green, and white on yellow. Net weight: 8 oz. "A cultured soyfood. No preservatives. If purchased fresh, keep refrigerated. If purchased frozen, use within 12 days of thawing and keep refrigerated until use." Ingredients: Organic soybeans, rhizopus oligosporus culture.

883. Departemen Perindustrian (Ministry of Industrial Affairs), Indonesia. 1980. Mutu dan cara uji tempe kedelai [Quality and testing methods for soy tempeh]. Jakarta: Departemen Perindustrian, Republik Indonesia. 7 p. Indonesian Industrial Standard SII.0271-80. [Ind]* Address: Jakarta, Indonesia.

884. **Product Name:** Tempeh.
Manufacturer's Name: Dharma.
Manufacturer's Address: c/o Earth Foods, 308 Bronti Rd., Waverley, NSW, 2024, Australia. Phone: 994-505.
Date of Introduction: 1980.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Swami Veetdharma. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 32. This was one of the first two tempeh shops in Australia.

885. Fang, S.F. 1980. [The origin and development of alcoholic beverage fermentation with chu]. *History of Science and Technology* (*China*) 4:140. [Chi]*
• ***Summary:*** The first written reference to chu was found in the Shu-Ching, written during the Chou dynasty (1121-220 B.C.), which states that *chu* (grain koji) is essential for making *chiu* (alcoholic beverages). Of the early types of chu, the most widely used one was yellow (*huang-chu*), indicating perhaps that *Aspergillus oryzae* may have been cultured at that time. The yellow color was said to be so lovely that the Emperor's yellow robes were known as chu-yi. Initially chu was made in granular form (*san-chu*), but by the Han dynasty (205 B.C.–220 A.D.) it was being made as a cake (*ping-chu*). It was later found that the growth of *Rhizopus* and yeast species were more abundant than *Aspergillus* in ping-chu. Thus the so-called amylo process actually originated in China in the third century.

The earliest written description of the method for preparing chu appeared in the Ch'i-min Yao-shu (early 6th century A.D.). It described three types of yellow chu: *huang-yi, huang-tcheng,* and *nu-chu.* Yellow chu was widely used for alcohol fermentation and for fermented soyfoods. Fang then discusses 11 other types of chu, including *hong-chu* (red rice with Monascus). Address: Inst. of Microbiology, Academia Sinica, Beijing, China.

886. Fardiaz, Dedi. 1980. Biochemical changes in the oncom fermentation of peanut pressed cake. PhD thesis, Michigan State University. 194 p. Dissertation Abstracts International B41, 4440 (1981). *

887. Fukakura, Noriko; Asano, M.; Murata, K. 1980. Daizu hakkô shokuhin no shikô-sei ni kansuru kenkyû [Survey on

the acceptability of tempeh]. *Bulletin of Teikoku Gakuen* No. 6. p. 33-39. [8 ref. Jap; eng]
• ***Summary:*** A survey on the acceptability of tempeh was carried out by 50 members of a taste panel at the authors' school in Osaka, Japan. "The results of the survey indicated that the appearance of tempeh was lower than that for flavor, taste, stickiness, and texture. More than 76% of the panel members favored tempeh over natto (the result may be different if a survey is carried in Kanto district). Among methods of cooking tempeh, deep fat frying was most favored. Salt was evaluated as the best seasoning for tempeh rather than coriander or curry. The panel also compared the meat burger, the meat with soyprotein burger, and the tempeh burger. The meat only was given the highest rating, the meat with soybean protein second, the tempeh burger was the lowest. However, it was found that the tempeh burger could be acceptable." Address: Teikoku Women's Univ., 173, 6-chome, Todacho, Moriguchi-shi, Osaka, Japan.

888. **Product Name:** Tempeh.
Manufacturer's Name: Garden of Eatin' (Marketer-Distributor).
Manufacturer's Address: 5300 Santa Monica Blvd., Los Angeles, CA 90029.
Date of Introduction: 1980.
New Product–Documentation: Label. 1980, dated. 4 inch diameter. Yellow, red, blue, and white. "Ancient food for modern nutrition."

889. Jha, K.; Verma, K. 1980. Removal of flatulence principles from legumes by mold fermentation. *Indian J. of Experimental Biology* 18:658-59. *

890. Kronenberg, H.J. 1980. Tempeh microbiology: A technique for culture preservation. 7 p. Unpublished manuscript. [8 ref]

891. **Product Name:** Noble Bean Tempeh Salad.
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: c/o Cleveland Tofu Co, 8021 Euclid Ave., Cleveland, OH 44121.
Date of Introduction: 1980.
Ingredients: Tempeh (Organic soybeans, water, Rhizopus culture), Hellmann's Mayonnaise (soy oil, partly hydrogenated soy oil, whole eggs, vinegar, water, egg yolks, salt, sugar, lemon, juice, natural flavors, calcium disodium, EDTA added to protect flavor), celery, pickles, onion, parsley, shoyu, mustard, garlic powder.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated.
New Product–Documentation: Label. 1987. Oval 4 by 2.75 inches. Green, blue, red, and yellow on white. Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7.

892. **Product Name:** Noble Bean Tempeh Salad Sandwich.
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: c/o Cleveland Tofu Co, 8021 Euclid Ave., Cleveland, OH 44121.
Date of Introduction: 1980.
Ingredients: Whole wheat bread (organic whole wheat, molasses, corn oil, yeast, sea salt, malt), tempeh (Organic soybeans, water, Rhizopus culture), Hellmann's Mayonnaise (soy oil, partly hydrogenated soy oil, whole eggs, vinegar, water, egg yolks, salt, sugar, lemon, juice, natural flavors, calcium disodium, EDTA added to protect flavor), celery, pickles, lettuce, tomato, onion, alfalfa sprouts, parsley, shoyu, mustard, garlic powder.
Wt/Vol., Packaging, Price: 6 oz.
How Stored: Unrefrigerated and perishable.
New Product–Documentation: Label. 1987. Oval 4 by 2.75 inches. Green blue, red, and yellow on white. Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7.

893. Slamet, Dewi Sabita; Tarwotjo, Ignatius. 1980. Komposisi zat gizi makanan Indonesia [The nutritional composition of Indonesian foods]. *Penelitian Gizi dan Makanan* (*Research on Food and Nutrition*) 4:21-36. [4 ref. Ind]

894. **Product Name:** Tempeh of the Sea (Containing Sea Vegetables).
Manufacturer's Name: Soy Plant (The).
Manufacturer's Address: 211 East Ann St., Ann Arbor, MI 48104. Phone: 313-663-0500.
Date of Introduction: 1980.
Ingredients: Organic soybeans, arame, hiziki [hijiki], dulse, nori, kelp, vinegar, rhizopus oligosporus culture.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Frozen.
New Product–Documentation: Rectangular Label in Soy Plant scrapbook. 1980. 4½ by 4 inches. Black on white. An oval illustration in the center shows plants growing by the sea shore.
Shurtleff & Aoyagi. 1985. History of Tempeh. p. 56. Sliced, this tempeh "resembled fish sticks."

895. **Product Name:** Tempeh.
Manufacturer's Name: Swan Gardens.
Manufacturer's Address: 1111 N.W. 22nd., Miami, FL 33127. Phone: 305-324-8910.
Date of Introduction: 1980.
New Product–Documentation: Soyfoods Center. 1982. Jan. Tempeh Shops in the West. Unpublished computer printout. Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Dick McIntyre. Phone: 305-324-8910.

896. **Product Name:** Soy Tempeh.
Manufacturer's Name: Thistledown Soyfoods.
Manufacturer's Address: R.R. 5 (Church Rd. 5855), Duncan, BC, V0L 4T6, Canada. Phone: 604-748-9514.
Date of Introduction: 1980.
New Product–Documentation: Label. 1982, undated. 3.5 by 4 inches. Green and purple on white; Shurtleff & Aoyagi. 1982. Soyfoods Industry & Market. p. 48

Soyfoods Center Computerized Mailing List. 1982. July 23. Owners: Jean & Jan Norris. Address: R.R. 5 Church Rd. (5855), Duncan, BC, V9L 496, Canada. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 60. Leviton. 1982. In a Small Bright Building.

897. **Product Name:** [Vanda Tempeh Chips].
Foreign Name: Vanda Tempé Chips.
Manufacturer's Name: Van Dappern B.V. Renamed Tempé Produkten B.V. in April 1983.
Manufacturer's Address: Kerkrade, Netherlands.
Date of Introduction: 1980.
New Product–Documentation: Label. 1984, undated. 3.5 by 7 inches. Orange, black, and white on clear plastic. "Een gezonde soja snack" [A healthy soya snack]. 100 gm.

Letter from Ike Van Gessel. 1992. Dec. 20. This product was introduced in 1980 and discontinued in 1984. The name of the product as it appeared on the label was "Vanda Tempé Chips."

898. Bloodroot Collective; Beaven, Betsey; Giordano, Noel; Miriam, Selma; Shea, Pat. eds. 1980. The political palate: A feminist vegetarian cookbook. Sanguinaria Publishing, 85 Ferris St., Bridgeport, CT 06605. xxiii + 325 p. Illust. Index. 23 cm. [39 ref]
• ***Summary:*** This feminist collective and restaurant is named Bloodroot for an eastern woodland wildflower, *Sanguinaria canadensis.* They "found something symbolic in its slow spreading rhizomatous root system and the way each piece of root throws up its own grey-green leaf furled protectively around the eight-petaled white flower. Any part of the root, stem, or leaf 'bleeds' a red juice." The cookbook is largely vegetarian (though 8 recipes which use fish are included), seasonal, and ethnic/regional. The introduction praises the books on tofu, tempeh, and miso written by Shurtleff and Aoyagi as "truly political books." Their favorite vegetarian cookbook is Julie Jordan's *Wings of Life* (Crossing Press). The book is interspersed with feminist quotations and has a separate lengthy feminist bibliography.

Soy-related recipes include: Harvest vegetable platter with miso gravy (p. 17-19). Winter miso soup (with soybeans, p. 80-81). Kasha platter (with miso gravy, p. 91-92). Indonesian tempeh dinner (p. 96-97). Urab: Indonesian steamed vegetable salad (with tofu, p. 98). Sea vegetable salad (with tofu dressing and wakame, p. 134-35). Grilled Ma-Po tofu and rice (p. 169-70). Hot and sour soup with wild daylily buds (and tofu, p. 188-89). Snow pea salad with tofu sauce (p. 196). Omelet grandmere (with miso gravy, p. 280-82). Address: Bridgeport, Connecticut.

899. Brotonegoro, Soetarjo; Sudjana, M.; Saono, S. 1980. Preservation of economically important cultures by freeze drying. Paper presented at the Second ASEAN Workshop on Solid Substrate Fermentation. Held 27-29 Nov. 1980 at Kuala Lumpur, Malaysia. *
• ***Summary:*** The author isolated, identified, and preserved the microorganisms in some traditional Indonesian foods such as tempe, tauco (Indonesian miso), and kecap (soya sauce). Address: Malang Research Inst. for Food Crops (MARIF).

900. Chen, Steve; Wang, E. 1980. Huang-dou shu-pin [Soy foods]. Taipei, Taiwan: American Soybean Assoc. 248 p. Illust. 19 cm. [Chi]
• ***Summary:*** On the cover is written: "In celebration for the 10th anniversary of ASA/Taiwan. American Soybean Association. China Nutrition Society. China Institute of Food Science Technology. China Food Health, Nutrition Research Foundation." Contains many photos and graphs. Address: American Soybean Assoc.

901. Corbin, Frederick T. ed. 1980. World Soybean Research Conference II: Abstracts. Boulder, Colorado: Westview Press. 124 p. Conference held 26-29 March 1979 at North Carolina State Univ. Author index. 24 cm.
• ***Summary:*** The World Soybean Research Conference II was held on 26-29 March 1979 at North Carolina State University. This volume contains summaries of the more than 200 papers, both invited and contributed, presented at that meeting. The full proceedings contains 74 of the invited papers in full.

Contents: Keynote addresses. Mineral nutrition. Engineering. Nitrogen fixation. Entomology. Utilization. Breeding. Physiology. Production. Protein and oil. Plant pathology. Modeling soybean systems. Regional. Agribusiness. Marketing, transport and storage. Weed control. Research techniques. Addendum. Address: Prof. of Crop Science; North Carolina State Univ., Raleigh.

902. Fukushima, Danji; Hashimoto, Hikotaka. 1980. Oriental soybean foods. In: F.T. Corbin, ed. 1980. World Soybean Research Conference II: Proceedings. Boulder, Colorado: Westview Press. xv + 897 p. See p. 729-743. [7 ref]
• ***Summary:*** Contents: Fermented soybean foods. Non-fermented soybean food. Conclusion. References.

The following statistics show the amount (tons) of whole soybeans/ defatted soybean grits/ total of whole and grits consumed for various soybean foods and feeds in Japan in 1976.

Fermented soyfoods: Shoyu (soy sauce) 10,000/

165,000/ 175,000, miso 190,500/ 5,000/ 195,500. Natto 69,000/ 0/ 69,000.

Non-fermented soyfoods: tofu and aburage (fried tofu pouches) 411,500, 55,000/ 466,500. Kori-tofu (dried-frozen tofu) 29,000/ 0/ 29,000. Others 16,000/ 75,000/ 91,000.

Animal feeds: 30,000/ 1,950,000/ 1,980,000. Thus total use for foods and feeds is whole soybeans 756,000. Defatted soybean grits 2,250,000, total of both 3,006,000. By type of use, animal feeds account for 65.9% of total Japanese usage of whole soybeans and defatted grits, non-fermented soyfoods account for 19.5%, and fermented soyfoods account for 14.6%. The top three food users are tofu (466,500 tons, 45.5% of all food uses), miso (195,500), and shoyu (175,000). There are 35,000 tofu plants in Japan.

Fermented soybean foods described are shoyu (soy sauce; 5 types), miso (3 basic types, 6 varieties), sufu (Chinese soybean cheese), tempeh (fermented soybean cake), natto (fermented whole soybeans; itohiki-natto and hama-natto), and fermented soymilk (recently a new fermented soybean product appeared on the market in Japan. It is a soy milk drink fermented by lactic acid bacteria).

Non-fermented soybean foods described are tofu (soy milk curd), aburage (fried tofu pouches), kori-tofu (dried-frozen tofu), yuba (coagulant film of soy milk), kinako (roasted soybean powder), moyashi (soybean sprouts), and soybeans. Production, chemical composition, and use of each of these foods is discussed. Address: Kikkoman Foods Inc., P.O. Box 69, Walworth, Wisconsin 53184.

903. Gay, Martin; Gay, Kathlyn. 1980. Eating what grows naturally. South Bend, Indiana: And Books. 137 p. Illust. by Brian "Woodie" Byrn. 21 cm. [75 ref]
• ***Summary:*** A book about natural foods, with some vegetarian recipes. Martin was born in 1950. Pages 79-80 give ten menus based on Shelton's food-combining principles, including (5) Stir-fried vegetables and tofu cubes, and (9) Tofu-vegetable casserole with green salad. Page 106 gives definitions of miso, tamari, tempeh, and tofu. Soy-related recipes include: Soy burgers (with ground, cooked soybeans, p. 108), and tofu casserole (p. 109).

904. Hanssen, Maurice. 1980. Country kitchen recipes with soya beans. Wellingborough, Northamptonshire, England: Thorsons Publishers Ltd. 32 p. Illust. 14 cm. *
Address: Northamptonshire, England.

905. Hartadi, J. Sri. 1980. Beberapa catatan tentang jenis kedele dalam pembuatan tempe [Several notes on types of soybeans used in tempeh processing]. Thesis (Skripsi), Fakultas Teknologi Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia. 19 p. [Ind]*
Address: Yogyakarta, Indonesia.

906. Liener, Irvin E. 1980. Miscellaneous toxic factors. In: I.E. Liener, ed. 1980. Toxic Constituents of Plant Foodstuffs. 2nd ed. New York: Academic Press. xiv + 502 p. See p. 430-67. Chap. 13. [322* ref]
• ***Summary:*** Soya is discussed under: Estrogenic factors (p. 430). Antivitamin A (Raw soybeans are know to contain the enzyme lipoxidase, which oxidizes and destroys carotene; p. 442). Antivitamin D (which leads to rachitogenic activity and can cause rickets; p. 442-43). Antivitamin E (p. 444). Antivitamin B-12 (p. 447). Other enzyme inhibitors (inhibitor of pancreatic lipase; p. 452). Flatus-producing factors (p. 455-56).

The estrogenic principles of plants have been, in most cases, chemically identified as isoflavones, which occur naturally in the form of glucosides. Isoflavones have been isolated from the soybean.

"One of the major factors limiting the human consumption of legumes is their ability to produce gas in the gastrointestinal tract, also referred to as flatulence." The intestinal gas is "composed largely of carbon dioxide, hydrogen, and, to a lesser extent, methane. Studies have clearly implicated the oligosaccharides raffinose and stachyose as causative factors of flatus. These oligosaccharides are related by having one or two □-D-galactopyranosyl groups attached to sucrose via □-1,6-galactosidic linkages. Owing to the absence of enzymes in the human intestinal mucosa that are capable of hydrolyzing this linkage, the intact oligosaccharides accumulate in the lower intestine, where they undergo fermentation by anaerobic bacteria. The gases so produced are responsible for the characteristic features of flatulence, namely, nausea, cramps, diarrhea, abdominal rumbling, and the social discomfort associated with the ejection of rectal gas. Such traditional soybean foods as tofu (soybean curd) and tempeh have little flatus activity." Address: Dep. of Biochemistry, College of Biological Sciences, Univ. of Minnesota, St. Paul, MN 55108.

907. Lin, Ching-Fwu. 1980. Preparation of shrimp-flavored tempeh using a thermo-tolerable *Rhizopus* sp. T-3 isolated from Indonesia. In: Proceedings of the Oriental Fermented Foods. Food Industry Research and Development Institute, P.O. Box 246, Hsinchu, (300) Taiwan. iv + 229 p. See p. 167-79. Held 10-14 Dec. 1979 in Taipei, Taiwan. 8 tables. 3 figs. [20 ref]
• ***Summary:*** This T-3 strain of *Rhizopus* mold, which was isolated from indigenous tempeh collected on Bali island, grew vigorously even at 45ºC or more, and the stolon and sporangiophore were found to be larger than for any *Rhizopus* species listed in the "Taxonomical Studies on the Genus Rhizopus" by Inui et al. This mold produced abundant hydrolytic enzymes, such as acid protease, glucoamylase, lipase, cell separating enzymes and milk clotting enzyme in soybean substrate. The tempeh prepared by this mold after 18 hours fermentation at 30ºC–40ºC had the flavor of shrimp.

The tempeh thus made was easily macerated into a single cell from slight blending in a blender.

"An improved procedure for preparation of tempeh using raw soybean as substrate is presented in this paper." Address: Inst. for Microbial Resources, Taiwan Branch, 100 Chien-Hsing St. East, Taichung, Taiwan.

908. McConnaughey, Evelyn. 1980. More sea vegetable recipes from the Oregon coast. Plus seaweeds from the Orient. 1653 Fairmount Blvd., Eugene, OR 97403. 41 p. Illust. by Catherine Vignaux. No index. 22 cm. [8 ref]
• ***Summary:*** On page 7 is nutritional information about tofu, tempeh, miso, and tamari (shoyu). Soy-related recipes: Miso (p. 13). Tempeh (p. 26, 27, 37). Tofu (p. 15, 27). Tamari shoyu (p. 27). Line drawings of sea vegetables appear on most pages. Address: Oregon.

909. Miller, Lani; Rodgers, Diane. 1980. We love your body. Seattle, Washington: Morse Press, Inc. vii + 256 p. Illust. by Joanie Oliver. 25 cm.
• ***Summary:*** A natural foods, vegetarian cookbook. The glossary describes soybeans (incl. soy flour, milk, and tempeh, p. 246), tamari sauce, and tofu (p. 247).

910. Nagai, S.; Nishio, N. 1980. Biochemical engineering problems on solid state culture. In: Proceedings of the Oriental Fermented Foods. Food Industry Research and Development Institute, P.O. Box 246, Hsinchu, (300) Taiwan. iv + 229 p. See p. 218-26. Held 10-14 Dec. 1979 in Taipei, Taiwan. 1 table. 10 figs. [11 ref]
• ***Summary:*** The production of wheat tempeh cultured with *Rhizopus oligosporus* is studied. Contents: Introduction. Static cultivation without aeration. Static cultivation with forced aeration. Dynamic cultivation without aeration (in a small drum fermenter). Dynamic cultivation with forced aeration. Engineering problems.

During tempeh production, the substrate temperature increased remarkably due to the metabolic heat generation; a major problem is removal of this heat. Also a large amount of moisture was produced due to a respiration reaction; this increases the substrate moisture content and may cause quality problems. Address: Dep. of Fermentation Technology, Faculty of Engineering, Hiroshima Univ., Hiroshima, Japan.

911. Null, Gary. 1980. The new vegetarian cookbook. New York, NY: Macmillan Publishing Co., Inc.; London: Collier Macmillan Publishers. x + 310 p. Recipe index. 24 cm.
• ***Summary:*** One chapter (p. 52-60) titled "Soybeans and Soybean Products" discusses: "Whole, raw soybeans" [green vegetable soybeans], dried soybeans, soybean milk soy flour, soy grits, soy flakes, tempeh, tamari, miso, and tofu. The long section on tofu begins: "As a high-quality source of complete protein, tofu (soybean curd, usually called bean curd) is hard to beat, not to mention inexpensive, low in calories and versatile." It ends: "As you become more familiar with tofu, you'll come up with many of your own innovations. But no matter how you choose to serve this natural, high-protein food, serve it often and savor its benefits!"

Page 78, under "Bean Sprouts," states that "Soybeans make the most delicious sprouts, but are a little more difficult to grow" than mung bean sprouts. Page 88 notes that tamari and miso are good alternatives to salt.

Soy-related recipes include: Miso tofu soup (p. 132-33). The section titled "Tofu Dishes" (p. 199-208) includes: Butternut tofu. Tofu cauliflower casserole. Herby tofu croquettes. Mushroom and tofu sautéed in miso. Tofu Orleans. Red and green peppers with tofu. Soba tofu dinner. Tofu eggplant Parmesan. Yogurt tofu casserole [with cow's milk yogurt]. Tomato tofu and kidney beans. Bulghur, lentil and tofu casserole. Tofu à la king. Sesame tofu (Tofu plus sesame seeds). Hot breakfast for two (tofu with oatmeal, raisins, and walnuts).

Soy-enriched wheat berry bread (p. 242). Page 304 contains a list of food suppliers, including Chico San, East West Journal Mail Order, and Walnut Acres (Penns Creek, Pennsylvania). Address: New York City, NY.

912. Perl, Lila. 1980. Eating the vegetarian way: Good food from the earth. New York, NY: William Morrow and Company. 93 p. Illust. Index. 25 cm. [9 ref]
• ***Summary:*** This children's book discusses the reasons for vegetarianism, the different types of vegetarian diets, and why modern meat-raising techniques are causing many Americans to change their diets. Also offers alternative protein-rich recipes.

Pages 42 mentions soybeans, and page 48 mentions tofu, tempeh, and soy sauce. Address: Beechhurst, New York.

913. Sugiarto K., Ignatius. 1980. Penelitian pendahuluan tentang kerja lapuk dalam tempe [Preliminary research on the fermenting action of tempeh molds]. Thesis (Skripsi), Departemen Kimia, Matematika dan Ilmu Pengetahuan Alam Institut Teknologi Bandung, Bandung, Indonesia. 38 p. PBITB. [Ind]*
Address: Bandung, Indonesia.

914. Thio, Goan Loo. 1980. Processing and application of soya beans for human nutrition at home and village levels (Abstract). In: F.T. Corbin, ed. 1980. World Soybean Research Conference II: Abstracts. Boulder, Colorado: Westview Press. 124 p. See p. 35-36.
• ***Summary:*** "It is of utmost importance that the less developed and the developing countries avail themselves of simple methods for processing soya beans into easily digestible soya products, which can be manufactured at home and village levels. These products should have a

high nutritive value and preferably a neutral, bland taste, so that they can be incorporated into local dishes of the countries concerned, without the risk of being refused by the population. Because of the neutral bland taste, these soya products will take on the taste and flavor of the national dish into which they are incorporated. In this way they will in most cases be directly accepted by the consumers. Soya products like soya milk and soya bean curd (also called toufu [tofu]), which have proved to be high quality protein sources and which have existed for thousands of years, can easily be flavored or spiced so that they will become as delicious as meat and fish dishes.

"Soya milk can be prepared easily at home and village levels just like soya bean curd and soya steak (also called tempeh). The most important factor is the absence of the beany taste in these products, and also the absence of trypsin inhibitors and of hemagglutinins. Especially for babies and toddlers these two antinutritive factors should be inactivated. As they both belong to the proteins, simple heat treatment during a few minutes at temperatures above 90 C is sufficient. With soya products prepared at home and village levels, a great variety of delicious dishes and high quality weaning food can be prepared." Address: Royal Tropical Inst., Amsterdam, The Netherlands.

915. Walker, Robert. 1980. Re: How to make tempeh on a commercial scale at Tempeh Enterprises. Letter to William Shurtleff at Soyfoods Center–in reply to inquiry. 3 p. Undated. Handwritten
• ***Summary:*** A handwritten, detailed description of exactly how two people make tempeh on a commercial scale at Tempeh Enterprises.

Note: This description soon appeared in the book *Tempeh Production,* by Shurtleff and Aoyagi (March 1980, p. 91-94), with 10 illustrations. Address: Founder and owner, Tempeh Enterprises, R.R. 3 Box 7, Port Perry, Ontario L0B 1N0, Canada.

916. INTSOY. 1980? Soybean Foods Research Centre (SFRC), Gannoruwa (Brochure). 3 p. Undated. Publisher not given.
• ***Summary:*** Contents: Introduction. Home level. Village level. Commercial level: Full fat soya flour, coconut milk substitute, soya cereal extrusion cooked blends, soya milk (beverage), soya oil and meal, soya and cassava extrusion cooked blends, soya-maize extrusion cooked blends, Oriental soya foods (tofu and tempeh), soya sauce. Future plans.

917. Davis, Richie. 1981. Soy food prices to increase: Soybeans in shorter supply. *Recorder* (*Greenfield, Massachusetts*). Jan. 2.
• ***Summary:*** The New England Soy Dairy of Greenfield now manufactures nearly 30,000 lb/week of tofu. They buy 15,000 lb/week of soybeans from Minnesota and Illinois. The Tempeh Works buys 10,000 lb/month of soybeans to make 4,200 lb/week of tempeh.

Richard Leviton, "who said shipping costs account for 25 percent of the price of soybeans, said he, his wife and a third partner plan to start growing soybeans in the Hadley-Hatfield area this spring... The first year, he said, he plans on growing between 25 and 50 acres of organic soybeans on rented land. Eventual plans call for between 1,000 and 1,500 acres of soybeans." A photo shows Louis H. Battalen checking tempeh at the Tempeh Works. Address: Staff reporter.

918. Root, Waverley. 1981. A cordial bow to the byproducts of the soybean. *Los Angeles Times.* Jan. 15. p. J42.
• ***Summary:*** This article is indebted to: Simonds, Nina. 1979. "Chinese cuisine: Bean curd." *Gourmet.* Sept. p. 28-29, 84-91.

The soybean, which offers extraordinary versatility as a human food, can be transformed into soybean milk, "the soybean milk skin [yuba] derived from the milk, the bean sticks [bamboo yuba] made from the milk skin, the also edible sediment given off by the milk [okara], untreated bean curd [regular tofu and perhaps silken tofu], pressed bean curd which produces bean curd noodles [pressed tofu noodles], more tightly compressed bean curd cakes, and frozen-and-thawed bean curd [dried frozen tofu]."

In the process of making "pressed bean curd, another soybean food is created–bean curd skin [*pai yeh,* pressed tofu sheets], which should not be confused with soybean milk skin [yuba]. Dried bean curd skin," which needs no refrigeration and is often stuffed, for example with chopped meat, is sold by weight by Chinese specialty shops throughout the world; five or six sheets weigh one ounce.

"There is a whole family of foods made from fermented bean curd" [fermented tofu]. Bean curd can be fermented in various ways. Bean curd loaves, for example, can be stored for the winter in a cool dark place; micro-organisms from the air cause fermentation. "The loaves acquire a fungoid coating, which has to be scraped off, and as far as I know is not used for food,..." Fermented bean curd, which has been called "soybean cheese," is easier to digest than unfermented bean curd. Bean curd can also be marinated in rice wine, flavored with spices, and then allowed to ferment. A most unusual type of fermented tofu is stinky bean curd (*sh'ou tou fu*), a favorite Chinese snack. In Taipei, there are many street vendors who ply the streets with their portable deep fryers. This fermented tofu is usually deep-fried and usually eaten with one's choice of soy sauce, vinegar, mashed garlic, and chili paste.

Other fermented foods include miso, natto, hamanatto (which is of Korean origin), tempeh (of Indonesian origin), and shoyu (Soybean sauce, soy sauce).

"It is said that the best grades of soy sauce can take as much as six to seven years of aging to reach perfection, and

that the making of a superb soy sauce requires 'as much art in its preparation as good French wines.'"

Flavorings are added to some Chinese soy sauce "various herbs, especially citronella; spices (ginger); aromatic vegetables (onions); and not only fermented fish, but even fermented chicken meat. To produce three liters (3.1 quarts) of sauce requires on kilogram (2.2 pounds) of beans.

"Fukien has the reputation of producing the best soy bean sauce in China and consequently stews many foods in it, giving them a color which has caused the culinary techniques of this region to be called 'red cooking.'"

Soybean sauce is "often an important ingredient in many more complicated sauces–for instance Hoisin sauce in China and Worcestershire sauce in England."

919. **Product Name:** Tempeh.
Manufacturer's Name: Calindo Co.
Manufacturer's Address: 617 Nebraska St., Vallejo, CA 94590. Phone: 707-644-8866.
Date of Introduction: 1981. January.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Ed Tirta.

920. **Product Name:** [Tempeh].
Foreign Name: Tenpe.
Manufacturer's Name: Centraalbureau voor Schimmelcultures.
Manufacturer's Address: 3 Oosterstraat, 3742 Sk. Baarn, The Netherlands.
Date of Introduction: 1981. January.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Tempeh starter cultures can be purchased.

921. **Product Name:** [Tempeh].
Foreign Name: Tenpe.
Manufacturer's Name: Firma ENTI.
Manufacturer's Address: 5 Tweemanspolder, 2761 Zevenhuizen, Netherlands. Phone: 018-021-986.
Date of Introduction: 1981. January.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Mrs. L.J. Duson.

Letter from Sjon Welters. 1983. March 2. The official name of this company is Firma Enti. It was founded by a woman named Wedding. Her man [husband] was an Indonesian. Mrs. Duson, the woman who owns it now, could not remember if Mrs. Wedding was Dutch or Indonesian.

922. **Product Name:** [Tempeh].
Foreign Name: Tenpe.
Manufacturer's Name: Firma Ergepe.
Manufacturer's Address: 4 Singelsteeg, 3511 Utrecht, The Netherlands. Phone: 030-318-315.
Date of Introduction: 1981. January.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22.

923. **Product Name:** Tempeh.
Manufacturer's Name: Homeland Foundation.
Manufacturer's Address: Upper Thora, Bellingen, NSW 2492, Australia. Phone: 066-558-514.
Date of Introduction: 1981. January.
New Product–Documentation: Interview with Jonathan Gordon of White Wave, Inc. 1995. Nov. 16. Jonathan traveled to Australia in March or April 1981 and lived at the Homeland Foundation in Upper Thora, Bellingen, New South Wales, where he made tofu with other members of the community. Homeland was also making tempeh at the time Jonathan arrived but he was not a tempeh maker and he does not remember the tempeh maker's name. He left Australia in about Dec. 1981 to return to England. Jonathan thinks their food plant did not have a name separate from the name of the Homeland Foundation. They did not package their tempeh. They just used to take it around in their own van to people's houses and little food shops. But he may be able to find out. His close friend at Homeland, Karen James (an American), is now in California and she may remember; she worked more extensively in the food area than Jonathan did.

Talk with Karen James White, now living in Santa Fe, New Mexico. 1997. March 12. Karen recalls that she arrived at Homeland Foundation in either late December 1981 or early 1982. It was located about 40 miles inland from Coffs Harbour, in a lush, fertile green valley–perhaps 40-50 miles from the nearest neighbors. At that time the community was making and selling tempeh, and the shop (which also made tofu–in the same room as the tempeh–and sprouts) almost certainly had a name. She worked in the tempeh shop during her 3½ month stay at Homeland, where they typically made 30-40 pounds of tempeh per batch using an incubator as big as a refrigerator.

924. **Product Name:** Istemewa Tempeh.
Manufacturer's Name: Istemewa Corp. (Tamarinda).
Manufacturer's Address: 9918 Commerce Ave., Tujunga, CA 91042. Phone: 213-338-7178.
Date of Introduction: 1981. January.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owners: Jan Ruitenbach & Winnifred Dreeuws. Tempo. 1981. June 13. p. 50. Shows label.

925. **Product Name:** Tempeh.
Manufacturer's Name: Joy of Soy.
Manufacturer's Address: 510 Kasota Ave., Minneapolis, MN 55414. Phone: 612-379-2390.
Date of Introduction: 1981. January.
New Product–Documentation: Soyfoods Center

Computerized Mailing List. 1981. Jan. 22. Owner: Pat Aylward. Soyfoods Center. 1982. Jan. Tempeh shops in the West.

926. **Product Name:** Tempeh (Soy-Rice).
Manufacturer's Name: Monterey Bay Soyfoods.
Manufacturer's Address: 335 Pennsylvania Ave., Santa Cruz, CA 95062. Phone: 408-423-2256.
Date of Introduction: 1981. January.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Jeremiah Ridenour. Talk with Jeremiah Ridenour. 1988. Aug. 31.

927. **Product Name:** Nature Foods Tempeh.
Manufacturer's Name: Nature Foods Inc.
Manufacturer's Address: Box 40127 Minillas Sta., Santurce, PR 00940. Phone: 809-722-6192.
Date of Introduction: 1981. January.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Fausto Carrasquillo. Letter from Fausto. 1982. May 4. They are producing about 500 lb/month of tempeh, using perforated trays and banana leaves. "It comes out very good; people love it."

928. **Product Name:** Tempeh.
Manufacturer's Name: New Moon.
Manufacturer's Address: 1550 W. Michigan, Kalamazoo, MI 49007.
Date of Introduction: 1981. January.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Donald Wykoff.

929. **Product Name:** Tempeh.
Manufacturer's Name: Now Foods Enterprise.
Manufacturer's Address: 15870 Alwood St., Valinda, CA 91744. Phone: 213-918-5312.
Date of Introduction: 1981. January.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Al Bleeker. He is Dutch.

930. **Product Name:** Tempeh.
Manufacturer's Name: Nupro Foods.
Manufacturer's Address: 1227 City Park Ave., Ft. Collins, CO 80521. Phone: 303-493-0138.
Date of Introduction: 1981. January.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owners: Carol & John Hargadine. By July 1982 the address has changed to 1819 W. Prospect Rd., Ft. Collins, Colorado 80526. The phone and owners are the same.

931. **Product Name:** Pacific Tempeh Burger (Vacuum Packed).
Manufacturer's Name: Pacific Tempeh.
Manufacturer's Address: 1508 62nd St., Emeryville, CA 94608.
Date of Introduction: 1981. January.
Ingredients: Soy tempeh, water, shoyu, lemon juice, garlic, paprika, thyme, oleic safflower oil.
Wt/Vol., Packaging, Price: 7 oz 2 x 3.5 oz burgers. Vacuum packed.
How Stored: Refrigerated.
New Product–Documentation: Label. Undated. 3.25 inch diameter. Brown and white on orange. "A natural hearty meal." Leviton. 1982. Soyfoods. Winter. p. 27. Sales climbed to 5,000 a week by Nov. 1981. Leaflet. 1982. 8½ by 11 inch. Color. "A what burger? A Pacific Tempeh Burger. A hearty and satisfying cultured soyfood with twice the protein of tofu and more vitamin B-12 than tuna or eggs. Take the taste test."

Talk with Travis Burgeson of Pacific Tempeh. 1983. April. Pacific Tempeh now makes 4,000 to 4,500 lb/week of tempeh, 75-80% of it in the form of tempeh burgers.

932. **Product Name:** Tempeh.
Manufacturer's Name: Paul's Tofu & Tempeh.
Manufacturer's Address: 155 Archway Rd., Highgate, London N6 4NA, England.
Date of Introduction: 1981. January.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. No phone. The owner is later found to be Paul Jones. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 31. This was the first of the new wave of "New Age" European tempeh companies.

L. Leneman. 1985. The Vegetarian. July/Aug. p. 23. "Tomorrow's Food." "Some enterprising wholefood shops are now making tempeh (and Paul's Tofu includes fresh tempeh on their price list), but the first company to manufacture tempeh on a large scale is Tempeh Foods (Ipswich, Suffolk)."

933. Shurtleff, William; Aoyagi, Akiko. 1981. Que es el tempeh? Traducido por Corina Gutman [What is tempeh? Translated into Spanish by Corina Gutman]. Soyfoods Center, P.O. Box 234, Lafayette, CA 94549 USA. 4 p. Jan. [3 ref. Spa]
• ***Summary:*** Contents: Introduction. Rich in protein and vitamin B-12. Tempeh comes west (a brief history). How tempeh is made. The miracle of fermentation. Buying and storing tempeh. Tempeh for Latin America. Our favorite tempeh recipes: Contains 11 recipes. Address: Authors: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

934. Soy Plant Co-op Inc. (The). 1981. Price list effective 1/28/81 [28 Jan. 1981]. Ann Arbor, Michigan. 1 p. 28 cm.

Secondary Tempeh Products
Pressure-Sensitive Labels

1981

A what burger?

A PACIFIC TEMPEH BURGER

A hearty and satisfying cultured soyfood with twice the protein of tofu and more vitamin B_{12} than tuna or eggs. Take the taste test!

PACIFIC TEMPEH • 1508 62nd St., Emeryville, CA 94608 • (415) 655-4441

• ***Summary:*** This hand-lettered sheet contains four columns: Manufacturer, product, unit price, and case price. The Soy Plant is manufacturer of: Tofu, plain soy milk, flavored soy milk, tempeh, miso garlic dressing, and Soyanaise (soy mayo). Other manufacturers are Sunshower (fruit juices and butters), Hills Brothers (apple cider), Toper (pickles), Westbrae (miso–3 types), and Canadian Soya (Soya Lecithin Spread, non-hydrogenated). Address: 711 Airport Blvd., Suite #1, Ann Arbor, Michigan 48104. Phone: 313-663-TOFU (663-8638).

935. *Soyanews* (*Sri Lanka*).1981. Recipes: Tempeh–The Indonesian contribution. 3(6):1, 3, 8. Jan.
• ***Summary:*** Gives a short introduction to tempeh and a recipe for making it. On page 1 is a photo of a cake of tempeh, with the title "Tempeh is here." The caption states that tempeh is part of the daily diet in Indonesia. On page 8 are recipes for Tempeh tempura and Deep-fried tempeh.

936. *Tempo.*1981. Mengangkat martabat tempe [To raise tempeh's value]. Jan. 26. [Ind]*
• ***Summary:*** Discusses Prof. Dr. Susanto Mangkuwijoyo's discovery of the ability of tempeh to reduce the blood cholesterol level in laboratory hamsters.

937. **Product Name:** Tempeh.
Manufacturer's Name: Tofu for You.
Manufacturer's Address: 207 N Acacia St., Solano Beach, CA 92075. Phone: 714-481-6914.
Date of Introduction: 1981. January.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Paul Beeson.

Talk with Paul Beeson, who calls from California. 1996. Dec. 16. His company was named Tofu for You. He also had these words on his license plate. He started making tempeh in early 1981. He used stainless steel hospital warmers that he bought from restaurant suppliers as incubators.

938. **Product Name:** Tempeh.
Manufacturer's Name: Toronto Tempeh Shop.
Manufacturer's Address: 324 Apache Trail, Willowdale, ONT, M2H 2W5 Canada. Phone: 416-491-2328.
Date of Introduction: 1981. January.
New Product–Documentation: Liem, Irene T.H.; Steinkraus, K.H.; Cronk, T.C. 1977. "Production of vitamin B-12 in tempeh, a fermented soybean food." *Applied and Environmental Microbiology* 34(6):773-76. Dec. See pages 774 and 775. Table 2 (p. 774) states that this tempeh was made commercially by Tjeng Giok Tan in Toronto, Canada.

Letter/Order for *The Book of Tempeh* from Tjeng G. Tan, 324 Apache Trail, Willowdale, ONT, Canada M2H 2W5. 1979. Dec. 11.

Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owner: Mr. Tjeng Giok Tan.

Note: Neither Mr. Tan nor his shop are listed in the book "History of Tempeh" (1985) by Shurtleff and Aoyagi. Mr. Tan may have told Shurtleff that he never started a commercial shop.

939. Wang, H.L.; Hesseltine, C.W. 1981. Use of microbial cultures: Legume and cereal products. *Food Technology* 35(1):79-83. Jan. [38 ref]
• ***Summary:*** Contents: Introduction. Use of nontoxin-producing cultures. Safety of fermented foods: Several factors contribute to their safety: Soaking and cooking, salting, acid formation, antibiotic production, alcohol production, low surface moisture, decrease of aflatoxin by *Rhizopus* and *Neurospora.* Shelf life of fermented foods. Nutritive value of fermented foods: Complementary effect of mixed proteins, protein efficiency ratio and digestibility, vitamins. Future of fermented legume-cereal foods.

The following fermented soy-related foods are described briefly, including names, area of origin, organisms used, substrate, and nature and use: Soy sauce (chiang-yu, shoyu, toyo, kanjang, kecap, see-ieu). Miso (chiang, doenjang, soybean paste, tauco). Fermented bean (hamanatto, tou-shih, tao-si). Sufu (fu-ru, fu-ju, tou-fu-ju, bean cake, Chinese cheese). Tempeh (tempe kedelee). Natto. Ontjom (onchom). Address: NRRC, Peoria, Illinois.

940. David, I.M.; Verma, Jitendra. 1981. Modification of tempeh with the addition of bakla (*Vicia faba* Linn). *J. of Food Technology* 16(1):39-50. Feb. [23 ref]
• ***Summary:*** Excellent tempeh was made from fava beans alone or blended with equal parts soybeans. Fava bean tempeh was more crisp than soybean tempeh The crispness decreased with increasing soybean content. The beany flavor of the soybean has prevented it from playing a more important role in the Indian diet. Address: Dep. of Microbiology, College of Basic Sciences and Humanities, G.B. Pant Univ. of Agriculture and Technology, Pantnagar, India.

941. Fiering, Steve. 1981. Low technology soybean dehuller. *Soyfoods* 1(4):52. Winter. [1 ref]
• ***Summary:*** An essential article for anyone wishing to dehull soybeans using low-cost equipment, with one useful illustration. The basic machine, a simple stone dehuller, was developed and patented by Nelson and Ferrier at the University of Illinois. U.S. Patent 3,981,234. The separator, based on a vacuum cleaner blower, neatly and cleanly separates the hulls into a cloth bag.

"During last summer's *Soyfoods Showcase* I was excited by the work of the University of Illinois in expanding the use of soybeans as human food. Their work with technology-deficient countries has led them to develop a 'low tech' soybean hull separator. This machine holds promise for

NOTE: A stone mill to dry dehull soybeans and this make-it-yourself hull separator is by far the best way of dehulling soybeans for making tempeh. Bill Shurtleff.

SOYTECH

Low Technology Soybean Dehuller

by Steve Fiering

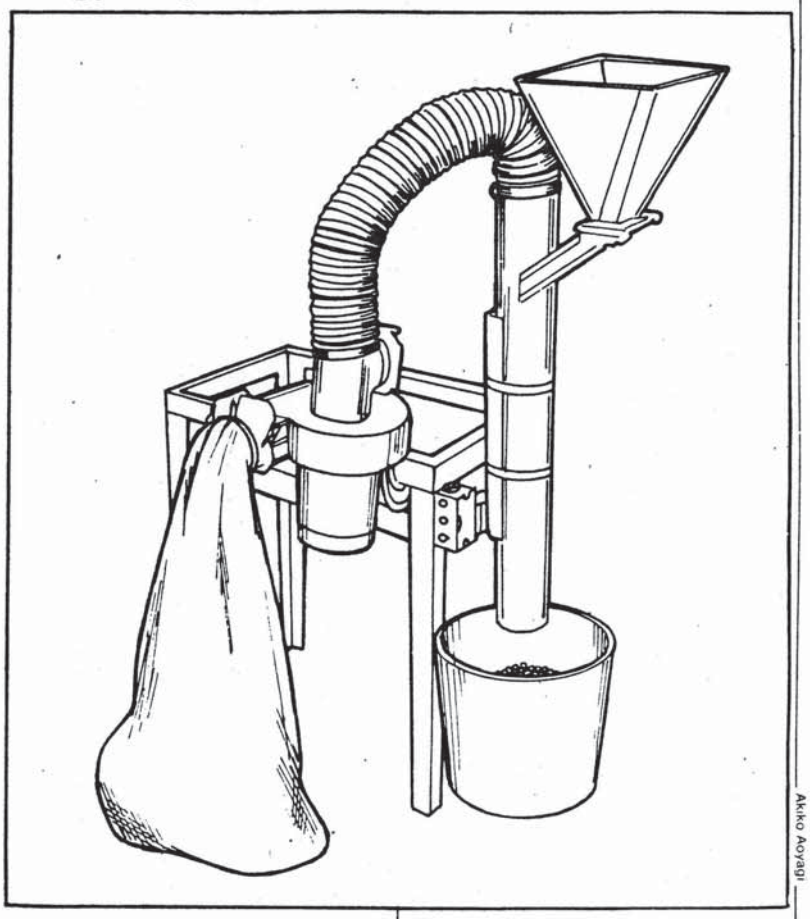
During last summer's *Soyfoods Showcase* I was excited by the work of the University of Illinois in expanding the use of soybeans as human food. Their work with technology-deficient countries has led them to develop a "low tech" soybean hull separator. This machine holds promise for immediate use by the growing ranks of tempeh makers.

The machine is designed to separate the hulls from dry-cracked beans, a mixture of hulls and soybean fragments. For the University of Illinois prototype, the cracked beans are made from whole beans by a mill of their invention called a *drum dehuller*. The hulls are separated from the cotyledons by dropping the cracked beans through an upward flow of air. The light hulls are carried upward and the heavier cotyledons fall through the updraft and are collected at the bottom.

For a detailed description of the machine's construction, I will quote from the inventors, Nelson and Ferrier. Writes Alvin Nelson:

"The dehuller was developed by the writer and two associates while I was on assignment in India. It is patented and the U.S. Patent Number is 3,981,234 which was issued on September 21, 1976. As with our soybean beverage base, the patent belongs to the University of Illinois Foundation and its use requires suitable arrangements.

"The body of the separator consists of a vertical four-inch diameter plexiglass tube, three feet long. A rectangular feed tunnel, with interior measurements of 3½" wide x 1" wide x 10" long is mounted six inches from the top of the tube making a 50 degree angle with the tube. A loading hopper, with a sliding feed door, is attached to the top of the feed tunnel. The top of the separating tube is connected with a four inch diameter, four-foot long flexible hose, to a squirrel cage blower (Torrington, Model FE610 Airotor) powered by a 3,450 rpm, ¼ hp., Westinghouse electric motor. This blower is designed to deliver air at 200 cfm. A collection box is connected to the outlet of the blower to catch the separated hulls. The bottom of the plexiglass tube is open and air flows rapidly up through the tube when the blower is operating so that hulls are carried upward and cotyledons fall out of the lower end. During early tests it was noted that the cotyledons carried along some hulls as they dropped through the tube. To avoid this, a deflector was placed in the feed tunnel to direct the cracked beans to the inside surface of the wall of the tube. This encourages cotyledons to fall in a spiral path around the wall of the tube and thus tends to provide the hulls with a clear path to move up through the center of the tube. In addition, the cotyledons travel a longer path around the inside surface of the tube which allows opportunity for more efficient hull separation."



Akiko Aoyagi

The separator is an admirably efficient machine. It processes five pounds of dry cracked beans per minute and in two passes will virtually remove 100 percent of the hulls with .06 percent of the cotyledon carried up with the hulls. Such efficiency is not demanded in tempeh making because 100 percent of the hulls do not have to be removed. Possibly a tempeh maker could make do with one pass. The speed of bean feed is controlled by the previously mentioned slide below the hopper while the amount of draft is controlled by a similar slide just prior to the blower in the flexible hose. These controls give the separator some ability to adjust to variables in the cracked beans fed to it. This adjustability of the separator will be needed as soycrafters try to combine this machine with their current bean-cracking system.

Further information is available from Dr. A.I. Nelson, 110 South Wing Horticulture Field Lab, University of Illinois, Urbana, Illinois, 61801.

immediate use by the growing ranks of tempeh makers."

Note 1. This is the earliest document seen (Sept. 2011) with the term "low technology" (or "low tech") in the title.

Note 2. This is the earliest document seen (Sept. 2011) that contains the term "low tech" ("low-tech").

Note 3. The description of this dehuller and hull separator (with different illustrations) first appeared in: Nelson, A.I.; Ferrier, L.K. 1976. Soybean processing using low level technology. Urbana, Illinois: University of Illinois. 34 p.

Note 4: In a 2-page letter to Bill Shurtleff dated 16 July 1984, A.I. Nelson says: "The hull separator is not patented and can be used by any interested parties."

Address: The Soy Plant, Ann Arbor, Michigan.

942. Fiering, Steve. 1981. Demystifying refrigeration. *Soyfoods* 1(4):48-51. Winter. [2 ref]

• ***Summary:*** An excellent introduction to an essential subject for soyfoods makers who sell refrigerated or frozen products. "A cooler takes heat from within an insulated box and releases the heat into the environment outside the box. This is accomplished by taking advantage of the fact that when a liquid changes to a gas (evaporates), it absorbs a great deal of heat, and when a gas changes to a liquid (condenses), it releases heat.

"All coolers work on this very simple principle. A substance, generally freon [Freon], is brought inside the cooler box as a liquid and once in the box, allowed to evaporate; thus absorbing heat from within the box. The freon is taken out of the box as a gas and then condenses back into a liquid releasing heat. The liquid is sent back into the cooler, allowed to evaporate, then once more taken out and condensed. This cycle–called the refrigeration cycle–continues until the box is cool enough. It's a simple idea, though the mechanics of accomplishing it may be complex."

The three basic units of every refrigeration unit are the compressor, evaporator, and condenser. Two illustrations show the relationship between these basic components. Address: The Soy Plant, Ann Arbor, Michigan.

943. Grant, Therese Carroll. 1981. Tempeh: Molds make it happen. *Learning.* Feb. p. 45, 48.

• ***Summary:*** Contains a science lesson for children on how to make and eat tempeh; doing so offers an excellent classroom opportunity for the study of molds. They also learn about and develop positive attitudes toward beneficial molds. "Children learn not only about the life cycles of molds and conditions for optimum growth, but also inoculation and incubation techniques and how to use a microscope. It can also be used to teach an awareness of plant proteins and their anticipated role in helping to solve world hunger problems." Address: Acme, Washington.

944. Ridenour, Jeremiah. 1981. The dead refrigerator

transformation [into a tempeh incubator]. *Soyfoods* 1(4):47-48. Winter.
• ***Summary:*** Jeremiah transformed a "dead" refrigerator into a tempeh incubator. Details of the transformation (including window, thermostat, fan, and placement of racks) are given. For about $35 he was able to achieve a capacity of 25 to 35 lb of tempeh every 24 hours, or 175-245 lb/week. Address: Monterey Bay Soyfoods, 335 Pennsylvania Ave., Santa Cruz, California 95062. Phone: 408-423-2256.

945. **Product Name:** Soy Tempeh.
Manufacturer's Name: Soyfoods Unlimited, Inc.
Manufacturer's Address: 14668 Doolittle Dr., San Leandro, CA 94577. Phone: 415-352-1320.
Date of Introduction: 1981. February.
Ingredients: Organic soybeans, water, vinegar, tempeh culture (Rhizopus oligosporus).
Wt/Vol., Packaging, Price: 8 oz in perforated plastic bag inside pre-printed plastic bag.
How Stored: Frozen or refrigerated.
Nutrition: Per 4 oz.: Calories 180, protein 22 gm, carbohydrates 11 gm, fat 8 gm. Percentage of RDA: Vitamin B-12 60%, protein 40%, riboflavin 30%, iron 17%.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. Owners: Valerie, Gary, and John Robertson. Label. 1982, undated. 5.5 by 7 inches. Blue and orange on clear plastic. "Foods for Health. A Cultured Soy Product." Recipes for Sweet & Sour Tempeh, and Tempeh in Tomato & Herb Sauce. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 51, 53.

946. *Soyfoods.*1981. Soyfoods showcase 1980 [Third Annual Soycrafters Association conference at the University of Illinois is a big success]. 1(4):6. Winter.
• ***Summary:*** The conference, titled *Soyfoods Showcase* under the direction of Richard Leviton, was convened at the University of Illinois at Urbana on 9-13 July 1980. Over 270 people attended, including representatives for 10 other nations, in addition to 15 Third World students already on campus for the INTSOY summer training program. Representatives of a number of large American food companies also attended, including Kraft, Beatrice Foods, General Foods, and General Nutrition.

"In addition to its rigorous intellectual format, *Soyfoods Showcase* featured 12 vegetarian-soyfoods meals prepared by Small Planet Catering of Chicago and Catering Plus of Champaign. Buffet meals included tofu lasagna, tofu spread in pita bread, tofu enchiladas, tofu 'egg salad' sandwiches, tempeh 'sloppy joes,' barbecued tofu in Chinese stir fry, miso paté, Indonesian gado-gado with tempeh, spinach tofu quiche, and tofu cheesecake." A photo shows Akiko Aoyagi teaching a cooking class.

947. Turtle Island Soy Dairy. 1981. And now... Tempeh information and recipes (Leaflet). Forest Grove, Oregon. 2 p. Front and back. 35 cm.
• ***Summary:*** This leaflet is printed with dark brown ink on orange-tan paper. The front contains information about tempeh, with the company logo and two illustrations. The back contains five recipes: Basic recipe. Jeff & doc's tempeh spaghetti. Linda Klatt's tempeh cutlets. Baked Indonesian tempeh. Tempeh Reuben Sandwich (the most popular sandwich at the Hope Co-op in Forest Grove). "For more recipes look for our "Recipe of the Month" cards in your neighborhood store.

Talk with Seth Tibbott, founder and owner of Turtle Island. 2000. Oct. 10. This leaflet first appeared in about Feb. 1981.

Note: This is the earliest document seen (Sept. 2011) concerning Turtle Island and tempeh (or soy). Address: 2017 21st Ave., Forest Grove, Oregon 97116.

948. **Product Name:** VFP Tempeh.
Manufacturer's Name: Victor Food Products, Ltd.
Manufacturer's Address: 102 Hymus Rd., Scarborough, ONT, M1L 2C9, Canada. Phone: 416-752-0161.
Date of Introduction: 1981. February.
New Product–Documentation: Ad in Chimo. 1981. Feb. p. 15.

949. O'Conell, Jean. 1981. First cousins in Greenfield [Massachusetts]: Tempeh follows tofu to market. *Morning Union* (*The*) (*Springfield, Massachusetts*). March 18. p. 25-26.

• ***Summary:*** A few nights ago the New England Soy Dairy organized a dinner meeting in Greenfield for the members of the Northeast Chapter of the Institute of Food Technologists. The meal included cottage cheese made without milk and lasagna made without meat. "Fairly tasty, but hardly exciting." But the dinner menu wasn't the point. Rather the "event served to point out that soy is coming of age here in the Connecticut Valley." More people are including tofu in their cooking, and tofu is now available in the lunch program of the Springfield public schools. "Soy is a good, cheap source of protein and it's receiving more attention as people scramble to beat, or at least meet inflation."

A little tofu shop named Laughing Grasshopper opened in 1976 in Greenfield. It was the forerunner of the New England Soy Dairy which is now the third or fourth largest tofu maker in the USA. Eighteen months ago Michael Cohen, one of the four partners, left the Soy Dairy to establish his own soy business, the Tempeh Works, which is also located in Greenfield. Cohen's shop now produces

an average of 4,000 lb/week of tempeh. Photos show: (1) Michael Cohen putting soybeans into a centrifugal extractor for removal of the water before adding tempeh culture. (2) Skat McPherson examining finished cakes of tempeh on a rack at the Tempeh Works.

"Another chapter in the soy story in the Connecticut Valley is expected to begin in the fall of this year with the opening of the South River Miso Company in Conway [Massachusetts]. Christian Elwell and his family are moving the company here from Ohio.

"Miso, even less known than tempeh, is a fermented soybean puree made with water and barley or rice. It has a long fermentation period and is used for such things as soup stock, according to Elwell who attended the Soy Dairy dinner in Greenfield.

"There are only three miso companies in the United States, one on the West Coast, one in North Carolina [American Miso Co.] and the one which is coming to Conway, it was noted by Richard Leviton at the Greenfield meeting." Leviton added that he and others in the soy industry are heartened that a few farmers in the Connecticut Valley are trying to grow soybeans, since the nearest source is now about 1,000 miles away. Contains a recipe for "Peanutty Soy," peanut butter extended with tofu, from Madeline Fox, marketing director and recipe developer at the New England Soy Dairy.

Note: This is the earliest document seen (Nov. 1999) that mentions the South River Miso Company–which began selling miso under its name in Oct. 1982. Address: Union Food and Fashion Editor.

950. Hesseltine, C.W. 1981. Work with soyfoods, Dr. Charles Thom, the NRRC culture collection, and the NRRC's main contributions related to fermented foods (Interview). Conducted by William Shurtleff of Soyfoods Center, March 20. 1 p. transcript.

• ***Summary:*** Contributions: (1) The development of solid-substrate fermentation, an indirect spinoff of work with foods, is now widely used in the West. Originally it was used for the production of enzymes, and later for experimental production of aflatoxins from *Aspergillus species.* (2) The introduction of pure culture yeasts in the miso fermentation process in place of the addition of lots of old miso. This is now completely accepted and widely used; (3) The use of perforated plastic bags to make tempeh. Address: Chief, Fermentation Lab., NRRC, Peoria, Illinois.

951. Hicks, Alastair. 1981. Re: History of the full-fat soy flour factory in Thailand. Letter to William Shurtleff at Soyfoods Center, March 25. 2 p. Typed, with signature on letterhead.

• ***Summary:*** "The full fat soy flour factory in Thailand commenced production of soyflour during commissioning trials which I ran in the week April 24-28, 1978, as food engineer to the project. The location is Mae Chan, a small village outside Chiang Rai in the far north of Thailand, near the Golden Triangle. The plant was initiated by the ASEAN Sub-Committee on Protein, whose chairman is Professor Amara Bhumiratana, Director of the Institute of Food Research and Product Development (IFRPD), Kasetsart University, Bangkok, Thailand.

"The king of Thailand, King Bhumibol Adulyadej, provided the land and buildings, as part of the Thai contribution to the project. One aim of the Royal Preserved Foods Project is to encourage Hill tribe farmers to grow crops other than opium poppies, in this case, nutritious soybeans, as part of an overall crop substitution program...

"The factory is able to make the following products: cleaned soybeans (up to 3 ton/hour); clean, cracked, debittered soybeans (a possible tempeh raw material); enzyme inactive full fat soyflour. The latter products can be produced at 1.1 tonne/hour. Enzyme active products could also be produced. Most of the full fat soyflour is utilized in the production of Kaset Infant food, a baby food produced at the I.F.R.P.D. in Bangkok. This product in turn is supplied to the hundreds of baby health centers throughout Thailand.

"For further information on these and other details, I suggest you write to Professor Amara... Meanwhile, I would like you to record the Department of Food Technology, Hawkesbury Agricultural College of Advanced Education, Richmond, N.S.W., Australia, as a center for soyfoods processing and research in Australia.

"We have an ongoing program of agricultural research in soybean varieties suitable for the Asian market. Related to this we have developed tofu trials and soybean canning trials. Presently we are developing soymilk from full fat soyflour and tempeh as a soyfood in Australia." Address: Lecturer, Dep. of Food Technology, Hawkesbury Agricultural College, Richmond, NSW 2753, Australia. Phone: (045) 701 333.

952. Fukushima, D. 1981. Soy proteins for foods centering around soy sauce and tofu. *J. of the American Oil Chemists' Society* 58(3):346-54. March. [41 ref]

• ***Summary:*** Contents: Abstract. Introduction. Soy sauce varieties: Koikuchi, usukuchi, tamari, saishikomi, and shiro shoyu. Soy sauce manufacturing process (for each of the 5 types). Miso. Other fermented products: Tempeh and natto. Tofu and related products: Regular and silken tofu, dried-frozen tofu, deep-fried tofu. Fermented tofu (Sufu). Other soy products: Soy milk, fermented soy milk beverages, yuba.

This paper discusses traditional Oriental soy protein foods which are growing rapidly in popularity in the USA among non-Asian-Americans.

"Generally speaking, soy sauce is divided into two groups: fermented soy sauce and chemical soy sauce. Fermented soy sauce has a long history as a human food, whereas chemical soy sauce has a history of only several decades. In fermented soy sauce, the proteins and

carbohydrates contained in the materials are hydrolyzed very slowly under mild conditions below 30ºC for over six months, whereas in chemical soy sauce they are hydrolyzed quickly by hydrochloric acid at 80ºC for 8-10 hours. Chemical hydrolysis is a cheap and rapid process, but during the hydrolysis, various secondary reactions occur and produce undesirable compounds, e.g. dark humins, furfurol, dimethyl sulfide, hydrogen sulfide, levulinic acid and formic acid, which are not present in fermented soy sauce. Furfurol, dimethyl sulfide and hydrogen sulfide, which have strong, bad odors in themselves, are derived from pentose, methionine, and sulfur-containing amino acids respectively. Furthermore, tryptophane, one of the nutritionally important amino acids, is destroyed almost completely. As shown in Figure 1 [two chromatograms], the main organic acid of fermented soy sauce is lactic acid, whereas the main organic acid of chemical soy sauce is formic acid. Levulinic acid, present in chemical soy sauce, does not exist naturally.

"To improve the odors of chemical soy sauce, semichemical soy sauce was devised. It is made by hydrolyzing raw soybeans with a lower concentration of hydrochloric acid (7-8%) as the first step, followed by fermenting the hydrolysate with osmophilic yeasts in the presence of wheat koji." In Japan, chemical soy sauce is not used as a soy sauce in itself, but as an extender for fermented soy sauce.

Table 1 gives the typical chemical composition (per 100 ml) of the five varieties of traditional soy sauce in Japan, including Bé [Baumé; a measure of the relative density of liquids], sodium (koikuchi is lowest at 17.6%, usukuchi is highest at 19.2%), total nitrogen (koikuchi has 1.55 gm, tamari has 2.55 gm or 65% more), formol nitrogen, reducing sugar, alcohol (koikuchi is 2.2%, by far the highest), pH (ranges from 4.6 to 4.8), and color.

A brief description of each of the five traditional varieties: (1) Koikuchi: This "dark-colored" shoyu is by far the most popular of the five types of fermented soy sauce in Japan, comprising 85% of the total. It is an all-purpose seasoning with a strong aroma, complex flavor, and deep, reddish-brown color. These characteristics are mainly derived from the use of equal amounts of wheat and soybeans in the koji; (2) Usukuchi [light-colored] shoyu is characterized by a lighter, red-brownish color and a milder flavor and aroma. It is used mainly for cooking when one wishes to preserve the original flavor and color of the food itself. As in koikuchi, equal amounts of soybeans and wheat are used in the koji, but the fermentation is done under conditions which prevent the development of a dark color. (3) Tamari shoyu has a higher amino acid content, but it lacks aroma. The koji is made primarily from soybeans with little or no wheat. (4) Saishikomi (twice-fermented) shoyu is made using equal amounts of wheat and soybeans in the koji, but using raw (unpasteurized) soy sauce instead of salt solution, which is mixed with the harvested koji. Saishikomi is characterized by aroma and full-bodied taste. (5) Shiro (clear, or "white") shoyu is made by using a very high ratio of wheat to soybeans in the koji, and further by fermentation under conditions which prevent dark color development. It is characterized by a very light yellow to tan color, though the amino acid content is very low because of the low soybean content in the koji. Flow sheets show the process for manufacturing koikuchi, usukuchi, and tamari shoyu. Each has three basic parts: Koji making process, brine fermentation process, and refining process.

Concerning soy sauce production and consumption: The total annual production of soy sauce in Japan in 1979 reported by the Japanese Agricultural Standard (JAS) was 1,252,431 kiloliters (kl). In 1979 in Japan, about 70% of the soy sauce products in Japan were purely fermented, 25% contained some semichemical soy sauce, and the remaining 5% contained chemical (HVP) soy sauce. The most recent estimates of annual consumption of soy sauce in the USA are as follows: Fermented soy sauce 17,850 kl; Chemical (HVP) soy sauce 25,500 kl. Within fermented soy sauce, production of koikuchi soy sauce is estimated to be 16,500 kl/year.

In Japan an "instant tofu powder" is actually a spray-dried soy milk. This product was made and introduced by *Nihon Tanpaku Kogyo* (Japan Protein Industry) about 15 years ago (ca. 1966) and was used mainly as a raw material for making regular or silken tofu in order to save time. "Recently, however [1973], the product was placed on the market as an instant powdered tofu [named *Hausu Hontôfu*] by Hausu [House] Foods Co."

A photo shows D. Fukushima. Address: Kikkoman Foods, Inc., Walworth, Wisconsin 53184.

953. Haytowitz, David B.; Marsh, Anne C.; Matthews, Ruth H. 1981. Content of selected nutrients in raw, cooked, and processed legumes. *Food Technology* 35(3):73-74. March. [11 ref]

• ***Summary:*** Contents: Introduction. Peanuts and soybean products (soy flours, soy isolates, soy concentrates). Conventionally cooked legumes. Oriental legume products (includes tofu, tempeh, soy sauce, miso, and natto). Address: Consumer Nutrition Center, Human Nutrition, Science and Education Administration, USDA, Hyattsville, Maryland 20782 USA.

954. Kuehn, Meri Mertig. 1981. Tempeh–Rich in protein, vitamins & minerals. *Bestways*. March. p. 79. [1 ref]

• ***Summary:*** Discusses: What is tempeh. How to make tempeh at home. The nutritional composition and benefits of tempeh. Ideas for cooking tempeh. Recommendation for *The Book of Tempeh,* by Shurtleff and Aoyagi.

"A whole food–nothing has been taken out, and it contains all important fiber." It costs "only about 25¢ to supply a day's protein needs with soy tempeh."

955. **Product Name:** Nectar Tempeh.
Manufacturer's Name: Nectar Tempeh. Later? changed to Nectar Soy Products.
Manufacturer's Address: 4/13 Glamis St. (P.O. Box 969), Geelong, VIC, 3220, Australia. Phone: 05-221-4458.
Date of Introduction: 1981. March.
New Product–Documentation: Letter and order for *The Book of Tofu, The Book of Tempeh,* and *Tofu & Soymilk Production* from Mike Manser and Ralph McCay. 1979. Aug. 30. They have two addresses: One is shown above. The other is 4/13 Glamis St., Newtown, VIC 3220.

Letter from Darren Fletcher of Darkville, Melbourne. 1984. Sept. 4. Another soyfoods business in Melbourne is Nectar Tempeh, P.O. Box 969, Geelong. Phone: (052) 214458.

Shurtleff & Aoyagi. 1985. Jan. Soyfoods Industry and Market. p. 9. Letter (fax) from Ross Hamilton and Mike Manser. 1990. Sept. 13. This was the company's first product, introduced in March 1981.

956. *Prevention* (*Emmaus, Pennsylvania*).1981. A health food dictionary: Soybeans. March. p. 144-46.
• ***Summary:*** Soybean foods include soybean oil, tofu, tamari, soy milk, tempeh, miso, soybean sprouts, soy flour, soy ice cream, and soy nuts.

The article ends: "Do yourself a favor. Get to know the soybean." Address: Emmaus, Pennsylvania.

957. Soycrafters Assoc. of North America; Soyfoods Center. 1981. Estimated soyfoods industry statistics (News release). Sunrise Farm, Heath Rd., Colrain, MA 01340. 1 p. March. Updated in Aug. 1981.
• ***Summary:*** 1. Number of companies manufacturing tofu, tempeh, miso, soynuts, soy sprouts, soy sauce, secondary soyfoods, soy delis & restaurants, in the USA, Canada, and Latin America. 2. Production statistics for USA and Canada: Raw soybean usage, food production, employees, and retail sales value are given for 4 types of tofu makers (caldron, steam kettle, pressure cooker, factory), tempeh, soynuts, and soy delis and restaurants. With totals. Actual gathering of statistics was done largely by Soyfoods Center. Address: 1. Richard Leviton, Colrain, Massachusetts; 2. W. Shurtleff, Lafayette, California.

958. Fardiaz, Dedy; Markakis, Pericles. 1981. Degradation of phytic acid in oncom (fermented peanut press cake). *J. of Food Science* 46(2):523-25. March/April. [16 ref]
• ***Summary:*** The phytic acid content decreased rapidly during fermentation. Phytase is the enzyme that hydrolyzes phytates. Address: Dep. of Food Sciences & Human Nutrition, Michigan State Univ., E. Lansing, MI 48824.

959. **Product Name:** Tempeh.
Manufacturer's Name: Harvest Wholefoods.
Manufacturer's Address: 403 Richmond Rd., Grey Lynn, Auckland, New Zealand.
Date of Introduction: 1981. April.
Ingredients: Whole soybeans, water, culture (*Rhizopus oligosporus*).
Wt/Vol., Packaging, Price: 250 gm plastic bag.
How Stored: Frozen.
New Product–Documentation: Chalmers, Elizabeth. 2007. Jan. 16. "Business history of the Chalmers family: Making soyfoods in New Zealand" (Interview). Letter (e-mail) from Elizabeth Chalmers. 2007. Jan. 23. This tempeh was not made with organic soybeans. "In 1981 you could only get 2 things in New Zealand that were organic–wheat & rye. We didn't start using organic soybeans until we started the Organic Soy Company in 1996. We always made tempeh in perforated plastic bags, then packaged it in another labeled plastic bag. We sold it frozen. The typical weight was 250 gm. We got our spores from Betty at GEM Cultures. We learned how to make tempeh from *The Book of Tempeh,* by Shurtleff & Aoyagi." As far as Elizabeth knows, this was the first tempeh made and sold commercially in New Zealand. "There was a Dutch Indonesian guy who used to do Indonesian food from his home, and he made a bit of tempeh, but as soon as we started making it he stopped, as it was too much work on top of his meals."

960. Soyfoods Center; Soycrafters Assoc. of North America. 1981. Soyfoods Production in America and the West (News release). Lafayette, California: New-Age Foods Study Center. 1 p. April. Updated in Sept. 1981 in a neater format.
• ***Summary:*** A table shows production statistics for 25 types of soyfoods. Number of manufacturers in the USA, Canada, Other West, Total; Tons of raw soybeans/year used by each food. Yield of food from 1 unit weight of soybeans. Wholesale value. Retail value. Number of people employed. Address: P.O. Box 234, Lafayette, California 94549.

961. Lesem, Jeanne. 1981. Will Americans swallow soybeans? *Morning Union* (*The*) (*Springfield, Massachusetts*). May 13. p. 29. [1 ref]
• ***Summary:*** According to this summary of an article by Judy Brown in the *National Food Review,* a USDA quarterly, tofu, tempeh, and miso are becoming increasingly popular.

962. Lesem, Jeanne. 1981. Will soybeans now follow margarine on road to success? *Hartford Courant* (*Connecticut*). May 13. p. E12.
• ***Summary:*** This article is a telephone interview with Judy Brown, based on her article in the *National Food Review,* a USDA quarterly. "Tofu (toe-foo) is as much a part of Japanese culture and cookery as bread is in the United States," says Brown. Also discusses tempeh, miso, soy flour and grits, and "textured vegetable products."

Note: Syndicated by United Press International, this

article appeared in several other newspapers.

963. Hesseltine, C.W. 1981. Future of fermented foods. *Process Biochemistry* 16(3):2-6, 13. April/May. [11 ref]
• ***Summary:*** Discusses shoyu, miso, natto, and tempeh in Korea, the USA, and Japan. There are nine factors that favor the increased use of fermented foods. Address: NRRC, Peoria, Illinois.

964. *Soyanews* (*Sri Lanka*).1981. And now soya karawala. 3(10):1. May.
• ***Summary:*** "In an experiment conducted to test the keeping qualities of sun-dried Tempeh the Soyabean Foods Research Centre [SFRC] in Gannoruwa has found that this Indonesian preparation made from soyabeans by a process of natural culture keeps very well for three months." Tempeh starter is now available at SFRC.

A large photo shows "Freshly made tempeh in banana leaf wrapping."

Note 1. In Sri Lanka, karawala / karawada is traditional dried fish. It resembles tempeh in flavor and texture.

Note 2. This is the earliest document seen (Nov. 2010) that uses the word *karawala* or "soya karawala" in connection with tempeh.

965. *Soyanews* (*Sri Lanka*).1981. Book review: The art of Tempeh making. 3(10):6, 7. May.
• ***Summary:*** A full page, positive review of *The Book of Tempeh,* by William Shurtleff and Akiko Aoyagi.

Photos show: (1) The cover of the book. (2) A woman selling tempeh in a market in Indonesia.

966. Wang, Hwa L. 1981. Oriental soybean foods: Simple techniques produce many varieties. *Food Development* 15(5):29-34. May.
• ***Summary:*** Methods of preparation are given for the following soyfoods: Tofu, soy sauce, miso, hamanatto, sufu, tempeh, natto. A table gives local names, descriptions, and uses for traditional East-Asian non-fermented soyfoods: "Fresh green soybeans (mao-tou, edamame)," soybean sprouts (huang-tou-ya, daizu no moyashi), soybean milk (tou-chiang), protein-lipid film (tou-fu-pi, yuba), soybean curd (tofu, tou-fu, tubu, tahoo, touhu, taufoo, dou-fu, dan-fu), and soybean flour (tou-fen, kinako). Local names, organisms used, substrate, and description of the product are given for traditional East-Asian fermented soyfoods: soy sauce, miso, hamanatto, sufu, tempeh, and natto.

Note: This is the earliest English-language document seen (Feb. 2004) that uses the word "taufoo" to refer to Chinese-style tofu. Address: NRRC, Peoria, Illinois.

967. O'Neill, K. 1981. America, God willing, becomes a tempe nation. *Tempo.* June 13. p. 49-50. [1 ref]
• ***Summary:*** Tempeh has started to be sold in Indonesian supermarkets. They are displayed on the stands at Pekan Raya in Jakarta. KOPTI was founded on 11 March 1979. The cooperative split off from a firm which equalized the distribution of soybeans, which are still imported and always in short supply. Indonesia requires 4,300 tons of soybeans a day. Of that total, 3,000 tons is for tempeh and 1,300 tons for tofu. KOPTI, which now has more than 12,000 members from 40 cooperatives, is headed toward mechanization.

Note: This is the earliest document seen (Sept. 2011) that mentions KOPTI. Address: New York.

968. Rothert, Yvonne. 1981. Use of soybean well-known, but here comes tempeh. *Oregonian* (*The*) (*Portland, Oregon*). June 24.
• ***Summary:*** About Seth Tibbott (a photo shows him carrying a tray of finished tempeh) and Turtle Island Soy Dairy. Tibbott started make tempeh on a home scale in Tennessee in 1977, and commercially in December 1980 in Oregon, in 50- to 60-lb batches. Compared with tofu, says Tibbott, tempeh has a more meatlike texture and flavor that "you can sink your teeth into and chew on." "Tibbott has also begun marketing an herb-seasoned tempeh, flavored with basil and oregano, which is pressed into sausagelike rolls instead of cakes."

Contains recipes "collected from Oregon tempeh lovers" for: Indonesian-style baked tempeh. Sauteed tempeh. Tempeh spaghetti. Tempeh cutlets. Tempeh Reuben. Tempeh teriyaki. Address: Oregonian staff.

969. **Product Name:** Tempeh Brothers Soyfurters (Marinated Tempeh Sticks Resembling Square Hot Dogs).
Manufacturer's Name: Appropriate Foods, Inc.
Manufacturer's Address: 137 New Hyde Park Rd., Franklin Square, Long Island, NY 11010.
Date of Introduction: 1981. June.
Ingredients: Organic soy tempeh, shoyu, herbs, spices.
Wt/Vol., Packaging, Price: 5 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1982. June 15. 2 by 5 inches. Orange on light grey. Interview with Robert Werz. 1987. Sept. 9. Made by slicing a cake of tempeh lengthwise into 4 sticks and marinating in a soy sauce, seasoned with liquid smoke. Introduced 15 June 1981. Discontinued 30 Dec. 1982.

970. Bassett, Barbara. 1981. Surprise! Its soy: New ideas for soy cookery from the Soyfoods Center. *Bestways.* June. p. 70-71, 74.
• ***Summary:*** This is an interview with William Shurtleff plus recipes for their latest favorite (previously unpublished) tofu recipes, including Yummy no-egg carob-applesauce cake with tofu, No-egg tofu carrot cake with tofu-tahini icing, Tofu cheesecake with strawberry topping, Tofu-apple-nut whole-wheat bread, Savory tofu cutlets (fried), Tofu carob

parfait, Wonderful creamy tofu dip or dressing: our favorite latest discovery, and Eggless egg salad sandwich. Photos show: Each of the above recipes. Akiko Aoyagi seated behind a table on which are various tofu recipes.

971. **Product Name:** Soy Tempeh.
Manufacturer's Name: Cricklewood Soyfoods.
Manufacturer's Address: Route 1, Box 161, Mertztown, PA 19539. Phone: 215-682-4109.
Date of Introduction: 1981. June.
New Product–Documentation: Leviton. 1982. Soyfoods. Summer. p. 33. Renate & Karl Krummenoehl began making tempeh in June 1981. They make "600 pounds/week of brown rice and plain soybean tempeh." Soyfoods Center Computerized Mailing List. 1982. July 23. Owners: Karl & Renate Krummenoehl. Address is given as R.D. #1, Box 161.

Talk with Karl Krummenoehl. 1988. Jan. 4. This is the company's most profitable product. The business is part time and low key. They make about 600 lb/week of tempeh.

972. **Product Name:** Soy-Brown Rice Tempeh.
Manufacturer's Name: Cricklewood Soyfoods.
Manufacturer's Address: Route 1, Mertztown, PA 19539.
Date of Introduction: 1981. June.
New Product–Documentation: Ad in CRC Reports. 1981, 1982, 1987. Fall. p. 15. Talk with Karl Krummenoehl. 1988. Jan. 4. This was one of the company's first two products. Sheet of Labels sent by Renate Krummenoehl, 2001. June.

973. Leviton, Richard. 1981. The soybeaning of the American kitchen. In: R.B. Yepson, ed. 1981. Home Food Systems. Emmaus, Pennsylvania: Rodale Press. 475 p. See p. 99-115. [14 ref]
• ***Summary:*** The United States is the world's leading producer of soybeans, harvesting 136 billion pounds a year. Yet instead of enjoying foods made directly from soybeans, we feed them first to animals, converting them into meat and dairy products.

"Meanwhile, East Asians, who have lived with the soybean for millennia, and who are not as affluent as we, have a simple, economical and healthful answer: simple, nutritious, inexpensive foods such as tofu, tempeh, soymilk, miso, and many others less known in the West." Address: Colrain, Massachusetts 01340.

974. Nofziger, Margaret. 1981. Tempeh & soy yogurt. *Vegetarian Times* No. 47. June. p. 60-63.
• ***Summary:*** Contents: Tempeh: Introduction, vitamin B-12 and tempeh, tempeh recipes (five recipes). Soymilk yogurt: Introduction, making the soymilk for soy yogurt, to make your mother culture, to make yogurt from mother culture, flavoring your yogurt, yogurt recipes. A photo shows Suzy Jenkins, smiling and holding a large container of tempeh. Address: The Farm, Summertown, Tennessee.

975. Smith, Paul. 1981. Re: Pioneering work with debittered full fat soy flour and with soybeans in Australia. Soybean production in Australia. Letter to William Shurtleff at Soyfoods Center, undated. 2 p. Handwritten. Plus comments on draft of History chapter.
• ***Summary:*** Comments on "History of Soya in Australia" manuscript: Vincent R. Smith was a soyfoods pioneer in Australia. In 1951-52 he began to manufacture Australia's first whole (full-fat) heat-treated (debittered) soy flour. From 1953-54 to 1974-75 V.R. Smith also canned soybeans in tomato sauce or puree. In 1956 he founded Soy Products of Australia Pty. Ltd. Between 1965 and 1974-75 Mr. Smith developed and manufactured two soyabean meat substitutes–Soya Bean Luncheon Loaf, and Savoury Roast–for Bellevue Health Supplies, as part of his product range within F.G. Roberts' Health Foods Proprietary Ltd. This latter company has since been absorbed within Soy Products of Australia Pty. Ltd. Technically and nutritionally these products were excellent, but they were discontinued due to rising labour costs, the small Australian market, and competition from larger, more highly automated companies like Sanitarium and Heinz. At the time, possibly due to the very cheap cost of meat in Australia, there was very little market interest in soyabeans either as a food, meat substitute, and/or extender.

By 1981 Soya Products of Australia Pty. Ltd. was making debittered full-fat soy flour and grits, Soy Crunch (a breakfast cereal containing soy grits), Soy Compound (containing dry soymilk, whole soy flour, malt, and lactose), and several types of Muesli containing soy grits. The company's main role is in supplying high grade, human consumption quality raw (enzyme active) and debittered (heat-treated) soy grits and soy flour to industry [food processors] for a wide variety of uses: cakes, biscuits, bread, bread premixes, pizzas, breakfast cereals and mueslis, hamburgers, smallgoods, baby foods, soy milk, soy ice cream, tofu, and calf- and piglet rations.

Interest in soyfoods is growing in Australia, and will continue to grow fostered by increasing health consciousness and the rising prices of meats of all kinds. After the end of the Vietnam war in 1975, there was a big influx of Vietnamese into Australia, swelling the number to 50,000, of which 30,000 are ethnic Chinese. There are also some 10,000 Indonesians currently residing in Sydney alone.

Letter: "Thank you for your hospitality during my visit to the USA... We are now more than fully occupied running, maintaining, and expanding our soy flour mill and our health food business. In the last two years we have made substantial improvements in our quality control, throughput, and heat-treatment process. We have also been working on improving our bulk unloading and grain cleaning system, and plans for extending and further automating our plant are well in hand... We are actively participating in research and development work on soy flour and its end uses: particularly in the areas

of liquid and powdered soymilks and soy ice cream.

"We were amongst the first people in Australia to use soya beans to make products for human consumption, in particular heat-treated or debittered full fat soy flour. We were actively involved with the first commercial crops of soybeans grown in Australia in the early 1950s at Kingaroy; we even had a plot of several varieties of soyabeans growing in our own backyard for several years from about 1953-55. Though the bushes grow, the soybeans never mature properly. We also did some interesting work in canning beans in tomato sauce or purée and in manufacturing soy meat substitutes. In addition to our conventional bakery and small goods outlets, our own specialty products and breakfast cereals, we are now supplying several small manufacturers of tofu, soymilk with soybeans, soy flour (raw), and soy grits (raw) and have recently become involved in tempeh manufacture. The trend here in Australia is definitely following that in the USA and interest seems to have grown dramatically in the last year or so. Soyfoods seem to have taken off... Unless you can afford shiploads, freight to Australia is a killer, so we do our best to avoid importing soybeans.

"I am enclosing a recent newspaper article about a tofu producer. We supply him with soy flour for making his tofu and soymilk."

Concerning soyabean production in Australia: "Soyabeans are widely grown in Australia from just north of Shepparton in Victoria (120 miles north of Melbourne), through the Riverina district of southern New South Wales (NSW), through central, north, and northeastern NSW; the Darling Downs area (around Toowoomba) and Kingaroy districts of Queensland. More recently soyabeans have been grown in Western Australia, near Perth.

"A great deal of work has gone into developing suitable varieties of soyabeans for Australian conditions; much of this has been built on American research and experience. U.S., Chinese and Australian beans, while generally similar, are very different to handle and process, in our experience.

"Initially, soyabeans were grown under natural rainfall but this is now rare as bean size tends to be small and yield poor. Soyabeans are definitely not suited to dryland farming techniques. Nearly all soya beans now grown in Australia are grown under irrigation."

Update (March 1995): Paul Smith joined this family-run company in April 1980. In 1981 he was just starting to learn about its history. By 1986 he had done extensive research and writing (which see) on the company history, which showed that it had much earlier and very interesting origins. Address: Soy Products of Australia Pty. Ltd., 69 Power Road, Bayswater, VIC 3153, Australia. Phone: (03) 729-1738 or 729-3611.

976. *Soyanews* (*Sri Lanka*).1981. Recipes: Make your own soya karawala. 3(11):4-5. June.

• ***Summary:*** How to make sun-dried tempeh at home. It can be incubated in a folded banana leaf or in a perforated plastic bag. Seven photos show the process.

977. *Soyanews* (*Sri Lanka*).1981. Book review: Tempeh as a cottage industry. 3(11):6, 8. June.
• ***Summary:*** A 1/3 page positive review of the book *Tempeh Production,* "a pioneering work" by William Shurtleff and Akiko Aoyagi. "It is for those who wish to go in for commercial production of Tempeh."

978. **Product Name:** Soy & Rice Tempeh (using brown rice).
Manufacturer's Name: Soyfoods Unlimited, Inc.
Manufacturer's Address: 14670 Doolittle Dr., San Leandro, CA 94577.
Date of Introduction: 1981. June.
Ingredients: Organic soybeans, brown rice, water, tempeh culture (Rhizopus oligosporus).
Wt/Vol., Packaging, Price: 8 oz in two plastic bags.
How Stored: Refrigerated or frozen.
Nutrition: Per 4 oz.; Calories 197, protein 18 gm, carbohydrates 20 gm, fat 5 gm, sodium 23 mg, vitamin B-12 1.5 mcg.
New Product–Documentation: Label. "Foods for Health." On back, recipes for Tempeh "Mock Chicken" Salad, and Tempeh with Spicy Peanut Sauce. "For more information and delicious recipes see The Book of Tempeh by Shurtleff & Aoyagi (Harper & Row)." The Mock Chicken Salad was made with tempeh, tofu mayo (tofu, oil, vinegar, salt, shoyu, water), onions, celery, parsley, basil, garlic, salt, and bulgur wheat. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 53.

979. **Product Name:** Tempehroni (Herb-seasoned Tempeh in Sausage-Like Rolls).
Manufacturer's Name: Turtle Island Soy Dairy.
Manufacturer's Address: c/o Hope Co-op, 2017 21st Ave., Forest Grove, OR 97116.
Date of Introduction: 1981. June.
Ingredients: Organically grown soybeans, water, apple cider vinegar, marjoram, basil, oregano, thyme, summer savory, Rhizopus oligosporus (tempeh starter).
Wt/Vol., Packaging, Price: 8 oz plastic wrapped cylinder. Retails for $1.28.
How Stored: Frozen.
New Product–Documentation: Tibbott. 1982. Soyfoods. Winter. p. 31. "The soy tempeh with herbs." Label, undated. "New! The soy tempeh with herbs." This label, 5½ by 3½ inches, is printed red on white. The Turtle Island logo appears large in the upper left corner. A turtle, upon whose shell appears the continents of North and South America, is inside of a circle formed by a vine with soybean leaves. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 56.

980. **Product Name:** Five Grain Tempeh (With Soybeans & Rice & Millet & Sunflower Seeds & Sesame Seeds).
Manufacturer's Name: Turtle Island Soy Dairy.
Manufacturer's Address: c/o Hope Co-op, 2017 21st Ave., Forest Grove, OR 97116.
Date of Introduction: 1981. June.
Ingredients: Soybeans, millet, rice, sunflower seeds, sesame seeds.

New Product–Documentation: Tibbott. 1982. Soyfoods. Winter. p. 31. "From a production standpoint, it is the most difficult tempeh to make." Shurtleff & Aoyagi. 1985. History of Tempeh. p. 56. This was America's first tempeh containing multiple cereal grains.

981. Vaidehi, M.P. 1981. A few soyabean products requiring better attention. *Lal-Baugh Journal* (*The*) 26(2). April/June. [Eng]
• ***Summary:*** "Soyabean should be considered not primarily as a meat substitute, but rather as a food ranking with meat, eggs, milk, and cheese, in protein content and supplementing these foods in the diet."

"The most popular south Indian fermented breakfast foods are 'idli' and 'dose'" [dosai]. Their batters are naturally fermented with wild yeasts present in the atmosphere. Soya dhal could be used as a partial replacement for black gram dhal in making either of these popular foods. A recipe is given.

Recipes are also given for making tempeh, tempeh chips, tempeh curry, soy milk, soy curd and butter milk, tofu (like paneer). Cow's milk paneer retails for over Rs. 25/- per kg. whereas tofu retails for Rs. 8-10 per kg–less than half the price. Address: Univ. of Agricultural Sciences, Bangalore, India.

982. **Product Name:** Soybean Tempeh.
Manufacturer's Name: White Cloud Tempeh.
Manufacturer's Address: 12333 Mt. Angel Gervais Rd., Mt. Angel, OR 97362. Phone: 503-845-9261.
Date of Introduction: 1981. June.
New Product–Documentation: Letter. 1982. Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Roberta Rodriguez. Company name is given as Colony Soy Dairy & White Cloud Tempeh.

983. Flinders, Carol. 1981. Like tofu and miso, tempeh is soybean import from Asia: Notes from Laurel's Kitchen. *Hartford Courant* (*Connecticut*). July 8. p. E7.
• ***Summary:*** A good introduction to tempeh and to *The Book of Tempeh* by Shurtleff and Aoyagi. Contains a recipe for Barbecued tempeh.

984. Mounts, T.L. 1981. Soycrafters annual meeting. *Northern Regional Research Center, Notes from the Director* (*Peoria, Illinois*) No. 1468. p. 1-2. July 17.
• ***Summary:*** "The fourth annual meeting of the Soycrafters Association was held on the campus of Colorado State University at Fort Collins, July 8-12. The foods receiving the most attention were tofu and tempeh, and modifications of them. Richard Leviton, Executive Director of the organization, pointed out that the growth rate of traditional soy foods is 25 to 30% each year, and he projected gross sales of $620 million by 1990. Currently the total sales are more than $50 million. California now has a pilot study on tofu for the school lunch program."

"Since 1979, the taste and appearance of soy foods served at these meetings has greatly improved. The tempeh burgers, served on a bun with lettuce and tomatoes, were exceptionally good." Address: Director.

985. Kornblatt, Sasha. 1981. Re: Request for permission to use a quotation from *The Book of Tempeh, Vol. II* (*Tempeh Production*). Letter to William Shurtleff and Akiko Aoyagi at New-Age Foods, July 24. 2 p. Typed, with signature on letterhead.
• ***Summary:*** "Since we moved into our new facility, things here at Surata have been very exciting. While we are still a co-operative, we have organized to insure a strong management to effectively respond to the fast pace of the food industry. In May, I became Marketing Manager."

At the new plant, for the first time, Surata is able to produce more than the demand. "While natural food stores

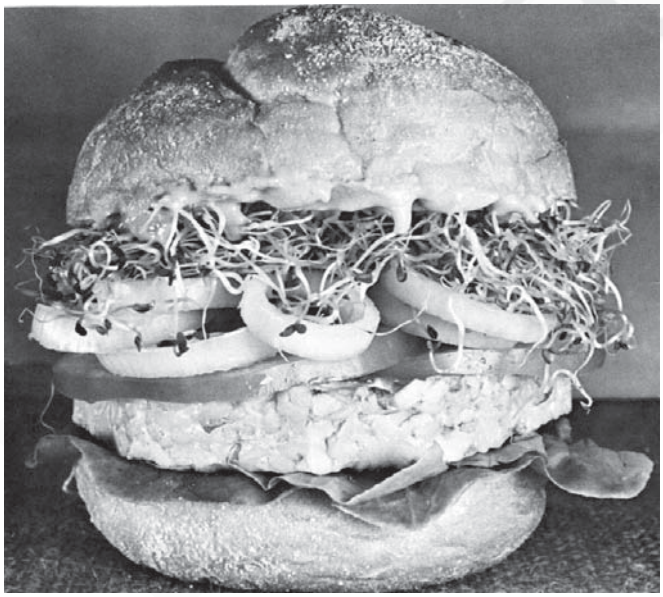
have always been responsive and pioneering accounts for us, that market is saturated and becoming increasingly competitive..." Now Surata is working to become "competitive and effective in the supermarket arena. We have been doing very well in a supermarket that sells [tofu in] bulk, surprisingly, and we are planning to approach other accounts with a co-ordinated, professional, and service-oriented view.

Sasha has been working with a graphics firm to redesign Surata's logo and labels. She encloses a copy of their new tofu label. "We are also switching to eight-ounce tempeh as we redesign the package." She requests permission to use a quote from *The Book of Tempeh, Vol. II* on their new tempeh label.

Note: The permission was granted in writing. Address: Marketing Manager, Surata Soyfoods, Inc., 302 Blair Boulevard, Eugene, Oregon 97402. Phone: (503) 485-6990.

986. Cohen, Richard L. 1981. Bay Area companies excited about tempeh. *San Francisco Business Journal.* July 27. p. 8-9.
• ***Summary:*** About Pacific Tempeh and Soyfoods Unlimited. Pacific Tempeh was America's first company to develop and market a tempeh burger. Soyfoods Unlimited invested $100,000 in their plant. It has the capacity to produce 10,000 lb/week of tempeh but currently produces only about 1,500 to 1,800 lb/month. The business will break even at 3,500 lb/month.

Note: This is the earliest document seen (Sept. 2011) that mentions Soyfoods Unlimited.



987. Cohen, Michael. 1981. Sterile technique for tempeh starter. *Soyfoods* No. 5. p. 36-37. Summer.
• ***Summary:*** "The following method for in-plant preparation of tempeh starter was developed by Michael Cohen and his co-workers at The Tempeh Works, of Greenfield, Massachusetts." The trick in making tempeh starter in a commercial shop is to keep everything sterile, i.e., free of unwanted microorganisms. So this is a very practical and useful article.

The instructions are in the form of a recipe with 10 numbered steps. Each step is accompanied by a photo taken by Frank Ward. Address: Tempeh Works, Greenfield, Massachusetts.

988. **Product Name:** Fresh Viili Starter, Powdered Tempeh Starter, Homemaker Light Rice Koji Spore Kit [for Amazake], Natural Terra Alba Calcium Sulfate (Tofu Coagulant).
Manufacturer's Name: GEM Cultures.
Manufacturer's Address: 30301 Sherwood Rd., Fort Bragg, CA 95437. Phone: 707-964-2922.
Date of Introduction: 1981. July.
New Product–Documentation: Letter from GEM Cultures. 1981. "Just a few words about our Powdered Tempeh Starter. Our PTS is prepared on the same all vegetable (non dairy, non animal origin) medium on which our Living Tempeh Starter is grown." It is mixed with sterilized flour to extend it.

Letter from Betty Stechmeyer of GEM Cultures. 1991. Oct. 18. These three basic products were introduced in July 1981.

989. **Product Name:** Hi Pro Tempeh.
Manufacturer's Name: Hi-Pro Tempeh.
Manufacturer's Address: 73 Jamaica St., Jamaica Plain, MA 02130. Phone: 617-524-2524.
Date of Introduction: 1981. July.
New Product–Documentation: Letter from Michael Morearty. 1981. July 22. They now make 160-240 lb/week of soybean/rice tempeh. "This fall we will be setting up a larger factory and will give an apprenticeship in tempeh production." Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Michael Morearty. Address is given as P.O. Box 69, Gardner, MA 01440.

Label. 1982, undated. 4.5 by 5.5 inches. Black on yellow. Address is now Box 69, Gardner, MA 01440.

Leaflet with recipes sent by Morearty. 1982. April 9. "High Pro Tempeh. Taste the difference." Introduced in the fall of 1981, the product is made in the traditional Indonesian way; Shurtleff & Aoyagi. 1982. Soyfoods Industry & Market. 1982. p. 48. By Jan. 1982 the company was at 73 Jamaica St., Jamaica Plain, MA 02130.

Talk with Michael Morearty. 1983. Feb. 26. He went to Java for 4½-5 weeks to study the real traditional tempeh method. He learned how to make tempeh up to 10 cm (3.9 inches) thick and how to make tempeh krepik (he visited the plant). He stayed with a family in Malang for 2 weeks, learned a lot and took many color slides. He plans to return

to Boston to set up a legitimate tempeh plant.

Michael Morearty. 1983. "Making traditional tempe in America: The Hi Pro Tempe story" (unpublished manuscript, 5 p.). The author began making tempeh in Miami, Florida, late in the summer of 1979. His hobby turned into a small business. He followed the "Americanized" process of making tempeh and people liked his tempeh but he felt that something was missing, that he wasn't making "real" tempeh. He moved from Miami to Boston (then Gardner), Massachusetts, and his home-based production grew from 75 lb/week to 200 lb/week. Then he used *The Book of Tempeh* to make his tempeh using the traditional Indonesian method. He soaked the beans for 18-36 hours to acidify them naturally, thus eliminating the need for vinegar. Then he lowered the incubation temperature to 84-86ºF and extended the fermentation time to 39 hours. Consumers liked his new product, production rose to 400 lb/week and he raised his price 20% above that of his two competitors. Later he went to Indonesia to study traditional tempeh making there. He met his current wife there, then returned to San Diego, California.

Michael Morearty. 1983. "Rice bran tempe ragi–Affordable tempe starter for America" (unpublished manuscript, 3 p.).

990. Kronenberg, H. 1981. Tempeh today: A technique for preserving tempeh culture. *Soyfoods* No. 5. p. 32-33. Summer. [2 ref]

• ***Summary:*** Tempeh makers need quick access to pure culture tempeh starter. We may someday isolate a strain of *Rhizopus oligosporus* that produces white sporangia (fruiting bodies) and this resolve the problem of good tempeh with black spots on its surface. Contains a detailed description (in recipe format in 11 steps with a flow sheet) for preservation of Rhizopus culture.

Note: Kronenberg is an expert on this subject; he studied tempeh fermentation at Hebrew University in Jerusalem, Israel. A photo shows Michael Cohen (founder of The Tempeh Works), smiling, holding out a tray of mature tempeh in perforated plastic bags.

991. Leviton, Richard. comp. 1981. Soyfoods in America. The Fourth Annual Soycrafters Association Conference on Producing and Marketing Soyfoods: Schedule, abstracts, expo information, the menu, registration list, and directory of instructors. Colrain, Massachusetts: Soycrafters Assoc. 150 p. Held 8-12 July 1981 at Colorado State Univ., Ft. Collins, CO. No index. 28 cm.

• ***Summary:*** These proceedings were given to the registrants when they arrived. Schedule: Wed., July 8. Lectures: Directions for the soyfoods industry, by Richard Leviton. Soyfoods: Protein source of the future, by William Shurtleff.

Thurs., July 9. Class period 1: Review of tofu-making equipment, by Larry Needleman. International soyfoods cooking class, by Melodie Phipps. Small business management, by Dr. Harry Kreuckeberg. Tofu plant tour. Seminars: Sensory evaluation, part I, by Adrian Pearson. Soyfoods & human nutrition, part I, by Dr. Joseph Rackis, chairman. Home soymilk preparation, by Linda Gilbert. Tempeh production laboratory, by Dr. Clifford Hesseltine [NRRC, Peoria, Illinois], chairman. Class period 2: Soyfoods master chef cooking class, by Akiko Aoyagi. The Real Food Tofu Cafe, by Dik Rose. Soyfoods marketing strategies, by Dr. Harry Krueckeberg. Tofu plant tour. Tempeh production laboratory II, by Dr. Clifford Hesseltine, chairman. Lecture: Low cost extrusion cooking, by Dr. Judson Harper. Expo opens. Class period 3: Cooking soyfoods, macrobiotic style, by Rebecca Greenwood. Effective advertising and promotion, by Dr. Harry Krueckeberg. Seminars: Levels of tofu production, Luke Lukoskie, chairman. Introduction to nutrition and dietary analysis, by Jennifer Andersen & Suzy Pelican. Lectures: The view from tofu towers, by Thelma Dalman. The history of soybeans in the West, by Dr. Theodore Hymowitz. The year in review: Progress, problems & challenges, by William Shurtleff.

Fri., July 10. Class period 4: Tofu in Ecuador cooking class, by Ricardo Jennings. Quality control of soy products, by Dr. Joseph Maga. Labor / management relations, by Dr. Ron Wiggins. Demonstrations: Tofu making, at White Wave, Boulder, Colorado. Soymilk ice cream, by Jamie Stunkard & Al Jacobson. Extrusion cooking, by Dr. Ron Tribelhorn. Seminars: Soyfoods & human nutrition, by Dr. J. Rackis, chairman. Sensory evaluation, part 2, by Adrian Pearson. Business management, by William Scott. Class period 5: Soyfoods master chef cooking class, part 2, by Akiko Aoyagi. The small tofu shop, by Dik Rose. Tempeh making demonstration, at White Wave. Lecture: The nutritional value of extruded foods, by Dr. Richard Jansen. Expo open. Class period 6: How to open a tofu or tempeh plant, by William Shurtleff. Infant and child nutrition, by Dr. Barbara Smith. Soyfoods desserts cooking class, by Darrilyn Jackson. Seminar: Recall programs for soyfoods, by Dr. Joseph Rakosky. Lecture: Soyfoods & the natural foods industry, by Gil Johnson. Tofu cheesecake bake-off awards. Live music & refreshments.

Sat., July 11. How to open a tofu business on nothing down, by Al Jacobson. Soyfoods & the kosher market, by Chananyah Kronenberg. Government taxes and small business, by Dr. Terry Lantry. Demonstrations: Design and maintenance of the soy plant, by Steve Fiering (at White Wave). Soysage production, by Jamie Stunkard & Bob Davis (at White Wave). Seminars: Quality assurance programs, by Dr. Joseph Rakosky. Tofu and institutional feeding, by Thelma Dalman and Maxine Prairie. Class period 8: Sweden's first tofu plant, by Dr. Ted Nordquist. Quick home tempeh method, by Linda Gilbert. Frozen tofu cooking class, by Robin Clute. Expo open. Lecture: Tofu from cottonseeds, by Dr. Khee Choon Rhee. Class period

9: Tempeh microbiology and technology, by Chananyah Kronenberg. Financial management, by Dr. Oscar Varela. Tofu production cost control and analysis, by John Baldwin. Mexican village soya cooking class, by Blanca Dominguez. Seminar: Principles of tofu production, by Dr. Hwa Wang, Dr. C. Hesseltine, Dr. K.C. Rhee. Dinner. Square dance.

Sunday, July 12. Class period 10: Soyfoods in the North Woods cooking class, by Demetria Nanos Hamdorf. Workers & management / conflict resolution. What are organic soybeans, by Ardell Andersen. Open technical seminar on soyfoods, by William Shurtleff. Tempeh producers roundtable: Dr. Clifford Hesseltine, chairman. Lectures: The woman's role in promoting soya in Mexico, by Blanca Dominguez. Morinaga aseptically packaged tofu, by Kunisuke Kuwahara. Closing remarks, by Richard Leviton.

A SANA business meeting was held on Sat. July 11, starting at 7:00 p.m., moderated by Luke Lukoskie of Island Spring (president) and Richard Leviton (Executive Director). Format: President's report, by Luke Lukoskie. Financial report, by Richard Leviton. Proposals, by Richard Leviton. Open discussion. Address: 100 Heath Rd., Colrain, Massachusetts 01340. Phone: 413-624-5591.

992. Leviton, Richard. 1981. Directions for the soyfoods industry. Paper presented at the annual Soyfoods Association Conference, Ft. Collins, Colorado. 12 p. Unpublished manuscript.
Address: 100 Heath Rd., Colrain, Massachusetts 01340.

993. Needleman, Larry. 1981. Tofu plant profiles: Swan Gardens, Miami. *Soyfoods* No. 5. p. 26-27. Summer.
• ***Summary:*** Swan Gardens, located in Industrial Miami, is a family-run business which was started by and is now owned by Jocelyn and Dick McIntyre. It has 6 employees, including the McIntyre's daughter and, earlier, Jocelyn's mother. "The company began in St. Ignatius, Montana in 1978 where they produced 500 pounds of tofu weekly from a small shop situated on an organic vegetable farm, Jocelyn McIntyre had been making tofu at home for 8 years previously and finally yielded to her friends' encouragement to produce tofu commercially. In August 1979 they sold their company and farm and used the proceeds to launch Swan Gardens in Miami, which they opened in January 1980. They wanted to get into tofu in a big way and Miami seemed like a promising, wide-open market. Today they manufacture 2,100 lb of firm, vacuum packaged tofu, 5 to 6 days weekly, and distribute over 50% of it outside of Florida, often as far as Illinois and Ohio." A detailed description of the tofu production process and equipment is given. "What I find most impressive about Swan Gardens is their excellent application of American equipment to fashion a smooth production flow in a very clean and well maintained plant. They are among a few innovative companies that are trying vacuum-packing tofu as a way to extend shelf life and attract customers. Jocelyn McIntyre describes the company as 'a stable, solid business with a good work crew.' They are preparing an okara tempeh for the market and plan to release soysage and baked tofu in the future." Photos show: (1) Dick McIntyre and his daughter, Cecilia/Ceci, standing behind a 200 gallon tank of soymilk (p. 26). Ceci and her grandmother (Joci's mom) preparing tofu for vacuum packaging (p. 27). Address: Bean Machines Inc., Bodega, California.

994. Needleman, Larry. 1981. Tofu plant profiles: Sunshine Soy, Miami. *Soyfoods* No. 5. p. 29-30. Summer.
• ***Summary:*** Sunshine Soy is owned and operated by Danny Paolucci in Coral Gables, a suburb of Miami. "Starting in 1970 when he became acquainted with the vegetarian diet and the food uses of soybeans, Mr. Paolucci has been 'screaming soybeans,' as he remarks. In the mid-1970s he was cook at the Mt. Baldy Zen Center in California where he experimented with soybean dishes and made community scale miso. In 1974 he wanted to open a soy plant but there was no technology or information available; existing Oriental plants were unwilling to help him. In December 1977 he linked up as manager with the meteoric Swan Foods of Miami, an early multiproducts soy company that in its one intense year of business lost some $140,000. Mr. Paolucci emerged from the experience with considerable insight and some manufacturing equipment so that in June 1980 he was able to launch his own soy venture"–Sunshine Soy.

The company now makes 500-750 lb of tofu a day, plus tempeh, baked tofu, soymilk, miso salad dressing, and soysage. Photos show: Danny Paolucci. A hydraulic forming box press. A clamshell sealer. A Chisholm-Ryder screw extractor; unfortunately it is no longer manufactured. Address: Bean Machines Inc., Bodega, California.

995. Rakosky, Joseph, Jr. 1981. Tempeh today: Report from Indonesia. *Soyfoods* No. 5. p. 34-35. Summer.
• ***Summary:*** This year Rakosky traveled to Southeast Asia on behalf of the American Soybean Association (ASA), the Foreign Agricultural Service (FAS), and the USDA. He visited five countries: Philippines, Singapore, Malaysia, Thailand, and Indonesia. The purpose of his trip was to encourage people to use soy protein products in their foods and the report his impressions on the market potential.

In Indonesia he found that soymilk was being made in villages by licensed businesses for use in schools; it was flavored with ginger and contained 8% added sugar and 0.03% salt. Plans were underway to start a special soymilk project in which the beverage would be retorted, then distributed in shelf-stable cans and bottles.

Dr. F.G. Winarno, head of Nutritional Research and Development at the Agricultural Institute of Bogor in Jakarta, is involved in a program to improve the nutritional level of Indonesians living in villages. His group is concerned with the design and construction of equipment suitable for village

level food processing.

Dr. Winarno said the biggest change in tempe processing occurred in 1976 when the university showed tempe makers that they could get a better product, faster, by incubating their inoculated soybeans in plastic bags rather than in the traditional banana leaves. "'Twenty years ago the people of Java ate tempe and the Chinese ate tofu,' Dr. Winarno explained. 'Today they are both considered national dishes for the Indonesian people.'" About 70% of the soybeans in Indonesia are used to make tempe, with 20% used to make tofu. The biggest tofu maker in Indonesia uses a little less than 10 metric tons per day.

There follows a detailed description of how tempe and tempe starter are made commercially in a traditional Indonesian shop. "The government requires tempe shops to offer small preparation areas for villagers to use to make their own tempe."

"While the Chinese make up about 4% of the total population, they control about 80% of the wealth; obviously they are the country's businessmen, an imbalance the government is trying to correct."

KOPTI is an cooperative organization of independent tempe and tofu makers, mostly small companies, with a current membership of 2,035. To become a member, a company pays a one-time fee (depending on the size of the company) then a monthly fee of $1.62. Members buy their soybeans from KOPTI, which presently handles 4,800 metric tons a month and uses its large volume to get low prices. KOPTI also helps its members upgrade their products and schools them in sanitary practices.

"Since tempe is so popular in Indonesia, one would expect to find it in local supermarkets, but it cannot be found there." A photo shows a small tempe shop in Jakarta, with soybeans being soaked in metal barrels. Address: Morton Grove, Illinois.

996. Ridenour, Jeremiah. 1981. Honey extractor for tempeh [centrifuge/dewaterer]. *Soyfoods* No. 5. p. 50. Summer. [1 ref]
• ***Summary:*** For beginning or small-scale tempeh makers who wish to get into business on a shoestring. After converting a dead refrigerator into an in incubator, you can get a low-cost, manual centrifugal honey extractor for cooling and drying the cooked soybeans or splits. Describes how to convert the equipment to tempeh use, and how to use it. The total cost of the extractor and conversion was about $125. A list of two honey equipment suppliers is given. A photo shows the cylindrical extractor and its internal basket. Address: Santa Cruz, California.

997. Shurtleff, William; Aoyagi, Akiko. 1981. Tempeh production in community. *Communities–Journal of Cooperative Living* (*Oroville, California*) No. 49. p. 3-10. July. Cover story.
• ***Summary:*** "Portions of this article were excerpted from *Tempeh Production, The Book of Tempeh: Volume II* by William Shurtleff and Akiko Aoyagi." Contents: What is tempeh? The community shop: Equipment. Two tempeh shops (process given for each): (1) Yellow Bean Trading Co. (Detroit, Michigan)–Dry dehull, skim preparation, bag fermentation, makes 34 pounds of tempeh. (2) It's Natural (Evanston, Illinois)–- Soak dehull, skim preparation, bag fermentation, makes 17 pounds of tempeh. Contains 15 illustrations (line drawings). Favorite tempeh recipes (five).

On the front cover of the magazine is a multi-color illustration of a tempeh burger. Address: Lafayette, California.

998. Shurtleff, William. 1981. Soycrafters conference speech: The year in review, 1980-81. Paper presented at Fourth Annual Soyfoods Association of North America (SANA) Conference, Colorado State University, Fort Collins, Colorado. July 8. 14 p. Unpublished manuscript.
• ***Summary:*** In outline form: Discusses the major events of the past year, month by month, overall developments, and the main problem: To build a strong trade association. The conference was held on 8-12 July 1981. Address: Co-founder and director, Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

999. Shurtleff, William. 1981. William Morse: The father of soybeans in America (Continued–Part IV). *Soyfoods* No. 5. p. 56-60. Summer.
• ***Summary:*** Continued: "Moreover, in the U.S. only about 11,350 tons of soybeans (a mere 0.02 percent of the total U.S. crop) are used directly as food in a lightly processed form that allows the virtues of the vegetable-type bean (better flavor and texture, higher protein, larger seeds) to shine through. About half of the U.S. vegetable-type soybeans are exported to soyfoods producers in Japan and Europe and half are used for American soyfoods. The major uses, in order of importance, are for tofu, soynuts, soymilk, whole canned (mature) soybeans, and tempeh.

"Bill Morse was a strong supporter of the American Soybean Association. He was at the founding meeting in 1920 and was elected president three times (1924, 1925, and 1932). Pioneer soybean grower, E.F. 'Soybean' Johnson later said that 'for many years the ASA existed mainly through Morse's untiring efforts.' He was the mainspring that kept the clock ticking year after year through good times and bad. In 1944 George Strayer said: 'Morse might be called the 'daddy' of the American Soybean Association as well as of the soybean in America, since our organization has probably leaned on him more than any other man through the years. He has always been a guiding light and missed few if any meetings (except 1929-31 when he was in Asia). It is doubtful if anyone can equal his record.'

"Morse was a highly competent researcher and a prolific

writer. Between 1910 and 1950 he wrote some 87 articles and bulletins on soybeans and soyfoods, including The Soybean–in addition to making hundreds of speeches. Many of his articles appeared in publications of the American Soybean Association. He was editor of the Association's first publication in 1928 entitled *Proceedings of the American Soybean Association,* which contained 192 pages of papers given at the annual ASA conferences between 1925 and 1927. He contributed several papers to this volume, including 'The Distribution of Soybeans in the U.S.' (1927). He was also a frequent contributor to the *Soybean Digest,* which the ASA started in November 1940.

"The first article on soyfoods run by *Soybean Digest* was an article by Morse about vegetable-type fresh green soybeans entitled 'Shanghied... A Super Food' (July 1941). His second article was also on vegetable-type soybeans, 'Soys in Food: Future of Vegetable Varieties' (September 1945). In 1951 he wrote 'What's in a Name,' describing the significance of the poetic names given to varieties of soybeans in East Asia.

"In November 1949, when Morse retired after 42 years of service, he was known throughout the world, but especially in the U.S. and East Asia, for his work on soybeans and soyfoods. In 1907, when he started work, the soybean was such a small crop that no records of its production were kept. One measure of the success of his work is the amazing expansion of the crop from about two million bushels in 1919 to 9.4 million in 1929, 91 million in 1939, and 200 million in 1949.

"On retirement, Morse turned his work over to Martin G. Weiss, a professor of plant breeding and genetics from Iowa State University. From his home in Takoma Park, Maryland, where he had lived since 1917, Morse moved to Eastchester, New York, next door to his daughter, Margaret, who had accompanied him on the trip to East Asia. During the last ten years of his life he worked from time to time on his book on soyfoods (which, unfortunately, he never finished), did a lot of reading and gardening (he planted his own vegetable-type soybeans and enjoyed them each spring as fresh green soybeans, or later in the season, as mature cooked soybeans), and kept in active touch with the world of soybeans and soyfoods through many visitors and an extensive correspondence. He continued to enjoy soyfoods in his home meals.

"On the morning of July 30, 1959, at age 75, William J. Morse died of a cerebral hemorrhage at his home in Eastchester, New York.

"The work of Bill Morse runs like a bright thread through the whole tapestry of soybean and soyfood development in the Western world. We can pay no greater tribute to the man than to carry on his work and help fulfill his dream.

"For their help in providing information related to this article, the author would like to thank Mrs. Walter Thalman (Morse's daughter), George Strayer, Martin G. Weiss, Theodore Hymowitz, Jackson Cartter, R.W. Howell, and Verna Donavan." Address: Soyfoods Center, P.O. Box 234, Lafayette, California.

1000. **Product Name:** Tempeh.
Manufacturer's Name: Soy Shop.
Manufacturer's Address: 1081 Memorial Dr. S.E., Atlanta, GA 30317.
Date of Introduction: 1981. July.
New Product–Documentation: Letter/Order for the book *Tempeh Production* ($10.95) from The Soy Shop (P.O. Box 734, Decatur, Georgia 30031). 1979. Dec. 17.

Soyfoods Center Computerized Mailing List. 1982. July 23. Owners: Sarah & Steve Yurman. The address is 1081 Memorial Drive, S.E., Atlanta, GA 30316. Phone: 404-577-8896; Label. 1983, undated. 4 by 4.5 inches. Red and blue on white. 8 oz. Address: 1863 Memorial Dr. S.E., Atlanta, GA 30317.

1001. *Soyanews* (*Sri Lanka*).1981. Make your own tempeh starter. 3(12):3, 7. July.
• ***Summary:*** "There was a very encouraging response to the offer made by the Soyabean Foods Research Centre to send samples of tempeh starter, on request." Describes how to use existing tempeh starter to make more. Two illustrations show before and after. Two more illustrations show Indonesian people with finished tempeh starter (From *The Book of Tempeh,* by Shurtleff and Aoyagi).

1002. **Product Name:** Tempeh.
Manufacturer's Name: Sunshine Soy Co. Inc.
Manufacturer's Address: 4015 Laguna St., Suite "H," Coral Gables, FL 33146. Phone: 305-447-1277.
Date of Introduction: 1981. July.
New Product–Documentation: Needleman. 1981. Soyfoods. Summer. p. 29-30. "Tofu plant profiles: Swan Gardens and Sunshine Soy (Miami)."

Made by Danny Paolucci. Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Danny Paolucci.

1003. Wagner, Martha. 1981. Soy down under. *Soyfoods* No. 5. p. 11-12. Summer.
• ***Summary:*** First discusses the work of Marcea Weber and Debbie Schmetzer in Australia. Marcea Weber owns The Soybean Factory located just outside of Sydney, Australia. Debbie, formerly a tofu maker at Surata Soyfoods in Eugene, Oregon, is now living in New Zealand, where she plans to start a soyfoods business. "Marcea, originally from New York, began her tofu business three years ago, about a year after arriving in Australia from England where she operated a small natural foods bakery. Koreans and Chinese were already producing large volumes of tofu in Australia but her

business was the first to produce a nigari tofu. After three years, tofu is still quite foreign to Australians, Marcea says...

"The Soybean Factory sells to natural food stores, restaurants, and juice bars. It produces only 600 half-pound blocks a week. Using simple Takai machinery with a 45-gallon Australian pressure cooker, only 30 pounds are produced in each batch so the selling cost is high, about double U.S. prices, and much higher than Korean and Chinese tofu sold in Australia." "The factory employs three production workers and a manager. Marcea does the promotion. She also spends much of her time teaching cooking and nutrition classes at the East-West (Macrobiotic) Center, which she and her husband, Daniel, an acupuncturist, established when they arrived in Australia."

In New Zealand, "no one outside the Chinese community had even heard of tofu until an Auckland health food store, Harvest Whole Foods, began producing it in a backroom kitchen last October [1980]. The enthusiasm for tofu was shown by several restaurants doing an alternative lifestyle festival, which featured tofu burgers, has produced healthy sales for the shop. The three owners, Greg and Ricky Chalmers and Ricky's wife, Elizabeth, are producing about 170 to 299 kilos (374 to 440 pounds) of tofu a week. They expect sales to grow and are planning to expand production facilities."

Debbie Schmetzer arrived in New Zealand in Jan. 1981 with her husband, Peter (who was born in New Zealand) and their young son. She describes the process and ingredients used to make tofu at Harvest Health Foods, then notes that "Even in the Chinese community, only two Chinese restaurants are making tofu. Harvest's main customers are Indonesians, vegetarians, people switching from dairy to soy on the advice of naturopathic doctors, and spiritual seekers such as Hare Krishna and Divine Light people." On the Run is a fast food deli that makes excellent tofu dishes in Auckland, including tofu burgers, curried tofu salad in pita bread, and tofu tacos with locally made tortillas.

Letter from Martha Wagner. 1981. July 24. "Before this article went to press I learned that Debbie and her husband had become disillusioned with attitudes in New Zealand toward food and organic agriculture, red tape, and toward setting up business–especially concerning a mold to make tempeh. So they took off for greener pastures in Australia. They are now mulling over the scene in the Melbourne are and may well do a bagel business combined with a soy deli. She would be a good person for a soyfoods information center there. Address: 35 Flower Street, Essendon 3040 Victoria, Australia.

"For the addresses of the Koreans and Chinese making lots of tofu in Australia, contact Marcea Weber, 29 Belmore St., Rozelle 2039, NSW.

"Did you meet the Australian couple Fred and Radhika Koch at the SANA conference? They are planning to set up a good size tofu operation as a support for a 26-person community in the country." Address: USA.

1004. Sass, Lorna J. 1981. Soy foods: Versatile, cheap and on the rise. *New York Times*. Aug. 12. p. C1, C6. Widely syndicated.

• ***Summary:*** The article begins: "Soy foods have come west and, apparently, are here to stay. No longer restricted exclusively to the world of woks and cleavers, soybeans in America are now patted into soyburgers, and tofu (soybean curd) is puréed into soy mayonnaise, baked into 'cheesecake' and fried as 'cutlets,' while soy milk emerges from the blender as a frothy carob shake or from the freezer as cantaloupe 'ice cream.'

"Because soy foods are an inexpensive source of protein, low in fat and completely cholesterol-free, they have been attracting more and more attention among the growing number of weight-conscious, health-conscious and dollar-conscious Americans. Until recently, soy sauce was the only soy product familiar to most Americans.

Contains a long discussion of David Mintz (owner of Mintz's Buffet, a kosher delicatessen at 1040 Third Avenue at 62nd Street). He makes a tofu ice cream, and a tofu-spinach quiche. "A large Japanese company wants to buy exclusive rights to distribute Mintz's tofutti 'ice cream' in Japan. 'The more dishes I make with tofu, the better my business is,' said Mr. Mintz." He is frequently called upon to cater "tofu weddings."

Also discusses Light Foods in St. Louis (Missouri), and the Rochester Soy Deli (in New York). "Two of the people most responsible for introducing soy foods to Americans are William Shurtleff and his wife, Akiko Aoyagi, who in 1975 wrote 'The Book of Tofu,' a comprehensive cookbook and introduction to the untapped potential of soy foods as an alternate source of protein."

There follow seven recipes featuring tofu and tempeh: Mintz's tofu herb dip. Breaded tofu cutlets (with frozen tofu. Might also be called "Fillet of tofu," plus a note on how to freeze tofu at home). Tofu tartare sauce. Tempeh salad. Carob-tofu-mint pie. Whole wheat pastry crust (with soy milk and soy oil). Lotus Cafe not-dogs (meatless hot dogs).

Next comes a section titled "Learning more about soy: A listing of useful books." For example: "There is no more thorough book on the history and myriad Oriental forms of tofu than the profusely illustrated *"Book of Tofu,"* by William Shurtleff and Akiko Aoyagi (Autumn Press / Random House; 334 pages; $8.95). First published in 1975, it is credited by most tofu cookbooks as the one that 'spread the light.' The hundreds of recipes, mostly Oriental in style, will fascinate adventurous cooks. Beginners may prefer the condensed, somewhat more Americanized version (Ballantine, 433 pages, $2.95)."

The long article ends with a helpful sidebar titled "How to buy and store tofu." "A four-ounce piece of tofu (bean curd) sells for about 30 cents..." One main difference

"between the tofu sold in health food stores and the Oriental-style tofu sold by many greengrocers is the type of coagulant used. Tofu from health food stores is almost always made with nigari (primarily magnesium chloride and trace mineral elements derived from evaporated seawater), while Oriental tofu makers generally use calcium sulphate."

A photo shows Katherine Iselin with some of the special sandwiches at the Tofu Shop, a fast-food soy deli in Rochester, New York. She is wearing a Soyboy Tofu T-shirt. On the wall behind her is the restaurant menu.

Note: A similar article titled "More budget-conscious Americans are hitting the soy–its not just sauce" in the *Chicago Tribune* (29 Oct. 1981, p. W_A21).

1005. Tibbott, Seth. 1981. Re: Making tempeh at Turtle Island Soy Dairy. Letter to William Shurtleff at Soyfoods Center, Aug. 21. 1 p. Handwritten.
• ***Summary:*** Seth is surprised and glad to hear that his Five Grain and Tempehroni are now available in the San Francisco Bay Area, California. He doesn't know how they get there, as his current distributor goes only to Red Bluff.

He encloses two labels, some PR material, recipe of the month cards, an article from the Oregonian (which put his company "in touch with a thriving, tempeh-starved community of Indonesians who are buying by the case for home use!), and a cooking class poster.

"We are tempeh specialists making no other products. We're currently selling about 250 pounds a week and project to double this volume in the next month when we plan to take on more accounts and move from our current location. We've derived a lot of help from your books and are grateful for the good publicity generated from your center. Every time we turn around it seems like you're writing articles for another national magazine. It always helps our sales.

"Keep in touch and let us know if we can be of any assistance. Sincerely, Seth Tibbott.

"P.S. By the way, Alexander Lyon is out here working with us now and sends along his greetings."

Note: Though Seth's tempeh shop is in Forest Grove, this letter is written from: Rt. 2, Box 73, Gaston, Oregon 97119. Address: Founder, Turtle Island Soy Dairy, 2017 21st Ave., Forest Grove, Oregon 97031.

1006. Krieger, Verena. 1981. Gestern Steak, Morgen Tofu: Oder was man mit einer Bohne so alles machen kann [Yesterday steak, tomorrow tofu: Or all the things that can be made with one bean]. *Tages Anzeiger Magazin* No. 34. p. 6-12. Aug. 22. Also translated in English, French, and Italian. [4 ref. Ger; Eng; Ita; Fre]
• ***Summary:*** A lengthy, pioneering account of the virtues of tofu, and its development in the USA and Switzerland by the Sunday supplement to Switzerland's biggest daily newspaper. Contains numerous color photos of soyfoods from around the world. Also defines and discusses soymilk, miso, tamari, shoyu, and soy sauce, tempeh, and soy sprouts. Discusses the work of Edgar W. Schweizer (underway by 1977) in attempting to grow soybean varieties suited to Switzerland.

The Geneva restaurant "La Moisson" has had tofu on the menu for 5 years. In Bern, in the beginning of July, the restaurant "Sesam" was acquired by the first Swiss organic food store (*Bioladen*), the "Lotusbluemli" (Little Lotus Blossom). Since Sesam opened, the people of Bern have been able to get to know a rich treasure of dishes from tofu made at Sesam, as well as many applications of miso and shoyu or tamari. The vegetarian restaurant "Bristol" in Lucerne is launching tofu as its summer hit this year, in the form of Tofu Schnitzels and Burgers... In organic food shops, Reform Houses and Oriental specialty shops, miso and soy sauce are available. The following places in Switzerland sell fresh tofu, which they make on the spot: (1) Centre macrobiotique de Lausanne, ruelle de Bourg 7, 1003 Lausanne. (2) S. Gänterli, Vonmattsrr. 50, 6003 Lucern. (3) Le Grain d'Or, rue Voltair 27, 1201 Geneva. (4) De Lade, Oberaltstadt 8, 6300 Zug. (5) S. Lotusbluemli, Gerechtigkeitsgasse 17, 3011 Bern. (6) Madal Bal, Kreuzplatz 10, 8032 Zurich. On the last page of the article is an ad for Soyana in Zurich.

Note: The Italian-language edition of this article is titled "Ieri bistecca, domani il tofu." It is the earliest Italian-language document seen (Sept. 2011) that mentions tempeh, which it calls "tempeh." Address: Lucerne, Switzerland.

1007. McNees, Pat. 1981. Natural & organic: Taking the health food approach. *Washington Post.* Aug. 27. p. E1, E15, E20.
• ***Summary:*** The author's position on health food is slightly to the left of Julia Child and "considerably right of tofu lemon pie." She still eats more for pleasure than virtue [health]. She quickly adds: "You don't have to be a health nut or food faddist to take advantage of what health food stores have to offer." Their prices aren't always more expensive than those of supermarkets–and they tend to be much less expensive on some items, such as bran or stick cinnamon, and grains, nuts, herbs, and dried foods sold in bulk–which two photos show.

Includes the name and address of 15 such stores in Washington, DC, and 20 in Maryland (incl. Beautiful Day Trading Co. and Smile Herb Shop). Contains 8 recipes incl. one for Seasoned Crisp Fried Tempeh, from *The Book of Tempeh,* and one for Creamy Tofu Dip, from *The Book of Tofu* (both by Shurtleff and Aoyagi).

1008. McNees, Pat. 1981. Questions? Read on [A list of books about healthy foods]. *Washington Post.* Aug. 27. p. E1, E26. [30 ref]
• ***Summary:*** The books listed here are a good introduction to the subject of healthy and natural foods. Includes books

on whole foods, whole grains, macrobiotics, vegetarianism, and soybean products. "Serious vegetarians and lovers of Oriental cuisine will want to take a look at, if not own, three thoroughly fascinating and informative books about how to prepare and make the best use of three important soybean products: 'The Book of Miso' (Autumn Press), 'The Book of Tempeh' (Harper & Row), and 'The Book of Tofu' (Autumn Press), all by William Shurtleff and Akiko Aoyagi. Aoyagi creates the recipes, which work better than those we've tried in some other recipe books mainly because she doesn't try to make the principal ingredients taste too much like something they're not (although even she fails to make tofu palatable as a dessert, in the recipes we tried). What makes these books seductive for cookbook buffs is the research, which is Shurtleff's bailiwick; he tells you more than you could ever want to know about a subject, but he sure keeps you reading..."

1009. Kushi, Aveline. 1981. My favorite tempeh recipes: Cooking with a versatile Indonesian staple. *East West Journal.* Aug. p. 62-65.
• ***Summary:*** "Tempeh became popular in this country about two years ago. Bill Shurtleff was largely responsible, and I will always be grateful to him for this. Tempeh is not available in Japan, so I did not eat it while I was growing up.

"Tempeh is a very nice *whole* food. It gives great energy, especially to vegetarians, and it is very appealing to someone who is craving animal foods."

"I'm in my fifties and I stopped menstruating several years ago. The first time I ate tempeh–it was pan-fried with just a brush of oil, and cooked with onions and tamari–my menstruation returned for a time! So I think that tempeh perhaps helps to increase sexual vitality for women and strengthen men's and women's sexual organs." Contains 11 tempeh recipes: Tempeh with arame (a sea vegetable). Kinpura (with burdock and tempeh). Cabbage-roll tempeh. Tempeh with vegetables. Fried rice or noodles and tempeh. Paella without fish. Tempeh in soup. Tempeh macaroni salad. Barley stew with tempeh. Shish-ke-bab. Tempeh with kombu, daikon, and shiitake. A large photo shows Aveline Kushi smiling and cutting carrots. A large ad (p. 65) shows *The Book of Tempeh* by Shurtleff & Aoyagi.

1010. Lenetsky, Mark. 1981. Short course on soyfoods: What they are, how they are used. *Health Foods Business.* Aug. p. 46, 49-50, 52, 53. [2 ref]
• ***Summary:*** Contents: Introduction. Tofu or "soy cheese." The many uses of tofu. Makings of miso. Tamari–by any name. Tempting tempeh. 'High tech' approach (TVP). Its a joy to cook with soy: Selected recipes from suppliers. Address: Nutritional consultant, Applegate Natural Foods, Tigard, Oregon.

1011. New-Age Foods. 1981. Move over Big Mac! Here comes tempeh: A super soyfood from Indonesia. William Shurtleff and Akiko Aoyagi (Ad). *East West Journal.* Aug. p. 65.

• ***Summary:*** This 1/3-page black-and-white ad for *The Book of Tempeh* by Shurtleff and Aoyagi, includes a photo of the book's cover. "The authors of the bestselling *Book of Tofu* (over 250,000 copies in print) and *Book of Miso,* now present *The Book of Tempeh."* Address: P.O. Box 234-A, Lafayette, California 94549.

1012. *Soyanews* (*Sri Lanka*).1981. Soya to help raise nutritional levels. 3(12-1):1. Aug.
• ***Summary:*** "Five District Development Officers selected by the Nutrition Committee of the Matara District attended a week-long course last month to study the processing of soyafoods at the Soyabean Foods Research Centre at Gannoruwa."

A photo shows "Miss Ellen Jayawardena demonstrating how to make tempeh to the five district development officers..."

1013. *Soyanews* (*Sri Lanka*).1981. Tempeh at Esala Fair. 3(12-1):1. Aug.
• ***Summary:*** "Soya karawala (sun-dried tempeh) will be sold at the Agricultural Department's stall during the Esala Fair to be held on the Bogambara grounds, Kandy, beginning from the first week of August."

"The Esala Fair which is held each year to coincide with the duration of the Kandy Perahira begins on August 6 and goes for 13 days."

1014. Well Bean Deli (The). 1981. August. New soyfoods

restaurant or deli. 349 Soquel Ave., Santa Cruz, CA 95062.
• ***Summary:*** Letter from Kevin Van Slooten. 1980. Dec. 15. Written on letterhead that reads: Monterey Bay Soyfoods, 594 Redwood Dr., Santa Cruz, California 95060. Phone: 408-476-5833. Producers of tofu, tempeh and other fine soy foods. "I'm planning a soy deli for the Santa Cruz area. I'm 3/4 done defining and strategizing the plan... It will be structured partly as a non-profit educational organization so I can continue doing classes on soyfoods cooking etc. We did a booth of tempeh burgers and tofu salad at a food festival last weekend. It was a big hit and I've attracted interest by the local heart association."

Leaflet. 1981. "Announcing the Grand Opening" at 349 Soquel Ave., behind the Breadline Eatery. Article in *Santa Cruz Mobile News.* 1981. Oct. 2. p. 19. "A restaurant with accent on health." A photo shows part of the menu on the wall.

Candace Atkins. 1981. Green Sheet (Santa Cruz, California). Nov. 4. p. 3. "Tofu–the 'natural' kind of fast food."

Questionnaire filled out by owner of restaurant or deli. 1982. Lists the company's most popular soy-based menu items in descending order of popularity. The highest weekly total sales over the past 6-2 months, the month that this occurred, and why. The average weekly sales during this period. Average hourly wages paid to workers. The business startup cost (amount of money it cost to get the business started). Current profitability status. Plans for the future. Advice the owner would give to someone starting a similar business.

Shurtleff & Aoyagi. 1982. Report on Soyfoods Delis, Cafes & Restaurants. p. 3. Started on 25 August 1981 by Kevin Van Slooten. Startup cost: $43,000. Avg. weekly sales in 1982: $2,200. Address: Santa Cruz, California. Phone: (408) 425-4544.

1015. Cohen, Michael. 1981. Re: Thanks for the slides. Letter to William Shurtleff at Soyfoods Center, Sept, 1. 1 p. Handwritten, with signature on letterhead.
• ***Summary:*** Bill–Thanks for the [color] slides. Here's your paper. All in all I think its a good attempt.

"We've been doing a lot of contamination research this summer (we've had a lot!) working with 3 labs–Will let you know more on our findings later on–Best wishes, Michael.

"I'm trying to improve my reputation as a correspondent!!" Address: The Tempeh Works, P.O. Box 870, Greenfield, Massachusetts 01301. Phone: 413-772-0991.

1016. Leviton, Richard; Shurtleff, William. 1981. U.S. per capita consumption of soyfoods grows to nearly 9 pounds per year (News release). Soyfoods Assoc., Sunrise Farm, Heath Rd., Colrain, MA 01340; and Soyfoods Center, P.O. Box 234, Lafayette, CA 94549. 4 p. Sept. 4. Published in Soyfoods, winter 1982, p. 6. [2 ref]
• ***Summary:*** Compiled largely by Shurtleff, circulated by Leviton. "In 1981 Americans spent $4.57 per capita on soyfoods [not including soy oil] while consuming 4.9% of

the U.S. soybean crop–possibly an all-time high." Address: 1. Colrain, Massachusetts; Lafayette, California.

1017. The Soycrafters Association of North American (SANA) board of directors meets at the home of John and Valerie Robertson, 2101 San Miguel Drive, Walnut Creek (near San Francisco), California (photograph). 1981. Sept. 13.
• ***Summary:*** The board decides (unanimously) to change the name of the association to Soyfoods Association of North America to broaden its scope and base of support.

That evening a dinner party for the board is held at the home of William and Akiko Aoyagi Shurtleff. The vegetarian meal (featuring tempeh and other soyfoods) is prepared by Akiko. A photo shows (previous page) (left to right): Steve Demos (White Wave; gray sweater), Mark Brawerman (Living Lightly), Pat Aylward (Joy of Soy), Bob Davis (Light Foods), Luke Lukoskie (Island Spring), Larry Needleman (Bean Machines), Richard "Ira" Leviton (Soyfoods Association, Soyfoods magazine), Valerie Robertson (Soyfoods Unlimited), Akiko Aoyagi (Soyfoods Center). The photo was taken by William Shurtleff (of Soyfoods Center) on the evening of 13 Sept. 1981 at Soyfoods Center, the home of William and Akiko Shurtleff, 951½ Mountain View Drive, Lafayette, California.

1018. **Product Name:** Soy-Millet Tempeh (Sausage Shaped).
Manufacturer's Name: 21st Century Foods.
Manufacturer's Address: 30A Germania St., Jamaica Plain, MA 02130.
Date of Introduction: 1981. September.
Ingredients: Organic soybeans (90%), organic millet (10%), purified water, fresh Rhizopus culture.
Wt/Vol., Packaging, Price: 8 oz or 16 oz flat, or 8 oz roll.
How Stored: Refrigerated, 21 day shelf life.
Nutrition: Per 4 oz.: Calories 197, protein 23 gm, carbohydrate 15 gm, fat 5 gm, fiber 3.45%.
New Product–Documentation: Spot in Soyfoods. 1982. Summer. p. 57. The company, which began production in September 1981, now makes 400 lb/week of Soy-Millet Tempeh. Label, various sizes. 2 colors each. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center. Label. 1987. 6 by 8 inch plastic bag. Red, yellow, black, and white. "Healthy food for the whole world. Low calories. Low sodium. No cholesterol. No preservatives. What is Tempeh? (Lengthy description on back). Dark areas may occur on our tempeh, which indicate ripeness, and are normal on foods naturally cultured."

1019. **Product Name:** Soy Tempeh.
Manufacturer's Name: 21st Century Foods.
Manufacturer's Address: 30A Germania St., Jamaica Plain, MA 02130.
Date of Introduction: 1981. September.
Ingredients: Organic soybeans, purified water, fresh Rhizopus culture.
Wt/Vol., Packaging, Price: 8 oz or 16 oz flat, or 8 oz roll.
How Stored: Refrigerated, 21 day shelf life.
Nutrition: Per 4 oz.: Calories 197, protein 23 gm, carbohydrate 15 gm, fat 5 gm, fiber 3.45%.
New Product–Documentation: Spot in Soyfoods. 1982. Summer. p. 57. The company, which began production in September 1981, now makes 400 lb/week. Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Lucio Armellin. Address: 90 Risely Rd., Brookline, Massachusetts 02146. Phone: 617-739-9164.

Letter from Norbert Belanger. 1984. Jan. 16. He sends frozen samples of the company's products. Net sales of all soyfoods products for the month of Oct. 1983 was 4,074 lb compared with 975 lb for Jan. 1983. The company is still at 30A Germania St. Phone: (617) 522-7595.

Label, various sizes. 2 colors each. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center. Leaflet sent by 21st Century Foods. 1983. "Tempeh with a Real Difference." Individual photos show members of the Homestyle Tempeh family: Soy-Millet Tempeh, Soy Tempeh, Tempeh Burgers. Soylami, and Tempeh Fiesta. The company now uses 200 lb/day of soybeans to make all of its products.

Label. 1987. 6 by 8 inch plastic bag. Red, yellow, black, and white. "Whole food for a healthy world. Low calories. Low sodium. No cholesterol. No preservatives. What is Tempeh? (Lengthy description on back). Dark areas may occur on our tempeh, which indicate ripeness, and are normal on foods naturally cultured."

1020. Hymowitz, T.; Newell, C.A. 1981. Taxonomy of the genus *Glycine*, domestication and uses of soybeans. *Economic Botany* 35(3):272-88. Sept. [100 ref]
• ***Summary:*** Contents: Taxonomic history of *Glycine.* Domestication [and dissemination of the soybean]. Uses [of the soybean] (The four most important foods developed from the soybean in East Asia are miso, shoyu (soy sauce), tempeh, and tofu). "These traditional foods have little physical or flavor identity with the original bean. Hence it is not too surprising that Marco Polo, who raveled from Venice to Cathay and throughout the Orient between 1271 and 1295, makes no mention of the soybean (Rugoff, 1961)."

The earliest accurate description by a European seen for the use of soybeans as food was by Friar Domingo Navarrete. He wrote about them in 1665.

East Asian nonfermented soy foods: Tofu, soy milk, yuba, kinako, sprouts, green soybeans.

East Asian fermented soy foods: Miso, soy sauce, tempeh. Soy uses in the West: Oil, protein (from defatted soybean meal). A brief history of each of these foods is given.

Tables: (1) The species of *Glycine* according to Linnaeus, 1753, and their subsequent classification. (2) The genus *Glycine* L. according to Bentham (1864, 1865). (3) The genus *Glycine* L. according to Hermann (1962). (4) The genus *Glycine* Willd. as revised by Verdcourt (1966, 1970). (5) The genus *Glycine* Willd. as accurately delimited.

Figures: (1) *Shu,* the archaic character for soybeans (five stages in the character's development; Hu {1963} believes that the shu pictograph can be traced back to approximately the 11th century B.C.). Address: Dep. of Agronomy, Univ. of Illinois, Urbana.

1021. Inkson, Ms.; Mann, E.J. comp. 1981. Thesaurus: Food Science and Technology Abstracts. 2nd ed. Shinfield, Reading, England: IFIS (International Food Information Service). 238 p. No index. 30 cm. First edition, 1977. [Eng]
• ***Summary:*** The Introduction states: "The original IFIS word list, issued in 1970, did not attempt to give more than the barest outline of the relations between the terms encountered. In 1977, therefore, an FSTA Thesaurus was published, in which the basic structuring of the material found in FSTA was set out. The Thesaurus was designed to give maximum compatibility with the EEC Multilingual (English / French / German / Italian) Food Thesaurus, published in 1979 (and itself based largely on the FSTA system for the English version), and to take into account the needs of on-line users."

The terms are divided into headings (main terms or descriptors), which are printed in capital letters, and lead-in terms (non-descriptors) printed in lower case. Additional information is included in square brackets. The following abbreviations show the types of relationship between terms: BT = broader terms. NT = narrower terms. RT = related terms. UF = used for. lead-in term followed by "see" heading (e.g. bean curd see TOFU).

Soy-related terms: Beverages: UF soy milk. Lecithins: BT Emulsifiers, Phospholipids. UF phosphatidylcholine. Legumes: NT Soybeans. Miso: BT Soy Products. natto: see Soy Products. Sauces: NT Soy Sauces. soy flour: see Soy Products. soy milk: see Beverages; Soy Products.

Soy Products: BT Soybeans, Vegetable Products, Fermented Products. NT Miso, Soy Proteins, Soy Sauces, Soybean Oils. UF natto, nyufu, soy flour, soy milk, sufu, tempeh, tofu, tsukudani, vital.

Soy Proteins: BT Protein Products, Soy Products, Proteins Vegetable. RT Textured Vegetable Proteins. UF okara protein, Promine [Central Soya Co.], Supro 620, yuba.

Soy Sauces: BT Fermented Products, Sauces, Soy Products. UF moromi, shoyu.

Soybean Oils: BT Oils Vegetable, Soy Products. Soybeans (*Glycine max*): BT Legumes, Oilseeds. NT Soy Products.

Note 1. This is the earliest document seen (Sept. 2003) that is a thesaurus containing terms related to soybeans and soy products.

Note 2. This is the earliest English-language document seen (Feb. 2007) that uses the word "nyufu" to refer to fermented tofu. Address: IFIS (International Food Information Service), Lane End House, Shinfield, Reading RG2 9BB, England.

1022. Mintz's Buffet. 1981. Mintz's tofu buffet menu. 1040 Third Ave. (between 61st & 62nd Streets, near Bloomingdale's), New York, NY 10021. 1 p. Undated.
• ***Summary:*** This handwritten, undated menu (which includes prices) was probably printed in about Sept. 1981. It could have originated as early as August 1980–by which time Mintz's was serving quiches and tofu muffins. By Feb. 1981 they were serving egg rolls. Soy-related menu items include: Vegetable salads: Steamed broccoli with tofu-mustard sauce ($3.99/lb). Tofu-vegetable quiches: Broccoli, spinach, zuccini [sic, zucchini], mixed vegetable, cauliflower ($4.95). Vegetable tofu pies: Spinach, broccoli, cauliflower, zuccini ($2.75). Tofu-bran muffins: Strawberry-rhubarb, apple-walnut, blueberry-bran, carrot-apple, pecan, lemon-granola, pineapple-coconut, cherry-granola. Tofu-eggrolls: Spinach, Chinese vegetable, tabouli, tofu blintzes. Hot tofu items: Soy burgers, with tempeh & soy milk. Soy pizza, with nutritional yeast ($1.50). Eggplant Parmesan, with soy milk topping ($6.99/lb). At the bottom right is a floral design above the words: "An affair to remember."

Note: No ice cream of any kind is on the menu. Address: New York City. Phone: 212-751-9367.

1023. Mintz's Buffet. 1981. Tofu Time menu. 1040 Third Ave. (between 61st & 62nd Streets), New York, NY 10021. 1 p. Undated. 28 cm.
• ***Summary:*** This printed, undated menu (which includes prices) was probably printed in about Sept. 1981. Tofu is included in every item on the menu.

Tofu bran muffins ($0.95 each): Strawberry rhubarb, blueberry, carrot apple, pineapple, dutch apple, banana. Tofu vegetable salads ($3.99): Cauliflower, eggplant, steamed broccoli with mustard sauce, spinach, broccoli, zuccini [sic, zucchini]. Tofu vegetable pies ($2.75): Cauliflower, zuccini, spinach, broccoli. Tofu Ice Kream (Country vanilla, old fashioned chocolate, strawberries n'kream, peaches n'kream, apples n'kream, Dutch nut chocolate, apricot rum).

"All tofu dishes are completely natural and free of preservatives." Glatt Kosher. Louise Londin / Design. Address: New York City. Phone: 212-751-9367.

1024. *Soyanews* (*Sri Lanka*).1981. Snack foods sales up at fair. 4(1):1, 8. Sept.
• ***Summary:*** The Soya Sales Centre conducted by the Department of Agriculture during the Kandy Esala Fair last month had, once again, a successful run with a turnover reaching record levels. This was the fourth year in succession" that the Centre was open at the fair.

"The Sales Centre opened for the first time in 1978 with only a soya milk bar run by the Milk Board which produced the milk from its Pallekele factory. A cup of chilled soya milk was sold at -/25 cents. It was an instant success with 30,000 cups of milk sold during the first ten days.

"In 1979 more soya foods were put out for sale at the Esala Fair Soya Sales Centre which was taken charge of by the Department of Agriculture for the first time."

"On sale at the 1979 exhibition were soya nuts [oil roasted soyabeans], murukku [a deep-fried snack, popular in southern India and Sri Lanka], and cutlets which were all turned out at the home level kitchen of the Soyabean Foods Research Centre in Gannoruwa.

In 1980 "Soya ice cream which was on sale for the first time was the most popular item and along with the rising demand each night of the fair for fried [soya] nuts, cutlets and [soya] milk it was clear that soyafoods had come to stay."

This year soya ice cream was popular again; the new soyafood on sale was tempeh. "Both tempeh and tofu had satisfactory sales considering that they were not items that could be consumed on the spot."

1025. **Product Name:** Tempeh Burgers (Non-fried: Vacuum Packed).
Manufacturer's Name: Soyfoods Unlimited, Inc.
Manufacturer's Address: 14670 Doolittle Dr., San Leandro, CA 94577.
Date of Introduction: 1981. September.
Ingredients: Soy tempeh (made with soybeans organically grown in accordance with section 26569.11 of the California Health and Safety Code), natural soy sauce, herbs, spices.
Wt/Vol., Packaging, Price: 6 oz (170 gm). Vacuum packed in poly pouch.
How Stored: Frozen or refrigerated.
Nutrition: Per 3 oz.: Calories 190, protein 9 gm, carbohydrates 6 gm, fat 3 gm, sodium 466 mg.
New Product–Documentation: Label. Undated. Blue and red on white, with rainbow border. "No oil. Tasty. To serve: Brown in oiled pan or steam for 5 minutes." Ads in *Vegetarian Times* and *East West Journal.* 1982. Oct. "All the Sizzle... None of the Steak." Also in New Age. 1982. Dec. Inside rear cover; Spot in Soyfoods. 1984. Summer. p. 43. "America's first tempeh burgers were developed by Pacific Tempeh and Soyfoods Unlimited." Shurtleff & Aoyagi. 1985. History of Tempeh. p. 53. America's first non-fried tempeh burger, sold vacuum packaged.

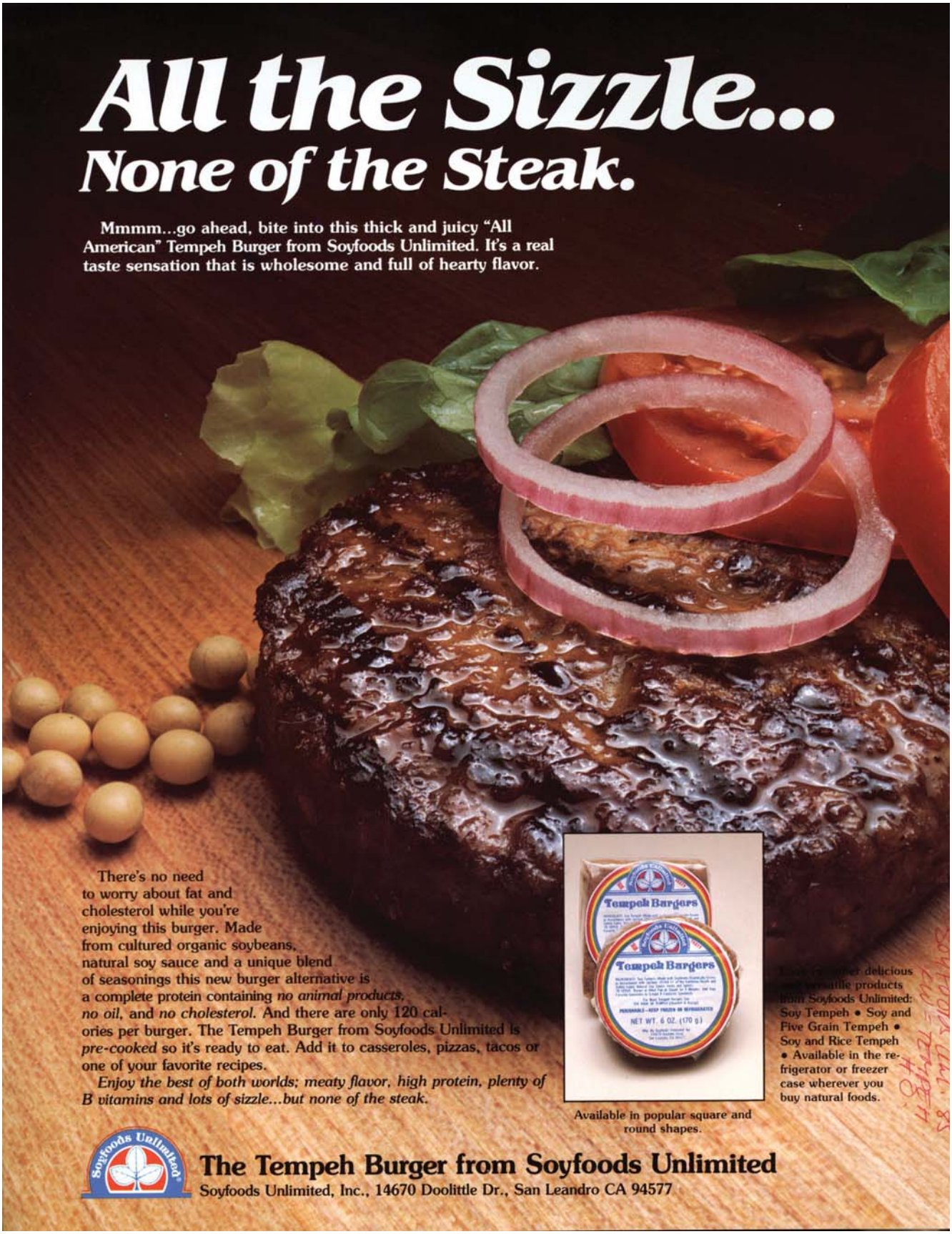
1026. **Product Name:** Tempeh, and Tofu.
Manufacturer's Name: Teac Bán Macrobiotic Center–Fad Saol Foods.
Manufacturer's Address: 6 Parnell Road, Harold's Cross Bridge, Dublin 6, Ireland. Phone: 01-543943.
Date of Introduction: 1981. September.
Ingredients: Tempeh: Organic soybeans, rice, Rhizopus oligosporus culture.
New Product–Documentation: Letter concerning an interview with owners and founders Ann Currie and Patrick Duggan conducted by Anthony Marrese. 1993. March. This organization was founded in 1985 or 1986. "They say they were the first in Ireland to make tempeh in any quantity and to sell it commercially. The name "Fad Saol Foods" is used for their products; It means "Long Life," or, for them, macrobiotics. Their first contact with tempeh was through the Community Health Foundation in England. They were given the first tempeh hand grinder that was used by the Foundation, and they say it was the first organization in England to make tempeh. Since tofu and tempeh were generally not available for their needs in macrobiotics and dietary counseling, they started making these foods. They supplied most of Dublin with tempeh at that time, and their fresh tofu was sold at health food shops. There are Chinese shops that produced their own tofu at that time and still do. Ann and Patrick use nigari to make their tofu. They also run tofu-making classes and tofu cookery courses. They presently sell most of their tofu and tempeh through only one retail shop. They have little desire to supply more because of their current focus on courses and teaching. At present they make about 35 lb/week of tempeh (sold frozen) and 70 lb/week of tofu. Patrick produces both these soyfoods on his own. In the future they are open to increasing production if people from their courses come in to help. Once a week they serve a meal prepared by their cooking class and explain the significance of the foods, their preparation, etc. Approximately 15 people can be served and they are generally sold out.

In a letter of 12 May 1994 Anthony Marrese also sends a business card for the Macrobiotic Centre, a tempeh label, an issue of *Teac Ban News* (Vol. 7, No. 3, Autumn/Winter 1992; the Centre offers shiatsu treatment and classes, macrobiotic consultations, and courses in alternative medicine [10 sessions] and wholefood cookery [8 sessions, including tofu and tempeh]), and 2 pages of tofu recipes (from *The Magic of Tofu* and *The Book of Tofu*).

Tempeh Label. 4 by 6.75 inches. Blue on beige. Printed on both sides–with 6 recipes or recipe suggestions on the back. "Gluten free. No cholesterol. High protein. No preservatives."

Form filled out by Patrick Duggan and Ann Currie. 2001. May 29. Their food company is named Fad Saol Foods. They started making tempeh in Sept. 1981. They also send their tempeh label, a one-panel tempeh leaflet, and a 6-panel brochure describing "Teac Ban: The home of healthy living, macrobiotic cooking, feng shui, and shiatsu."

1027. *Santa Cruz Mobile News.*1981. A restaurant with accent on health. Oct. 2. p. 19.
• ***Summary:*** About the Well Bean Deli, 349 Soquel Ave.,



Santa Cruz, California. It was started less than 2 months ago by Kevin Van Slooten. A photo shows part of the menu on the wall. Many of the dishes feature tofu or tempeh–Tofu burger, tempeh burger, missing egg salad or sandwich, tempeh mock chicken salad, tofuna salad or sandwich, tempeh salad, soy milk, tofu cheesecakes, etc. Address: Santa Cruz, California.

1028. Shurtleff, William; Aoyagi, Akiko. 1981. History of major U.S. soya research centers. Soyfoods Center, P.O. Box 234, Lafayette, CA 94549. 24 p. Oct. 12. Unpublished typescript.
• ***Summary:*** A comprehensive history of the subject. Contents: Introduction. University of Illinois and INTSOY: Home Economics Department's work (in the 1930's, 1940-1961, and 1974-1981), Food Science Department (1955-1981), International Soybean Program (INTSOY) founded July 1973, large number of talented faculty made the Univ. of Illinois one of the world's top soy research centers. Iowa State University. Cornell University: First work with soy 1883, first soyfoods work in 1927 (soymilk thesis by Y.T. Chiu), one of leading centers of U.S. soyfoods research during World War II (see chapter on Clive and Jeanette McCay), rebirth of interest in soyfoods in late 1950's, 1960 paper on tempeh, soymilk work 1963-1980, other soyfoods studied, arrival of Dr. Van Veen in 1962 (had studied tempeh since 1932, had lived in Indonesia, and had a lifelong interest in tempeh), renewed program of soybean development and production initiated in New York state in 1964. USDA Northern Regional Research Center (NRRC): Originated with 1929 USDA soybean lab in Ohio, 1936 soybean lab in Urbana, IL, transferred to Peoria, IL, 1942, expanded research on food uses of soybeans and soy oil, fermentation division headed by Langlykke, work on soy sauce, life of Dr. A.K. Smith, at NRRC from 1942-1964, arrival of Drs. Watanabe and Shibasaki, Smith one of first American researchers to realize the potential of tofu, work with miso, 1960 arrival of respected Indonesian microbiologist Ko Swan Djien, work on tempeh, NRRC hosted 2 of first major conferences on soy protein foods in 1961 and 1966, sponsorship of overseas contract work, expansion of research in 1960's, soy flour extrusion, Rackis' work with oligosaccharides (flatulence-causing factor in soybeans), life of Dr. C.W. Hesseltine, 1962 arrival of Dr. H.L. Wang at fermentation lab, Mustakas' studies on soymilk, NRRC's interest in soyfoods steadily growing, legitimizes soyfoods to people in U.S. and around the world. INTSOY: Founding, 5 basic objectives, main accomplishments with soybeans, main accomplishments with soyfoods. Address: Lafayette, California. Phone: 415-283-2991.

1029. *Chicago Tribune.*1981. 'Tofu' and other soy books: Reader's guide to good eating. Oct. 29. p. W_A21, or N_B19.
• ***Summary:*** This is a briefly annotated list of useful books about soy products: (1) *Soybeans for Health and Longevity,* by Philip S. Chen. (2) *The Soybean Book: Growing and Using Nature's Miracle Protein,* by Phyllis Dobson. (3) *The Farm Vegetarian Cookbook,* edited by Louise Hagler. See recipes for making ice bean, soy yogurt, and soysage. (4) *The Book of Tofu,* William Shurtleff and Akiko Aoyagi. Profusely illustrated, with hundreds of recipes. "There is no more thorough book on the history and myriad Oriental forms of tofu... First published in 1975, it is credited by most tofu cookbooks as the one that 'spread the light.'" (5) *The Tofu Cookbook,* by Cathy Bauer and Juel Anderson. Incorporates tofu artfully into familiar international dishes Many recipes assume access to the by-products of making tofu at home: okara (soy pulp) and whey. (6) *The Great American Tofu Cookbook,* by Patricia McGruter. (7) *Tofu Goes West,* by Gary Landgrebe. For those who enjoy the chewy texture of "frozen tofu." (3) *The Book of Miso,* by Shurtleff & Aoyagi. The best-known book about miso. (8) *The Book of Tempeh, by Shurtleff & Aoyagi.* A thorough study of this traditional Indonesian food.

1030. Sass, Lorna J. 1981. More budget-conscious Americans are hitting the soy–its not just sauce. *Chicago Tribune.* Oct. 29. p. N_B19.
• ***Summary:*** This article first appeared as: Sass, Lorna J. 1981. "Soy foods: Versatile, cheap and on the rise." *New York Times.* Aug. 12. p. C1, C6.

1031. Storup, Bernard; Ruel, Françoise. 1981. Re: Studying tofu in America and starting work with tofu in France. Letter to William Shurtleff at Soyfoods Center, Oct. 31. 6 p. Typed, with signature. [2 ref. Eng]
• ***Summary:*** Bernard and Françoise enjoyed the 8 months they spent studying soyfoods in the USA, and have now been back in France for nearly 10 weeks. "During the time we were in the U.S., we had a rather good survey of the small and medium scale tofu industry, and I think we learned a lot from all the people we met, and very often what not to do.

"I have been really surprised by the quality of the welcome we had all along our way, as well as the spirit prevailing among most of the people involved with soyfoods (we did not visit the big factories). This too has been a good lesson. Another small surprise has been the general lack of technical experience of most of the people working with tofu... They could learn a great deal from the dairy industry–chiefly the small and medium scale cheese-making industry–by using the techniques and the equipment (very often not expensive) employed when curding, putting in pressing boxes by gravity, pressing, etc."

Concerning Li Yu-ying, "we went with Jean de Preneuf to the location of 'La Société Française pour l'exploitation du soja et de ses dérivés,' located at 48 Rue Denis Papin, Les Vallées, Colombes (west of Paris). The buildings had been

pulled down about 20 years ago, but were used for other manufacture since at least the beginning of the thirties. We met an old man who has always lived in the neighborhood and remembers that 'some Chinese people were making cakes there before the first world war.' So, it is certain that this address was the one of Li's plant in 1912. We have been to the town hall of Colombes, but nobody was able to help us. We have to come back there at the end of November...

"Since our return to France, we had have, with Jean de Preneuf, a lot of contacts with different people to introduce, at least, the idea of soyfoods. We met people of the medical corps, all having an important role in scientific research (Dr. Sautier, INSERM, Hôpital Bichat, Paris; Dr. Mirouse, Dean of the Faculty of Medicine in Montpellier–the most important in France) working on plant proteins for years (as Dr. Cheftel, Universite de Montpellier, who has been to Japan several times and has worked on soymilk with experimental equipment made by Alfa-Laval) and people from INRA (Institut National de la Recherche Scientifique). All these people knew or at least had heard about tofu, and are ready to help us in their own field (analysis or sometimes technical assistance).

"We also met people from large industry (researchers for Nestlé, and an executive of Prolait) to ask if they had worked on soy products other than T.V.P. and soymilk formulas for infants. They all knew tofu and other soyfoods very well but said that 'the market in Europe is not ready yet for this.' Finally, we met organic soybean producers (and non-organic too); we wanted to know more about the future policy of the Economic European Community on soybeans...

"Actually, 9000 hectares of soya (22,500 acres) are cultivated in France, mostly in the south of France. Soya represents in value the second largest (after oil) national import for the French budget.

"In France, we can find tofu only in very few places, most of the time at a prohibitive price, between $4 and $7 a kilo. Vietnamese shops in all big cities have tofu, but their tofu is rather special with a sandy texture and a strong (sour) taste. We found only one (bad) tempeh producer in Paris. For these reasons, we have thought more and more that it would be a good thing to open a tofu shop and to work at the same time on the informational level. We are now working on a small recipe book (adapted to the French habits) as well as on a technical flyer, a pamphlet and other things...

"We are thinking of starting a Soyfood Center in France but we will tell you about this in the future as soon as we have found a new place to settle (it should be near Paris). We have already made an application.

"Jean de Preneuf contacted different (good) publishers, and one said *The Book of Tofu* has been found to be very interesting by a committee of readers. We are now waiting for a definitive answer from this publisher (Editions Denoel, one of the best in France, by quality and volume)."

Accompanying the letter are photocopies of books by Li Yu-ying and Grandvoinnet (1912) and Rouest (1921) which Shurtleff had been unable to find in America. Key portions were highlighted in yellow and translated into English.

Note: This is the earliest document seen (Feb. 2003) concerning Société Soy or its founders, Bernard and Françoise. The company's first soy product was launched in June 1982. Address: 48 Rue Bouffard, 33000 Bordeaux, France.

1032. *East West Journal.*1981. A soyfoods trailblazer looks back... & ahead [Interview with Dr. C.W. Hesseltine]. Oct. p. 30, 32-33.
• ***Summary:*** This interview was conducted by William Shurtleff of Soyfoods Center. Dr. Hesseltine's lab has sent out 30,000 to 40,000 packets of tempeh starter to approximately 20,000 different people over the past 5 years. "Shurtleff: Has there been an interest comparable to that for any other [NRRC] food project that you know of? Hesseltine: No, nothing on that scale. Even back in the penicillin days, there was no such response." A photo shows Dr. Hesseltine talking with people at the 1981 Soycrafters Association Convention.

Note: Dr. Hesseltine says that okara can be used as a feedstock for making ethanol (ethyl alcohol) and methanol. Address: Chief, Fermentation Lab., USDA/NRRC, Peoria, Illinois.

1033. Greenwood, Rebecca. 1981. Irresistible soy cuisine: Discover soy yogurt and prepare old favorites. *East West Journal.* Oct. p. 64, 66-69.
• ***Summary:*** The author prefers fermented soyfoods, finding them more digestible, and richer in enzymes and vitamins. She describes how to prepare homemade soy viilia (a yogurt-like product whose starter culture is available from GEM Cultures in Fort Bragg, California), homemade miso, homemade natto and natto condiment, tofu and natto sandwich spread, an autumn meal with natto, amasake, and a pecan pie sweetened with thick amasake. She predicts a bright future for tempeh. Address: Colorado.

1034. Leviton, Richard. 1981. Things go better with soyburgers: The new all-American food. *East West Journal.* Oct. p. 24-30. Cover story. Photos by Frank Ward.
• ***Summary:*** Contents: Of tempeh burgers and tofu dips: An industry poised for growth. The soyfoods industry: Building on a solid foundation. Market penetration: Mainstreaming convenience soyfoods. Soyfoods market snapshot: Crystal ball gazing. Soy sense. Address: Editor and publisher of *Soyfoods,* the quarterly journal of the soyfoods trade, and executive director of the Soycrafters Assoc. of North America, 100 Heath Road, Colrain, Massachusetts 01340.

1035. Soy Plant (The). 1981. An all-soy deli: Tofu, miso, soymilk, tamari, tempeh (Ad). *Ann Arbor Calendar*

(*Michigan*). Oct. p. 21.
• ***Summary:*** At the top of this small ad (2½ by 1.75 inches) is the collective's logo. At the bottom: "Present this ad for a 10% discount on listed items through 10/31/81. Limit one per customer." Address: 211 East Ann St., Ann Arbor, Michigan 48104. Phone: 663-0500.

1036. Weber, Marcia. 1981. Re: New developments with tofu and tempeh in Australia. Letter to William Shurtleff at Soyfoods Center, Nov. 8. 1 p. Typed, with signature on letterhead.
• ***Summary:*** "Here in Sydney there are only two other major producers of Bean Curd. They are both Chinese and are very enterprising.

"Our factory has shut down, and now one of the Chinese producers [Sin Ma Trading Co., 9 Meeks Road, Marrakville, NSW] is allowing us to use their premises to make our tofu... We are hoping to start another factory with more capital behind us. Unfortunately, we were grossly undercapitalized, and this was our downfall. The demand here in the healthfood line has stabilized at about 600 [pieces of tofu] weekly. Many people buy the Chinese bean curd, because they don't know the difference. When they experience our brand, they realize that there is a vast difference.

"However, it is impossible to compete with the price; our Tofu is twice the price. Because our volume is so low, we have very little choice. I myself teach cooking, and try to promote it as much as I can... Don't forget that this whole country is only 13 million people. It's very small compared to the U.S."

Gives addresses for Castle Trading Pty. Ltd. in Ranwick NSW, Homeland Community in Bellingen NSW, Sin Ma Trading Co. in Marrakville NSW, and Elly & Cyril Cain in Eumundi. The latter are just starting tempeh making on a very small scale. Address: East West Foundation of Australia, Suite 507, 363 George Street, Sydney 29 5481, Australia.

1037. Sweeney, Amin. 1981. How to search for early reference to tempeh in early the Javanese literature (Interview). *SoyaScan Notes.* Nov. 12. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** William Shurtleff is trying to find an early reference to tempeh in today's Indonesia.

The classical Malay literature, which is Indonesia's oldest, is written in Perso-Arabic script. It is palace literature and not much of it has been translated; a little has been translated into Dutch.

To find an early Malay or Javanese reference to tempeh, it is probably best to look in the early Javanese literature.

The oldest of all Malay manuscripts date from about 1600; 12 of them are at Oxford and Cambridge, but there is probably no reference to in them. The oldest dated manuscripts start in the early 1800s.

Prof. Sweeney thinks he has seen a reference to tempeh in the classical literature of the 18th and 19th centuries. He's think about the question. He requests that Shurtleff call back next week.

Another easier source is old Dutch dictionaries; look in the South and Southeast Asia Library. In 1928 Malay was declared the language of the future Indonesia. Then it was called Bahasa Indonesia. Malay and Indonesian are basically the same language, like British English and American English. Before 1928 no distinction was made between the two dialects. The Malay language was the lingua franca of the whole archipelago. Address: Prof., Indonesian Languages, 4116 Dwinelle Hall, Univ. of California, Berkeley, CA 94720. Phone: 642-4180.

1038. Affandi, Irwin; Mahmud, Mien K.; Hermana, -. 1981. Memanfaatkan khasiat tempe [Making better use of the special virtues of tempeh]. In: S. Josodiwondo, R. Utji, and U. C. Warsa, eds. 1981. Kumpulan Makalah Kongres Nasional Microbiologi III. Perhimpunan Mikrobiologi Indonesia. See p. 445-48. Held 25-28 Nov. 1981 in Jakarta. [4 ref. Ind]
• ***Summary:*** Describes results of a study on the use of tempe in the preservation of fish and in treating gastrointestinal disorders in children under 5 years. It was shown that tempeh was a good preservative but so far no inhibitory effects on microorganisms causing diarrhea were noted.

In other studies, tempeh has been reported to contain antibacterial and antiinfection substances, and may cure dysentery, gastrointestinal diseases, and digestive disorders. Address: Pusat Penelitian dan Pengembangan Gizi, Badan Penelitian dan Pengembangan Kesehatan Departemen Kesehatan R.I., Bogor, Indonesia.

1039. **Product Name:** Tempeh.
Manufacturer's Name: Beancoast Soyfoods.
Manufacturer's Address: Eumundi P.O. c/o C. Cain, Eumundi, QLD, 4562, Australia. Phone: 071-470-189.
Date of Introduction: 1981. November.
New Product–Documentation: Letter (order form) filled out by Mrs. Elly Cain (324 Grant Ave., Syracuse, New York 13207). 1979. Sept. 26. She orders 1 copy of *The Book of Tempeh* (professional hardback edition).

Letter from Marcea Weber. 1981. Nov. 8. Elly & Cyril Cain (Nambour P.O., Eumundi, 4560 QLD) are just starting tempeh making on a very small scale. Soyfoods Center Computerized Mailing List. 1982. July 23. Owners: Elly & Cyril Cain.

Letter from Ken Alexander of Daylesford, Australia. 1982. Oct. 21. "Cyril and Ellie Cain have gradually built up a tempeh business, supplying Brisbane [in Queensland]. Cyril makes beautiful tempeh. As he is selling the business to a private family concern, the situation is too tight for me to be included, otherwise Cyril would gladly share his experience with me. Cyril needs a successful sale, so as to return to the

United States with his family."

Letter from Michael Joyce (which see). 1983. March 5. Gives a brief history of Cyril and Elly Cain's pioneering work with tempeh in Australia.

Letter from Michael Joyce. 1984. Oct. 25. "I believe Cyril and Elly Cain made the first commercial tempeh in Australia, commencing in July 1982, as Beancoast Soyfoods, Maroochydore, QLD. Julie and I started working with them in October 1982 and we bought the company in May 1983. In October 1983 we changed the name to Mighty Bean Soyfoods and moved from Maroochydore to Cooloolabin via Yandia, Sunshine Coast, Queensland 4558. We make 100-300 kg/week."

Vicki Jackson. 1983, Nov. The Squirrels Cook Book Brisbane. On p. 94 starts chapter titled "Tempeh" written by Julie and Michael Joyce. They note: "Little did we know in early 1982, when we first ate tempeh made by Cyril & Ellie Cain of Eumundi, Sunshine Coast, that we were soon to become tempeh makers."

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 32. This company was founded by Cyril and Elly Cain in July 1982.

1040. Leviton, Richard. 1981. Plenty to eat at "Soyfoods in America" conference [at Colorado State University]. *Vegetarian Times* No. 51. Nov. p. 86-88.
• ***Summary:*** More than 240 people, from 18 nations, attended the 4-day conference. The "Soyfoods Expo 1981" featured a 30-booth trade show, including much production equipment. A strong feature of the conference was the opportunity it offered everyone to sample soyfood dishes in daily meals and cooking classes. The vegetarian food service program was developed and supervised by Pat Calhoun and Pattie Morris, soyfood chefs associated with White Wave, which helped plan the conference.

"Another world's first was the Tofu Cheesecake Bakeoff, never before dreamed of anywhere, anytime (according to our far-flung sources) in the tofu-eating world. Ten daring contestants baked their tofu creme pies and cheesecakes (free from dairy, eggs, sugar, white flour) during the conference while the panel of hungry judges went delirious in sampling, then evaluating, what was agreed were the finest tofu cheesecakes ever submitted to a panel of soyfoods judges."

A series of ten cooking classes were taught by Akiko Aoyagi, Rebecca Greenwood, Richard Jennings, Darrilyn Jackson, Robin Clute, Blanca Dominguez, Demetria Nanos Hamdorf, Melodie Phipps, and Thelma Dalman. Linda Gilbert and Ray Wolf of Rodale Press demonstrated their shortened and simplified home tempeh method.

Photos show Robin Clute, Akiko Aoyagi, and Rebecca Greenwood. Address: 100 Heath Rd., Colrain, Massachusetts 01340. Phone: 413-624-5591.

1041. Norton, Reggi; Wagner, Martha. 1981. The soy of cooking: A tofu and tempeh recipe book. Revised ed. White Crane, P.O. Box 3081, Eugene, OR 97403. 58 p. Nov. Illust. 22 cm.
• ***Summary:*** Contents: Introduction. 1. Tofu and tempeh basics. Recipes–2. Salads, dressings, and dips. 3. Light meals and snacks, including appetizers and soups. 4. Main courses. 5. Desserts and muffins. Address: Eugene, Oregon.

1042. *Soyanews* (*Sri Lanka*).1981. Recipes: Tempeh with soya refuse. 4(3):3. Nov.
• ***Summary:*** How to make okara tempeh. Good tempeh can also be made with varying percentages of okara and whole or split soyabeans.

1043. **Product Name:** Santa Cruz Tempeh. Soy-Rice.
Manufacturer's Name: Western Soy Complements.
Manufacturer's Address: 335 Pennsylvania Ave., Santa Cruz, CA 95062. Phone: 408-423-2256.
Date of Introduction: 1981. November.
Wt/Vol., Packaging, Price: ½ lb. and 1 lb.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Jeremiah Ridenour. Talk with Jeremiah Ridenour. 1988. Aug. 31.

1044. Kim, Gai W. 1981. Re: Introducing tofu to Sri Lanka. Letter to William Shurtleff at Soyfoods Center, Dec. 18–in reply to inquiry of Nov. 18. 1 p. Typed, with signature.
• ***Summary:*** "I sincerely hope that you and your wife will come to Sri Lanka in the near future to teach me how to make aburaage [deep-fried tofu pouches], which I simply fail to make although I tried all the instructions written in your *The Book of Tofu.*

"As for my project, at present, Tofu, which I named Boncheese here because 'bean' in Sinhalese is Bonchi and the method of making tofu is just like making cheese. Soy Bread are daily sold at the Cornel's, the only Super Market in Colombo. I managed to make Miso out of Tempeh within a week's time and you have to taste it to appreciate its beauty. The biggest breakthrough is to supply about 50 pounds of *soyamesh* [soybeans ground in water; soybase or soy puree] every morning to the Colombo General Hospitals and the Welikada Prison to be used in lieu of coconut milk for the daily curry cooked in their kitchen. The plant I helped to set up is using about 1.5 to 2 tons of de-hulled [soya] beans a month at the moment.

"I am enclosing a report from the Super Intendent [superintendent] of the Welikade Prison in Colombo for your perusal. If you are really interested in my project in can send you some correspondence and newspaper cutouts [clippings] upon request.

"I just finished writing a letter to BMI regarding an order of BMI 100 for the expansion of the project."

A handwritten note says that Kim is contacting the Navy and Air Force canteens for her soy project.

Attached are two letters which are cited separately: (1) From H.G. Dharmadasa, Superintendent of Welikada / Welikade Prison (Oct. 1981). (2) From Dr. W.S. Weerasooria, Secretary, Ministry of Plan Implementation (16. Oct. 1981). Address: c/o UNDP in Sri Lanka, P.O. Box 1505, Colombo, Sri Lanka.

1045. *Food Chemical News.*1981. Tempeh is ethnic food, not "vegetable protein product," Miles says. 23(40):20. Dec. 21.
• ***Summary:*** As such, tempeh may be used as an ingredient in other foods. Corbin I. Miles, Chief of the Generally Recognized as Safe (GRAS) Branch in the Food and Drug Administration's (FDA) Bureau of Foods wrote his opinion to Herbert Friedlander, of Arthur A. Checchi, Inc., in a letter dated 14 Dec. 1981.

1046. Lyon, Alexander. 1981. Early history of tempeh, soy ice cream, and other soyfoods at The Farm in Tennessee (Interview). Conducted by William Shurtleff of Soyfoods Center, Dec. 26. 1 p. transcript. Includes follow-up interview of 18 Feb. 1985.
• ***Summary:*** The first cake of tempeh (just one cake) was made from whole soybeans, then the rest were all made with okara. They did not make whole soy tempeh since they had no way to dehull the soybeans. They only started making tempeh from whole soybeans after the splits were available for use in tempeh kits. Now most of the tempeh is made from whole soybeans rather than okara. Cynthia Bates was one of the first to work with tempeh and to stay with it. They used a food dehydrator as an incubator.

Members of The Farm Soy Dairy crew (Alexander, Marlene Pantos, Joanne Elfe, Myra Traugot) first started making soymilk ice cream during the summer of 1972 or 1973, using homemade soymilk, a hand-crank machine provided by Melvin Stiriff, and fresh blackberries gathered at a patch behind the soy dairy. Needless to say, the product was a hit, since no dairy products were consumed in the community and soymilk was still rationed among community members. The crew made this non-dairy ice cream 6-12 times during the first summer. A year or two later The Farm invested $100 in four tiny table-top Glacier ice cream machines that made 1-2 quarts at a time. Production grew, but it was all consumed within the community.

In 1974 The Farm's publications "Hey Beatnik" and "Yay Soybeans!" both mentioned soymilk ice cream.

After production of Ice Bean was moved from San Francisco, California, to Tennessee, Steve Meyers and Michael Moorman became the two key soy ice cream people. Address: Summertown, Tennessee.

1047. **Product Name:** Tempeh.
Manufacturer's Name: Aqua Agra.
Manufacturer's Address: 100 Highline Dr., Longwood, FL 32750. Phone: 305-339-8157.
Date of Introduction: 1981. December.
How Stored: Refrigerated.
New Product–Documentation: Talk with Don Wilson. 1993. Nov. 24. In late 1981 Aqua Agra began to make soy tempeh. They sold less than 100 lb/week, and only to a few health food stores in Orlando who had asked for it. the last soy product they introduced, and the market for it was not very big. When he had to close the business, he had just started developing it and he had not yet introduced it into any of the chain stores.

1048. Brown, Judy. 1981. Soyfoods: Catching on in the U.S. diet. *National Food Review.* Winter. p. 10-11. [6 ref]
• ***Summary:*** Begins with a brief history of soyfoods and soy modern soy protein ingredient in the United States. Contains a long section on tofu and a shorter section on tempeh and miso.

"Soybeans are finding a new place in the U.S. food system."

"Another indication of the growing popularity of soy protein as food can be found in industry figures which show that in 1971 food use of soybeans was estimated to be around 10 million bushels annually or less than 1 percent of the crop. Today, almost 50 million bushels or nearly 2 percent of the total soybean production goes to human consumption each year (excluding oil)." Address: USDA Economics, Statistics, and Cooperatives Service. Phone: (202) 447-6364.

1049. Chen, Steve; Wang, Elizabeth. 1981. Huangdou you yu huangdou shipin shoutse [Handbook of soy oil and soy foods]. Taipei, Taiwan: American Soybean Assoc. 200 p. 19 cm. [Chi; eng]
• ***Summary:*** On the rear cover is written (in English): "American Soybean Association. China Nutrition Society. China Institute of Food Science Technology. China Food Health, Nutrition Research Foundation." Contains many tables and graphs. Address: Taipei, Taiwan.

1050. Fardiaz, Dedi; Markakis, Pericles. 1981. Oligosaccharides and Protein Efficiency Ratio of oncom (fermented peanut press cake). *J. of Food Science* 46(12):1970-71. Nov/Dec. [15 ref]
• ***Summary:*** "Peanut press cake was fermented with *Neurospora sitophila, Rhizopus oligosporus,* a *Neurospora* strain isolated from Indonesian oncom, and mixed *Neurospora-Rhizopus* cultures... Mixed cultures resulted in the quick elimination of all sugars," including oligosaccharides, a benefit in reducing flatulence. Peanut press cake has a PER of 1.51 (measured on rats). Onchom has a PER of 1.41, a reduction of 6.7%. Replacing 10% of the peanut protein with sesame protein raised the PER of the fermented mixture to 2.11, compared with 2.50 for casein. Address: 1. Dep. of Food Science & Human Nutrition, Michigan State Univ., East Lansing, MI 48824; 2. Bogor

Agricultural Univ. Formerly at MSU.

1051. Ismail Bin Abdul Karim, Mohamed. 1981. Preliminary studies on nutritional qualities of Malaysian tempeh. *Pertanika* 4(2):129-32. Dec. [15 ref. Eng; mal]
• ***Summary:*** Commercial tempe, purchased from small processors and markets at various places in Indonesia, was found to contain 65.08% moisture, 40.22% protein, 21.73% fat, 4.18% ask, and 9.39% crude fiber.

In Malaysia, tempe is incubated and sold wrapped in three types of leaves: (1) Banana (*Musa sapietum*). (2) Rambai (*Baccaurea motlyeyanam*). (3) Ketapang (*Terminalia catappa*). Plastic (polyethylene) bags are also used in place of leaves. Address: Dep. of Food Science and Technology, Faculty of Agriculture, Universiti Pertanian Malaysia, Serdang, Selangor, Malaysia.

1052. Java Murni. 1981. Reserve now for Java Murni's Vegetarian X-mas dinner. 4509 Adams St., Carlsbad, California.
• ***Summary:*** The dinner will we held on Dec. 26 and 27 from 5-7 or 7:15 to 10 p.m. The menu is given: Soup: Soto (mild) or Laksa (spicy). Appetizers: Gulung rebung (bamboo shoots wrapped in crispy tofu). Tofu kembang (tofu flowers). Salad: Gado-gado (with peanut dressing). Urap (with coconut dressing).

Entree: Tempeh treat (tempeh braised in Indonesian soy and safflower oil). Tofu-saus-richa (tofu in sweet-and-sour spicy sauce). Sambal goreng boontjis (green beans in savoury sauce). Sayur lodeh (vegetables in coconut milk). Chah tempeh (mixed tempeh & vegetables). Keringan tempeh (sweet-piquant tempeh). Satay tempeh (barbecue tempeh). Beehun goreng (rice noodles). Soyex malakka (soy cubes in malakka sauce). Nasi kuning (yellow rice).

Dessert: Onde-onde (mung beans wrapped in glutinous rice and sesame). Pisang goreng (coated fried banana).

Dinner includes all the above: Per person $12.95.

A map shows the way to the restaurant. Illustrations: A bamboo border. A large Javanese shadow puppet on the left border, looking right. Address: Carlsbad, California. Phone: 434-4131.

1053. Ko Swan Djien; Kelholt, A.J. 1981. The inhibitive effect of *Rhizopus oligosporus* on toxin production by *Pseudomonas cocovenenans* in tempe bongkrek. *Annales Bogorienses* 7(3):97-106. Dec. [15 ref. Eng; ind]
• ***Summary:*** *"Rhizopus oligosporus* which is the principle mold species for the fermentation of soybeans or other raw materials into tempe, has several properties which inhibit harmful effects of other micro-organisms [microorganisms]. This paper reports on its inhibitive effect on toxin production by *Pseudomonas cocovenenans* in laboratory made 'tempe bongkrek.'" Address: 1. Dep. of Food Science, Agricultural Univ., Wageningen, Netherlands.

1054. Shurtleff, William; Aoyagi, Akiko. 1981. La soya y sus derivados: Tofu, miso, tempeh [The soybean and its products: Tofu, miso, tempeh]. *Quadernos de Natura* (*Editorial Posada, Mexico*) No. 20. 87 p. Dec. [3 ref. Spa]
• ***Summary:*** Contents: Introduction: The miracle of soya, by Ma. Teresa Piazza. 1. Soya: Source of protein. Ten reasons that soy will be the protein source of the future. 2. Tofu: Introduction A family of distinctive foods. A storehouse of high-quality protein. Cost of protein from different sources. Low in saturated fats: free of cholesterol; an ideal diet food. Natural backbone of the meatless diet. Buying and storing tofu. Making tofu at home and in communities. Soybeans, tofu, and the world food crisis. Table of different tofu varieties. Tofu shops in Japan. Our favorite tofu recipes.

3. Miso: Introduction. Delightfully varied; highly versatile. A nutritional treasure trove. The varieties of miso (including a table). The preparation of miso. Traditional natural miso and quick modern miso. A brief history of miso. Buying, storing, and using miso. Miso in Japan. Traditional Japanese miso shops and modern factories. Making miso at home. Our favorite miso recipes (contains 16 recipes).

4. Tempeh: Introduction. Rich in protein and vitamin B-12. Tempeh comes west (a brief history). How tempeh is made. The miracle of fermentation. Buying and storing tempeh. Tempeh for Latin America. Our favorite tempeh recipes (contains 8 recipes).

Note: This book is largely a Spanish-language translation of three English-language brochures written by the authors in the late 1970s: What is tofu? What is miso? What is tempeh? Chapter 1 is summarized from the first chapter of *The Book of Tempeh.* Address: Soyfoods Center, P.O. Box 234, Lafayette, California.

1055. **Product Name:** Tempeh (Soy & Okara), Tofu, Soysage, Egg-less Salad, Flavored Soymilk (Carob & Honey, or Maple).
Manufacturer's Name: Soy Beings.
Manufacturer's Address: 13-C Railroad Square, Waterville, ME 04901. Phone: 207-872-8790.
Date of Introduction: 1981. December.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Dec. 8. Owner: Richard Tory. Shurtleff & Aoyagi. 1982. Soyfoods Industry: Directory & Databook. p. 1. Form filled out by Richard Tory. ca. 1982. This is a 5-person collective. "We have a small, light catering business and wholesale sandwich business selling locally to natural food stores, etc. Potato salad, tofu dips, tempeh sandwiches, whole wheat tofu pizza, and natural pastries." The tofu contains nigari and organically grown soybeans. Soysage is made with nutritional yeast, safflower oil, honey and spices in an okara base. Egg-less salad made with tofu and eggless mayonnaise.

1056. Soyfoods Center; Soycrafters Assn. of North America. 1981. Per capita use of soyfoods grows to nearly 9 lbs. in U.S. *Vegetarian Times* No. 52. Dec. p. 6.
• ***Summary:*** Based on a Sept. 1981 news release copyrighted by the Soyfoods Center and the Soycrafters Assoc. of North America, this summary of a market study gives for each major soyfood product the number of manufacturers in the USA, Canada, and worldwide. The tons/year of raw soybeans used. And (in the USA only) the tons of food produced, wholesale value, retail value, and number of employees.

In the USA, the number of manufacturers, tons of product produced, and retail value in million dollars are as follows for low technology, traditional: Tofu and tofu products (154, 22,700, $50.4), tempeh (32, 494, $1.78), soymilk and soymilk products (14, 148,000, $118.0), soy sauce, shoyu & tamari (15, 54,837, $203.0), soynuts and soynut butter (12, 2,750, $4.6), miso (10, 2,000, $4.8), soy sprouts (5, 360, $0.25), etc. Subtotals for low-tech (284 manufacturers, 231,305 tons produced, $392.25 retail value).

For high-technology, modern: Soy flour & grits, defatted (12, 400,000, $190.4), textured, extruded soy flour (TSP/TVP) (2, 200,000, $179.2), soy protein concentrates (3, 45,000, $56.7), soy protein isolates (3, 45,000, $126.0), meat analogs (secondary products) (6, 20,000, $55,000). Subtotals for high-tech (26 manufacturers, 710,000 tons produced, $615.6 retail value). Total low and high tech: 310 manufacturers, 941,305 tons produced, and $1,007.85 million dollars.

Also published in New Age (Jan. 1982, p. 17) under the title "Tofu Takes Over."

1057. **Product Name:** Soylami (Ready-to-Eat Sausage-Shaped Meatless Salami Made from Tempeh; Vacuum Packed).
Manufacturer's Name: 21st Century Foods.
Manufacturer's Address: Jamaica Plain, Massachusetts.
Date of Introduction: 1981.
Ingredients: Organic soybeans, whole wheat, sesame seeds, corn oil, tamari, herbs, spices, tempeh starter, vinegar.
Wt/Vol., Packaging, Price: 6 oz cylinder, vacuum packed.
How Stored: Refrigerated.
New Product–Documentation: Labels (two), undated. "Pre-cooked. Ready to Eat Snack or Hors D'Oeuvre." Spot in Soyfoods. 1983. Summer. p. 52. "One Soylami on Rye, Please." Ready to eat. Label. 1987. 3.5 by 6 inches. Red and white on yellow-orange. "Made from Homestyle Tempeh. Ready to Eat Snack or Hors D'Oeuvre. Serving Suggestion: Cut into thin slices. Serve warm or cold. Combine with mustard or sauerkraut if desired." Talk with Rudy Canale. 1988. Sept. 13. One of their earliest products, launched in 1981, this is still a popular item.

1058. Anas, Juliar. 1981. Fermentasi kedele oleh cendawan *Rhizopus* Sp. pada pembuatan tempe [Fermentation of soybeans with *Rhizopus* species to make tempeh]. Padang: Fakultas Pertanian Universitas Andalas. [Ind]*

1059. Darmosuwito, -; Suhadi, -; Jutono, -; St. Margino, -. 1981. Study on the effect of physical treatment of soybean and selected *Rhizopus* strain on tempe quality. Yogyakarta: Departemen Mikrobiologi, Fakultas Pertanian Universitas Gadjah Mada. 12 p. Research report. [Eng]*

1060. **Product Name:** Bible Burger. Tempeh Vegetarian Treat.
Manufacturer's Name: Garden of Eatin' (Formulator and Distributor).
Manufacturer's Address: 5300 Santa Monica Blvd., Los Angeles, CA 90029.
Date of Introduction: 1981.
Ingredients: Soy tempeh (organically grown soybeans, water, and tempeh culture), soy sauce, herbs, spices.
Wt/Vol., Packaging, Price: 6 oz (170 gm).
How Stored: Refrigerated or frozen.
New Product–Documentation: Manufacturer's catalog. 1981, dated. Label. 1982, dated. "Steamed, not fried! No oil! No fat! No cholesterol! Tempeh at its best!"

1061. Hermana, -. 1981. Pengaruh pemberian bahan makanan campuran dengan kedele dan kedele yang difermentasi terhadap keadaan gizi kurang kalori protein [The effects of addition of foods made of a mixture of soybeans and fermented soybeans in the situation of calorie and protein deficiencies]. Bogor: Pusat Penelitian dan Pengembangan Gizi. 11 p. Research report. [Ind]*
Address: Bogor, Indonesia.

1062. **Product Name:** Java Murni Tempeh Schnitzstick (Seasoned and Breaded Fried Tempeh).
Manufacturer's Name: Indocon. Div. of Indofoods, Inc.
Manufacturer's Address: Carlsbad, California.
Date of Introduction: 1981.
Ingredients: Organic soybeans, organic unhulled sesame seeds, onions, soy sauce, garlic, vinegar, Rhizopus oligosporus, water, wheat flour, corn flake crumbs, soy oil.
Wt/Vol., Packaging, Price: 6 oz.
How Stored: Refrigerated.
Nutrition: Calories 72, protein 9 gm, carbohydrates 4.6 gm, fat 3.2 gm.
New Product–Documentation: Label. 1981, undated. Black on white.

1063. **Product Name:** Java Murni Tempeh Burger.
Manufacturer's Name: Indocon. Div. of Indofoods, Inc.
Manufacturer's Address: Carlsbad, California.
Date of Introduction: 1981.
Ingredients: Organic soybeans, organic unhulled sesame

seed, garlic, vinegar, onions, salt, Rhizopus oligosporus, safflower oil margarine, water.
Wt/Vol., Packaging, Price: 10 oz.
How Stored: Refrigerated.
Nutrition: The tempeh part: Calories 102, protein 12.3 gm, carbohydrates 6.4 gm, fat 4.5 gm, calcium 92 mg, iron 3.2 mg.
New Product–Documentation: Label. 1981, undated. Black on white.

1064. **Product Name:** Java Murni Tempeh.
Manufacturer's Name: Java Murni.
Manufacturer's Address: 4509 Adams Ave., Carlsbad, CA 92008. Phone: 714-434-4131.
Date of Introduction: 1981.
Ingredients: Dehulled and cracked organic soybeans, water, vinegar, Rhizopus oligosporus.
Wt/Vol., Packaging, Price: 10 oz.
How Stored: Frozen or refrigerated.
Nutrition: Per 100 gm: Calories 179, protein 17 gm, carbohydrates 12 gm, fat 7 gm, calcium 103 mg, iron 3.7 mg.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1981. Jan. 22. By July 1982 the owners are Max S.T. Tan and Bob I.K. Sih. Label. 1981, undated. Black on white. "Made with loving care and knowledge for Java Murni Ricetable Ingredients. Try tempeh at Java Murni Restaurant, 4509 Adams Street, Carlsbad." Recipes.

1065. Java Murni. 1981. Vegetarian Menu. 4509 Adams St., Carlsbad, California.
• ***Summary:*** Includes many interesting tempeh and tofu dishes. Dec. 1981 ranking of best-sellers: 1. Tempeh treat (Tempeh braised in Indonesian soy and safflower oil). 2. Keringan tempeh. 3. Satay tempeh. 4. Tempeh kechap. 5. Tempeh malakka. 6. Sambal goreng tempeh. Address: Carlsbad, California. Phone: 434-4131.

1066. Kronenberg, H.J. 1981. Synthesis of an antibiotic by *Rhizopus oligosporus.* 14 p. Unpublished manuscript. [9 ref]
• ***Summary:*** "Fermentation products of *Rhizopus oligosporus* were tested for antibiotic activity against *Bacillus subtilis, Bacillus subtilis var. niger,* and *Sarcina lutea.* A tempeh extract was found to inhibit the growth of all three assay organisms. The antimicrobial compound is moderately heat stable, and there is some evidence suggesting that it may contribute to the nutritional value of soybean tempeh." Note: *Bacillus subtitlis* is the bacterium used in the natto fermentation.

1067. **Product Name:** New World Norimaki (Vegetarian Sushi) [With Tempeh, or with Seitan].
Manufacturer's Name: New World Enterprises. Renamed New World Natural Foods in 1985.
Manufacturer's Address: 157 Sutherland Rd., Brookline, MA 02146. Phone: 617-232-5973.
Date of Introduction: 1981.
New Product–Documentation: Talk with Emily Merghart. 1989. Aug. 18. These two products were introduced today.

1068. **Product Name:** Tempeh Burger (with Miso).
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: c/o Cleveland Tofu Co, 8021 Euclid Ave., Cleveland, OH 44121.
Date of Introduction: 1981.
Ingredients: Tempeh (organic soybeans, water, Rhizopus culture), tamari, barley miso, spring water, corn oil, rice vinegar, spices.
Wt/Vol., Packaging, Price: 8 oz (3 burgers).
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1982. 4.25 inch diameter. Red, green, blue, and yellow on white. Logo of Jack and the Beanstalk. "No cholesterol. All natural. Pan Fry, Bake, Steam, or Grill." Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7. "Our tempeh burger is our number one product after tempeh. It is unique to my knowledge in that it is a fairly complicated marinade and depends less on tamari than many I've tasted."

1069. **Product Name:** Soyboy Tempeh.
Manufacturer's Name: Northern Soy.
Manufacturer's Address: 30 Somerton St., Rochester, NY 14607.
Date of Introduction: 1981.
Ingredients: Water, organic soybeans, cider vinegar, tempeh starter (Rice, Rhizopus oligosporus).
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Frozen.

New Product–Documentation: Label. 1981, dated. 5.5 by 6.5 inches. Orange, green, and black on beige. Recipes on back for Pan Fried Tempeh, Steamed Tempeh, Tempeh Lettuce & Tomato Sandwich, Garden Tempeh Spread, Sloppy Joe Tempeh. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center. Soyfoods Center Computerized Mailing List. 1982. July 23. Owners: Andy Schecter & Norman Holland. Address is now 30 Somerton St., Rochester, New York. Phone: 716-442-1213.

1070. **Product Name:** Tempeh Salad.
Manufacturer's Name: Soy Plant (The).
Manufacturer's Address: 711 Airport Blvd., Suite #1, Ann Arbor, Michigan 48104. Phone: 313-663-8638.
Date of Introduction: 1981.
Ingredients: Tempeh (organic soybeans, Rhizopus culture, vinegar), simmered in shoyu & water, Soynaise (soymilk, oil, vinegar, spices), carrots, celery, green onions, parsley, basil.
Wt/Vol., Packaging, Price: 12 oz. plastic tub.
How Stored: Refrigerated.
New Product–Documentation: Label in Soy Plant scrapbook. 1980. 2.75 by 2.5 inches. Black on white.

1071. Sudarmadji, Slamet. 1981. Asam phitat dan phitase dalam fermentasi tempe kedele [Phytic acid and phytase in soy tempeh fermentation]. *Agritech* 2(1):49-57. [Ind]*

1072. Suharni, Th. Tri; Sutarningsih, A. Edang; Sidemen, I.G.P. Badjra; Nastini, Sri Juni. 1981. Pembentukan growth factor oleh kelompok protista (bakteri dan khamir) dari inokulum tempe [Formation of a growth factor by the Protista group (bacteria and yeasts) from tempeh inoculum]. Yogyakarta: Fakultas Biologi Universitas Gadjah Mada. 16 p. Research report. [Ind]*
Address: Yogyakarta, Indonesia.

1073. Sukarni, Mariyati; Nasoetion, Amini; Rihati, Sri. 1981. Nilai gizi makanan hasil olah tempe kedele [Nutritional value of food made from soy tempeh]. *Media Gizi Keluarga* (*Family Nutritional Media*) 5(1):12-17. [Ind]*
• ***Summary:*** Includes a calculation of the nutritional value of 37 tempeh recipes.

1074. **Product Name:** Tempeh (Made with Sprouted Soybeans).
Manufacturer's Name: Surata Soyfoods.
Manufacturer's Address: 302 Blair Blvd., Eugene, OR 97402.
Date of Introduction: 1981.
Ingredients: Sprouted organically grown soybeans, water, apple cider vinegar, tempeh culture (Rhizopus oligosporus).
Wt/Vol., Packaging, Price: 10 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label, undated. 6 by 7 inches. Red on yellow. "An Oregon Cooperative. A Pre-Cooked Cultured Soyfood. Makes 4 burgers." Recipes on back for Tempeh Chili, Tempeh Salad, Tempeh Burritos / Tacos. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 56. "Sprouting the soybeans overnight increased the content of B and C vitamins, increased the yield by 11%, and facilitated wet dehulling."

1075. Tanuwidjaja, Lindajati. 1981. Pengaruh substrat terhadap daya tahan simpan inokulum tempe [Effect of substrates on the keep quality of tempeh inoculum]. In: Kumuplan Makalah Kongres Nasional Mikrobiologi ke III. See p. 425-429. [Ind]*
Address: 1. National Inst. for Chemistry, Indonesian Inst. of Sciences, Bandung, Indonesia.

1076. Universitas Brawidjaja. 1981. Tinjauan jasad renik pada tempe kedelai dan tempe kacang di daerah Malang [Microbiological survey on soy tempeh and peanut tempeh in the Malang region]. Malang: Departemen Biologi UNBRAW. 21 p. Research report. [Ind]*

1077. Altman, Nathaniel. 1981. Nathaniel Altman's total vegetarian cooking. New Canaan, Connecticut: Keats Publishing, Inc. 229 p. Index. 18 cm. Series: A Pivot Original Health Book. [180 ref]
• ***Summary:*** The author was born in 1948. The first page of the book begins: "It's not just spinach. The vegetarian way of eating is incredibly varied, employing such exotic, appealing foods as calcium-rich hijiki, tempeh from Indonesia, and tofu."

The glossary (p. 139-44) describes: Lecithin, milk (soy), miso, soybeans, soy grits, sprouts (incl. soy), tamari, tempeh, tofu, and textured vegetable protein (TVP).

Chapter 11, titled "A vegetarian diet can save you money" (p. 146-51) mentions soybeans and soyfoods (incl. soy milk powder, dry tofu [probably dried-frozen tofu], soy sprouts, soy flour, soy sauce, tofu) repeatedly as low-cost sources of protein.

The book has several very interesting appendixes: C. The vegetarian bookshelf (p. 208-10). D. Vegetarian contacts–Some vegetarian societies and publications (p. 211-12). Bibliography by chapter (p. 213-20).

1078. Buchari, Syafrial. 1981. Mempelajari pengaruh jenis bahan penambahan antioxidan terhadap mutu tepung tempe selama penyimpanan [Study of the effects of different types of antioxidants on the quality of tempeh flour during storage]. Thesis (Skripsi), Fakultas Mekanisasi dan Teknologi Hasil Pertanian Institut Pertanian, Bogor, Indonesia (College of Agricultural Mechanization and Technology, Bogor Institute of Agriculture). 118 p. [Ind]*
Address: Bogor, Indonesia.

1079. Dianti, Merry. 1981. Pembuatan dan pengujian bahan makanan campuran sorgum kedele dan sorgum tempe [Preparation and testing of foods made from a soybeans-and-sorghum mixture, and a sorghum-and-tempeh mixture]. Thesis (Skripsi), Akademi Gizi, Jakarta, Indonesia. [Ind]*
• ***Summary:*** Discusses Vitempo, a tempeh formula. Address: Akademi Gizi, Jakarta, Indonesia.

1080. Djurtoft, R. 1981. Studies related to tempe production. I. Tempe production from soybeans and cowpeas. Unpublished typed manuscript. 9 p. Plus 9 pages of 32 color photos, each with a caption. Unpublished manuscript. 30 cm. [1 ref]
• ***Summary:*** Contents: Oeben Sjarim factory culture. Usar leaves from "Nga Beans". Usar leaves from "Tempe Giling Murni". Old usar cultures from Jogjakarta. Tempe served as snacks. Address: Dep. of Biochemistry & Nutrition, Technical Univ. of Denmark, DK-2800 Lyngby, Denmark.

1081. Djurtoft, Robert. 1981. Studies related to tempe production. II. Two types of microorganisms on usar leaves (Rhizopus molds, Bacilli). Unpublished typed manuscript. 37 p. Including 13 color photos. Unpublished manuscript. 30 cm.
• ***Summary:*** Contents: Introduction. Determination of the number of viable organisms. Isolation and identification of molds and bacteria. Identification of molds from usar leaves: Two *Rhizopus* species from Nga usar, one *Rhizopus* species from GM4 usar. Identification of bacteria on usar leaves: Classification in genera, differential classification. Address: Dep. of Biochemistry & Nutrition, Technical Univ. of Denmark, DK-2800 Lyngby, Denmark.

1082. Djurtoft, Robert; Nielsen, Jens Peter. 1981. Studies related to tempe production. III. Nutritional value of [soy and cowpea] tempeh in relation to B-vitamins, including B-12. Unpublished typed manuscript. 10 p. Including 5 pages of color graphs. Unpublished manuscript. 30 cm.
• ***Summary:*** Contents: Introduction. Experimental. Conclusions. Address: Dep. of Biochemistry & Nutrition, Technical Univ. of Denmark, DK-2800 Lyngby, Denmark.

1083. Ford, Richard. 1981. Soy foodery cookbook: Tofu, tempeh, miso, sea vegetable recipes and resources. Santa Barbara, California: Published by the author. ii + 78 p. Illust. No index. 22 cm. Spiral bound. [20+ ref]
• ***Summary:*** Contents: Introduction: Creative balance. Soyfoods: Foods for the future. Soyfoods resources. Tofu: A soy product catching on. Tempeh: The super soy. Soysage. Sea vegetables: The tide is rising. Miso: A food doing it with culture. Soyfood travelers guide. Contains many recipes using tofu, tempeh, sea vegetables, and miso. At the end of each chapter is a bibliography. Address: Santa Barbara, California.

1084. Gandjar, I. 1981. Soybean fermentation in Indonesia. *Advances in Biotechnology* 2:531-34. [9 ref]
• ***Summary:*** Discusses various kinds of tempeh, taoco (Indonesian miso), kecap (Indonesian soy sauce), tempe gembus (okara tempeh; sold in every market and village in Central and Eastern Java), oncom tahu (okara onchom), and traditional fermentation processes. Address: Dep. of Biology, Faculty of Mathematics and Natural Sciences, Univ. of Indonesia, Jakarta, Indonesia.

1085. Hesseltine, Clifford W. 1981. Thom Award Address: A microbe's view of fermentation. *Developments in Industrial Microbiology* 22:xv-xvi, 1-18. [21 ref]
• ***Summary:*** Pages xv to xvi give a brief biography and photo of Dr. Clifford W. Hesseltine, winner of the tenth Charles Thom Award on 14 Aug. 1980, presented by the Society for Industrial Microbiology. Dr. Hesseltine knew Dr. Charles Thom and was strongly influenced by him, even though the two men never worked together.

"Dr. Hesseltine's studies on the taxonomy of the Mucorales have resulted in a classification now in worldwide use... The research of Dr. Hesseltine on mycotoxins is world famous. He has directed the aflatoxin project of the Fermentation Laboratory, NRRC...

"Dr. Hesseltine's studies on fermented foods are equally well known. Included in this research has been the use of soybeans and cereals in Oriental fermented foods including tempeh, miso, Chinese cheese, and shoyu."

Just 100 years ago the first pure cultures of fungi were made by Brefeld, a German, who published his results in 1881. The development of submerged culture of penicillin production began in 1941 at the NRRL. The USA lost its leading role in industrial fermentation early in the 1960s due to weakness in research in many fields. Address: NRRC, Peoria, Illinois.

1086. Jaffrey, Madhur. 1981. Madhur Jaffrey's World-of-the-East vegetarian cookery. New York, NY: Alfred A. Knopf, Inc. 461 p. Illust. by Susan Gaber. Index. 20 x 20 cm. A second edition was published in 1983 in London by J. Cape.
• ***Summary:*** The Indian woman author of this creative book presents 21 recipes for bean curd (tofu), 7 for tempeh, and some for yuba and miso. Green soy beans with sauce (p. 7). Cabbage with miso (p. 15). Eggplant slices with white miso (p. 22-23). Fresh soy beans, steamed (p. 57). Spinach with fermented bean curd (p. 59). Stuffed yellow squash (with yuba, p. 62-64). Pecel (Vegetable salad with spicy peanut sauce, plus tofu and tempeh; p. 73-74). Tempura (with tofu; p. 75-77). Soy bean sprouts (how to grow; p. 100). Soy-bean and mung-bean sprouts seasoned with sesame oil (p. 105). Tempeh, Fried tempeh, Fried, preseasoned tempeh, Sambal goreng tempeh kering (Sweet and sour tempeh), Tempeh cooked in coconut milk (p. 108-110). Thai fried rice (with

red fermented tofu; p. 150-51).

One chapter (p. 160-89) is titled "Soy milk, bean curd, and wheat gluten." Making your own soy milk. Making your own bean curd. Udofu (*Yudofu,* simmering bean curd with seasonings). Bean curd with watercress. Korean-style bean curd in a hot water bath. *Hiya-yakko* (Chilled bean curd). Bean curd with Chinese parsley. Bean curd with broccoli. Cabbage cooked with bean curd. Bean curd with a deliciously spicy sauce. Carrots and beans with bean curd dressing. Bean curd, mushrooms, and peanuts in hoisin sauce. Sautéed bean curd. Tofu dengaku (Toasted bean curd with a miso topping). Fried bean curd cubes, soy-bean sprouts sautéed with fried bean curd. Fried bean curd with a sweet-and-sour sauce. Fried bean curd cakes with a mustard surprise. Inari-zushi ("Bags" of fried bean curd stuffed with sushi rice). Pressed bean curd with cabbage. Salad of pressed bean curd, mung-bean sprouts, and agar-agar. How to make fried and baked wheat gluten balls (plus 5 gluten recipes). Buddha's delight (with yuba and fried bean curd).

Chawanmushi (Steamed savory custards, with tofu; p. 192-94). Omelette with bean curd (p. 198-99). Soy sauce eggs (p. 209). Paneer (milk cheese; p. 237-40). Hot or cold noodles with a soy-sauce dressing (p. 248). Noodles with a hot-and-sour bean sauce (p. 250). Vegetarian mee krob (Crisp noodles with pressed bean curd and eggs, from Thailand, p. 255-56). Noodles with quail eggs, mushrooms, spinach, and yuba (Japan; p. 256-57). Hoppers (yeast pancakes from Sri Lanka). Roti (Flat whole-wheat bread). Delicious stock made with soy-bean sprouts. Clear soup with enok mushrooms, bean curd skins [yuba], and spinach (p. 297). Clear soup with soft bean curd and celery cabbage (p. 298). Miso soup with bean curd (p. 307). Miso soup with carrots and mushrooms (p. 308). Fried, munchable soy beans [soynuts] (p. 321-22). Potato and tempeh patties (p. 339). Dipping sauces (with soy sauce; p. 357-59). Kombu relish (with soy sauce, p. 374). Shoyu daikon (White radish pickled in soy sauce). Ginger quick-pickled soy sauce (p. 375). Aomidaikon (Quick pickled small white radishes, with slightly sweet yellow miso; p. 377-78). Chinese-style jellied bean-curd sweetmeat with a peanut topping (p. 399-400).

General information (p. 418-36; lots on soyfoods, see: bean curd [regular, fried, fermented, pressed, pressed seasoned], kochu chang [jang], miso, soy-, tempeh, yuba). Sources (of ingredients; p. 437-40). Address: New York City, NY.

1087. Ko Swan Djien. 1981. Fermented foods of Indonesia except those based on soybeans. *Advances in Biotechnology* 2:525-30. [37 ref]

• ***Summary:*** Foods discussed include oncom [ontjom, onchom] (chiefly made of peanut presscake fermented with Neurospora species of molds), tempe bongkrek (made from coconut presscake obtained from coconut-oil factories where oil is pressed from copra, or from partly defatted coconut residue which is left when shredded coconut meat is extracted with water to obtain coconut milk for preparing dishes for family consumption; also discusses bongkrek poisoning and its history in Indonesia), tapé, and dagé. Address: Dep. of Food Science, Agricultural Univ., Wageningen, The Netherlands.

1088. McCallum, Cass. 1981. The real food guide. Vol. 2: Pulses, grains and seeds. Glasgow, Scotland: The Molendinar Press. 196 p. Index. 20 cm.

• ***Summary:*** The section on "Anti-nutritional factors in pulses" discusses those found in many legumes (such as haemagglutinins, trypsin inhibitors, phytic acid, flatulence factors) and those of importance in specific legumes; for soybeans, only heat-resistant trypsin inhibitors are mentioned. The section on "Basic bean cookery" gives general guidelines and tips (never add salt until beans are cooked tender). A table (p. 54) shows that soybeans require the longest cooking time of any bean listed.

The section titled "A-Z pulses" gives details (incl. the scientific name) concerning many legumes listed alphabetically. Includes adzuki, kura mame [sic, kuro mame = black soybeans] (p. 65), and winged beans. By far the longest section is on soy beans (p. 71-82). Contents: Introduction. Nutritional values. Dried soy bean products: Soy grits, soy coffee, soy flour (full fat, medium fat, fat free), soy nuts, soy milk, soy yolk (a concentrated form of soy flour), textured vegetable protein, soy splits, tofu powder. Fermented soy bean products: Black beans–fermented, chao, chee-fan, chiang (Chinese miso), Hamanatto, ketjap, koji, meitauza, miso, mame miso, Hatcho miso, kome miso, mugi miso, natto, okara. Soy sauces: Introduction, Chinese soy sauce, ketjap, synthetic sauce, tamari. Sofu [sic, sufu], tahuri, tamari, tao-cho, taokoan or tao koan, taotjo or tao dji, tempeh, tofu. Tofu from whole beans (homemade recipe). Tofu from powdered [soy] milk.

The part titled "Recipes" (p. 129-92) is divided into three sections. Soy-related recipes in each are listed here: (1) Soups and starters: Iced tofu (p. 134). miso soup (p. 138). Adzuki bean soup (p. 141). (2) Main dishes: Deep-fried tofu (p. 167). Szechuan bean curd (p. 168). (3) Bread, side dishes, sauces and desserts: Miso lemon sauce (p. 186). Miso ginger sauce (p. 187). Peanut butter (homemade recipe, p. 191).

The rear cover states: "These books fight a war against junk food–and win." The author is a woman.

Note: This is the earliest English-language document seen (Feb. 2004) that uses the word "tao koan" (or "tao-koan") to refer to tofu. Address: United Kingdom.

1089. Sayekti, S.; Tien, -. 1981. Usaha-usaha untuk memperpanjang daya simpan tempe kedele [Methods for extending the durability (shelf-life) of soy tempeh]. Thesis (Skripsi), Fakultas Teknologi Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia. 31 p. [Ind]*

Address: Yogyakarta, Indonesia.

1090. Schmidgall-Tellings, A. Ed; Stevens, Alan M. 1981. Contemporary Indonesian-English dictionary: a supplement to the standard Indonesian dictionaries with particular concentration on new words, expressions, and meanings. Chicago, Illinois: Ohio University Press. xv + 388 p. 24 cm. [Ind; Eng]

• ***Summary:*** Soy-related words (many are missing):

"Bungkil–peanut residue after the oil has been pressed out.

"Kacang hijau–mung beans. Kacang tojin–roasted peanuts with garlic. Note 1. Soybean is not mentioned here.

"Kècap manis–Indonesian sweet soy sauce." Note 2. Plain Indonesian soy sauce is not mentioned here.

Note 3. Kedelai, kedelé–Not listed.

"Tahu–bean curd. Tahu pong–bean curd cut into small pieces and baked until it pops up. Tahu tempe–a side dish of tahu and tempe."

Note 4: Tauco–Not listed.

"Témpé–a protein-rich cake of fermented soybeans. témpé bangsa–a small and insignificant nation. témpé pemuda–a good-for-nothing kid. témpé gembos–fermented beancake made from peanut residue."

The Preface begins: "The form of Malay used in the Indonesian archipelago was already different from peninsular Malay when, on October 28, 1928, a nationwide youth congress held in Jakarta named Bahasa Indonesia, the Indonesian language, as the national language. Since August 17, 1945, when Indonesia declared its independence, the language has changed rapidly, especially in the area of vocabulary." Address: 1. Freelance translator and author of many books and articles on the Indonesian language; 2. Prof. of Linguistics, Queens College and the Graduate Center, City Univ. of New York.

1091. Soetrisno, Uken S.S. 1981. The effect of heating time of soybean on vitamin B-6 and folacin retention, trypsin activity, and microstructure change. MSc thesis, Oregon State University, Corvallis, Oregon. 54 p. *
Address: Corvallis, Oregon.

1092. Stobart, Tom; Owen, Millie. 1981. The cook's encyclopedia: Ingredients and processes. New York, NY: Harper & Row, Publishers, Inc. xii + 547 p. Illust. 25 cm. [20 ref]

• ***Summary:*** Soy related entries include: Bean curd (incl. tofu). Bean-curd cheese [fermented tofu]. Bean paste and bean sauce (incl. Red bean paste) is sweet and made from adzuki beans. Yellow bean paste is made from soybeans and is salty and pungent. "Fermented salted black beans" is made from a black variety of soybeans; these salted black beans can be used to make "black bean sauce" which can be used as a flavoring in fish, lobster, chicken, and pork dishes.

Soybean (incl. soya bean, soja bean, flour {"pork soya links" used in Britain during World War II}, sprouts, soy oil, soy sauce, soymilk, vegetable yogurt [soy yogurt], vegetable cheese [soy cheese], tempeh, bean curd skin [yuba], miso, tamari, soy sauce, soy protein isolate, soy granules or grits, textured plant protein [textured soy protein]). The name in four European languages is given.

Soy sauce or shoyu (It "is said to be one of the ingredients of Worcestershire sauce." Incl. the "very heavy Indonesian *ketjap* {*ketjap manis or ketjap benteng*}, which is a type of soy sauce,..."). The name in four European languages is given.

Textured plant protein (a high-protein foodstuff manufactured from plants (soybeans, peanuts, wheat, cottonseed, etc.). "Originally it was aimed at the vegetarian market." Also called "textured vegetable protein" in the USA. Incl. textured soy flour, textured soy protein gel and fibers).

Worcestershire sauce: Begins with a history (starting in 1837) based on the fanciful story so widely known. "Thus was born what is probably the world's best-known and most ubiquitous bottled sauce, one which has become a standard ingredient." Note: How about soy sauce? "The exact formula is secret. Although it is much imitated, nobody seems to be able to get quite the taste of the original."

Also contains entries for adzuki, ketchup ("Javanese katjap [ketjap], for example, is a very sweet soy sauce"), peanut (groundut or monkey nut), pulses, seaweed, sesame seed, tahini.

Note: Millie Owen prepared the American edition of this book. Address: 1. Hassocks, Sussex, England; 2. Northfield, Vermont.

1093. Vaidehi, M.P.; Vijayakumari, J. 1981. Soya delights: Recipes for the use of soybean. Hebbal, Bangalore 560-024, India: University of Agricultural Sciences. xii + 106 p. Illust. No index. 22 cm. All India Coordinated Research Project on Soybean. [17 ref]

• ***Summary:*** Contents: 1. Introduction: Importance of soybean in Indian diet, processing method of soybeans, University of Illinois methods of processing for home and village level use, industrial processing of soybeans, soybean cultivation details, glossary. 2. Boiling method for soy dishes. 3. Roasting method for soy dishes. 4. Steaming method for soy dishes. 5. Frying method for soy dishes. 6. Baking method for soy preparations. 7. Sweet dishes from soybeans. 8. Soy milk and its preparation. 9. Soy fermented foods (tempeh). Tables and figures (12). Address: 1. PhD; 2. Mrs., instructor. Both: Univ. of Agricultural Sciences, Bangalore, India.

1094. Wedhastri, Sri. 1981. Daya proteolytik beberapa strain *Rhizopus Sp.* dalam usar pada substrat campuran kedelai dan kacang tolo [Proteolytic activity of the enzymes from various

strains of *Rhizopus* molds on a mixed soybean and *tolo* bean substrate]. Thesis (Skripsi), Fakultas Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia. 42 p. [Ind]* Address: Yogyakarta, Indonesia.

1095. Wolf, Ray; Hoffman, Jim; Keough, Carol. ed. 1981. Home soyfood equipment: Build-it-yourself. For production and use of high-protein, low-calorie tofu, tempeh, and soymilk. Emmaus, Pennsylvania: Rodale Press. 84 p. Illust. No index. 22 x 29 cm.
• ***Summary:*** For production and use of high-protein, low-calorie tofu, tempeh, and soymilk. Contents: Section I. Introduction. 1. What soyfoods are. 2. Using soyfoods (recipes). Section II. Introduction. 3. Tofu box. 4. Pot-mount press. 5. Table-mount press. 6. Tempeh incubator. Section III. Blueprints. Address: Rodale Press, 33 East Minor St., Emmaus, Pennsylvania 18049.

1096. Wood, B.J.B. 1981. Introduction of new fermented foods into Western culture. *Advances in Biotechnology* 2:467-72. Also in Proceedings of the VIth International Fermentation Symposium; London, Ontario. Academic Press, New York, pp. 467-472. [6 ref]
• ***Summary:*** Discusses soy sauce, shoyu, miso, tempeh, sake, and soy milk. Address: Dep. of Applied Microbiology, Univ. of Strathclyde, George Street, Glasgow G1 1XW, Scotland.

1097. Yepson, Roger B. ed. 1981. Home food systems. Emmaus, Pennsylvania: Rodale Press, Inc. 475 p. Illust. Index. 29 cm. [15 ref]
• ***Summary:*** Extensive, positive information on soyfoods is contained in the chapters on Grains (and bread, see p. 35), Beans (p. 94-95, 99-115; tofu, tempeh), Sprouting (p. 120, 125, 127), Canning (p. 203), and The Home Dairy (p. 298; soymilk, soy yogurt). Reviews and photos of many soyfoods books are given, with a sample recipe from most.

Pages 298 notes: "Soymilk is low in riboflavin (vitamin B-2), totally lacking in vitamin B-12, and has drastically less calcium than dairy milk. On the other hand, soymilk is lower in carbohydrates, has 12% fewer calories, 25% less fat, no cholesterol, and contains 15 times more iron than cow's milk." Address: Emmaus, Pennsylvania.

1098. **Product Name:** Hickory Smoked Tempeh Snack.
Manufacturer's Name: Hi-Pro Tempeh.
Manufacturer's Address: Gardena, Massachusetts.
Date of Introduction: 1981?
New Product–Documentation: Shurtleff & Aoyagi. 1985. History of Tempeh. p. 56.

1099. Hamlin, Suzanne. 1982. Tempeh: "New" food for the 80s. *Daily News* (*New York*). Jan. 6. Good Living section. p. 1, 3, 7. Wednesday.
• ***Summary:*** The article begins: "A super soy food from Indonesia is what tempeh has been dubbed, although Westerners tend to look at it askance, bewildered by its homely looks and uncompromisingly firm shape. In truth, it is not a pretty thing... It might be said to resemble a piece of moldy stucco wall or a remnant of an old sponge. Or it might be likened to a flattened piece of overripe brie cheese." Includes photos of Farm Foods Tempeh Kit, plus many recipes including: Tempeh dip and dressing. Seasoned crisp tempeh. Tempeh fries. Crispy tempeh bits. Broiled tempeh. Winter tempeh salad. Sesame and tempeh salad. Tempeh lasagne. Stir-fried tempeh and cabbage. Tempeh slices in hot sauce.

1100. Hamlin, Suzanne. 1982. Tempeh: It doesn't look like much, this tasty bargain. *Philadelphia Inquirer.* Jan. 17. p. 8-F. Sunday.
• ***Summary:*** This syndicated article first appeared in the *Daily News* (New York). Jan. 6. Good Living section. p. 1, 3, 7. Wed.

1101. Krieger, Verena. 1982. Re: Dr. Johannes Kuhl and fermented foods in Switzerland. Letter to William Shurtleff at Soyfoods Center, Jan. 19. 1 p. Typed, with signature. [1 ref]
• ***Summary:*** Dr. Kuhl, who wrote in the 1950s and is no longer living, advocated a natural-foods diet containing large amounts of fermented foods (one-third to one-half of all foods consumed). He believed that such a diet is the best protection against cancer and radioactivity. "His publisher, who keeps re-editing his books thinks that miso and tempeh would fit perfectly into his theory (K. himself had probably never heard of fermented soybeans).

"I have always been fascinated by fermented foods and feel that they will have to become an important part of the diet, especially with people moving away from meat eating. I hope that I shall be able to write a cookbook some day as a tool on how to integrate them into a practicable diet." Address: Bruchmattstr. 24, CH-6003 Lucerne, Switzerland. Phone: 041-22 50 34.

1102. Hamlin, Suzanne. 1982. Tempeh may be ugly, but its beauty is in palate of eater. *Chicago Tribune.* Jan. 21. p. W_A9B.
• ***Summary:*** This syndicated article first appeared in the *Daily News* (New York). Jan. 6. Good Living section. p. 1, 3, 7. Wed.

1103. Sass, Lorna J. 1982. Budget-conscious Americans are hitting the soy–its not just sauce. *Chicago Tribune.* Jan. 21. p. S_A151.
• ***Summary:*** This article first appeared as: Sass, Lorna J. 1981. "Soy foods: Versatile, cheap and on the rise." *New York Times.* Aug. 12. p. C1, C6. It first appeared in the *Chicago Tribune* on 29 Oct. 1981 (p. N_B19).

1104. Jaccard, Anne-Marie; Krieger, Verena. 1982. Une graine pour l'an 2000 [A grain for the year 2000]. *Illustre* (*Lausanne, Switzerland*) No. 4. p. 59-63. Jan. 27. [Fre]
• ***Summary:*** This grain is the soybean, which is imported in huge quantities from the USA to Europe. The article discusses the soybean plant, tofu, miso, tamari and shoyu, tempeh, homemade soy sprouts, and yuba.

A photo shows Paul Simon, a specialist in macrobiotic food at Lausanne. He makes tofu in the traditional way using nigari, and serves it with tamari and ginger. "Fresh tofu, prepared on the spot, is difficult to find in Switzerland. In the French-speaking cantons of Switzerland, there are only two places: (1) The macrobiotic Center of Lausanne, 7 ruelle de Bourg, and (2) Le Grain d'Or, 7 rue Voltaire, Geneva." Recently a factory opened at Zurich, and another will open soon at Nyon. In the two macrobiotic restaurants of French-speaking Switzerland (Romandie), tofu is found regularly à la carte: at "The Bio" in Lausanne, and "La Moisson" in Geneva.

1105. *Beanfield Newsletter* (*The*) (*SANA, Colrain, Massachusetts*).1982. Tempeh sales. 2(4):1. Jan.
• ***Summary:*** *"The Beanfield* recently contacted 15 tempeh companies around the U.S. to determine industry production figures and general prospects for tempeh sales. While overall poundage remains light except in Massachusetts and California most producers foresee a bright future and expanding sales." Lists weekly tempeh production figures (in pounds) for each manufacturer.

The largest are: Soyfoods Unlimited (San Leandro, California; 5,900, including 3,200 lb of soy tempeh, 400 lb of five grain tempeh, and 400 lb of soy/rice, and 1,000 lb of packaged tempeh burgers every week. In addition they ship some 6,000 lb of tempeh burgers once a month to New England Soy Dairy in Massachusetts for East Coast distribution. Promotion to the local Indonesian market netted a 33% sales increase in one month).

The Tempeh Works (Greenfield, Massachusetts; 4,500), and Pacific Tempeh (Emeryville, California; 2,500). White Wave (Boulder, Colorado; 700). Cricklewood Soyfoods (Mertztoown, Pennsylvania; 500). Northern Soy (Rochester, New York; 500).

1106. **Product Name:** Tempeh Burger.
Manufacturer's Name: Cauldron Express.
Manufacturer's Address: 123 Bolinas Rd., Fairfax, CA 94930. Phone: 415-453-2360.
Date of Introduction: 1982. January.
Ingredients: Pacific Tempeh Deep-Fried Tempeh Burger on a round whole-wheat hamburger bun with lettuce, relish, and tomato.
Wt/Vol., Packaging, Price: 9 oz.
How Stored: Refrigerated.
New Product–Documentation: Talk with Paul Duchesne. 1989. Aug. 26. This was one of two products that he made in addition to products he distributed. It sold well.

1107. **Product Name:** [Tempeh].
Foreign Name: Tempe.
Manufacturer's Name: Haagse Tempe Fabriek.
Manufacturer's Address: Treubstraat 9, 2288 EG Rijswijk ZH, Netherlands. Phone: 070-951974.
Date of Introduction: 1982. January.
New Product–Documentation: Letter from U.A. Soffner. 1984. They started on 12 Jan. 1982. By 1984 they used 200 lb/day of dry soybeans.

1108. **Product Name:** [Tempeh Chips].
Manufacturer's Name: Haagse Tempe Fabriek.
Manufacturer's Address: Treubstraat 9, 2288 EG Rijswijk ZH, Netherlands. Phone: 070-951974.
Date of Introduction: 1982. January.
New Product–Documentation: Letter from U.A. Soffner. 1984. They started on 12 Jan. 1982.

1109. **Product Name:** [Sambal Goreng Tempeh].
Manufacturer's Name: Haagse Tempe Fabriek.
Manufacturer's Address: Treubstraat 9, 2288 EG Rijswijk ZH, Netherlands. Phone: 070-951974.
Date of Introduction: 1982. January.
New Product–Documentation: Letter from U.A. Soffner. 1984. They started on 12 Jan. 1982.

1110. **Product Name:** [Jakso Tempeh].
Foreign Name: Jakso Tempe.
Manufacturer's Name: Jakso. Center for Agriculture & Craftsmanship. (Also/later called Yakso Farms).
Manufacturer's Address: Voorne 13, 6624 KL Heerewaarden, Netherlands. Phone: 088-772-189.
Date of Introduction: 1982. January.
Wt/Vol., Packaging, Price: 300 gm retails for 2.5 guilder (11/83).
New Product–Documentation: Form filled out by Tomas Nelissen of Jakso. 1981. The company opened on 1 July 1981. Soyfoods Center Computerized Mailing List. 1981. Dec. 8. "Jaksco Ct. Craftsmanship, Voorne 13, 6624 KL, Heerewaarden, Netherlands. Tomas Nelissen. Phone 088-772-189." Note: By July 1982 Tomas had been joined by Peter Dekker.

Letter from Sjon Welters. 1982. April 16. Jakso is the first and still the only shop making tempeh from organic soybeans: They are at Voorne 13, Heerewaarden. Attn: Peter Dekker. Form filled out by Jakso. 1982. June. The company started to make tempeh commercially in Jan. 1982. They presently make 315 kg/week of tempeh.

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 31. This was the earliest New Age tempeh shop in the

Netherlands. Probably started on 1 July 1981, but may have been as late as Jan. 1982. Tomas Nelissen: tempeh maker.

Richard Leviton. 1983. Trip to Europe with American Soybean Assoc. Oct/Nov. Unpublished manuscript. p. 24; Sjon Welters. 1989. Soya Newsletter. May/June. p. 14. "Soyfoods in Europe. During the early 1980s, tempeh was rediscovered. "Yakso Farms in the Netherlands was one of the first non-Oriental companies to produce tempeh, made from organic soybeans, and to process it into spreads, paté, sauces, and marinated products." Talk with Sjon Welters. 1989. July 15. This company was founded by Sjon's brother in law (his wife's brother) Tomas Nelissen. Tomas is now a shiatsu instructor.

Letter from Sjon Welters. 1989. July 24. "Yakso started to produce tempeh in 1982 as far as I can remember."

1111. **Product Name:** Okara tempeh.
Manufacturer's Name: Pour Tous Auroville.
Manufacturer's Address: Food Processing Unit, Aspiration 605104 Kottakupam, India.
Date of Introduction: 1982. January.
New Product–Documentation: Letter from Alain Bernard. 1982. Jan. 20. "We make okara tempeh each time we make tofu."

Interview conducted by Anthony Marrese. 1990. Aug. "The best I can tell, this company made tempeh for about a year or two, then stopped about 2 years ago when they ran out of culture. They are planning to order more culture and start again in 1991."

1112. Sastraatmadja, Dudi Djuhdia; Saono, Susono. 1982. Oncom inoculum. Presented at The UNESCO Regional Symposium on Microbiology. Held 26-29 Jan. 1982 at Bandung, Indonesia. *

1113. Soyfoods Center. 1982. Tempeh shops in the West. Lafayette, California. 2 p. Jan. Unpublished manuscript.
• ***Summary:*** Lists the name, address, and phone number of 41 tempeh shops in the USA, 3 in Australia, 3 in Canada, 1 in England, 5 in the Netherlands, and 1 in West Germany. Address: Lafayette, California. Phone: 415-283-2991.

1114. Wollner, Joel. 1982. History of Erewhon, macrobiotics, and soyfoods in America (Interview). Conducted by William Shurtleff of Soyfoods Center, Feb. 2. 2 p. transcript.
• ***Summary:*** Evan Root was the first attendant at the Erewhon retail store, below street level at 303-B Newbury Street. He lacquered the walls with Michio. Evan is a great storyteller, very intelligent. The initial store was just one room, about10 by 20 feet. Very few people came in to buy food, so it was more like a stock room than a store. Some evenings there were lectures there. Redwing Books now occupies that space. Most of the food (a tin of miso, a keg of tamari) was just being sent by the Kushis' friends from Japan as gifts; it didn't go through customs.

The Kushis got nigari and made tofu at home. It was not for sale, but for dinner guests and cooking classes. Joel made some tofu using lemon juice when nigari was not available.

As tofu started to become more popular, Erewhon started to buy it from a tofu maker in Boston's Chinatown. First they just bought and sold that tofu, but before long (in about 1973-74) they convinced him to start making nigari tofu for them. They guaranteed to buy what he made, and they sold him the nigari at cost. This might have been the first nigari tofu made in USA. A lot of nigari tofu is still made in Boston's Chinatown. Joel thinks the tofu maker was located on Tyler, Street, perhaps Yah Kee. Nigari came in 66 pound sacks from Japan. Erewhon also sold small quantities of nigari in the retail store. Chinatown was Erewhon's main source of tofu until Laughing Grasshopper appeared.

What was the macrobiotic movement's contribution to the history of soyfoods in the United States? Macrobiotic teachers and students talked and wrote about them, ate them, and sold them. They felt soyfoods were an important part of a good diet. They educated people and developed a market for soyfoods Few Americans had eaten miso and tofu at home before 1966–the year Erewhon started. Macrobiotics were the first Caucasian Americans to really use soyfoods regularly. Before that, soyfoods (except perhaps soy sauce) were just interesting oddities. Once could say that the macrobiotic movement introduced soyfoods to America.

As for tofu, Joel thinks that Michio Kushi's students misinterpreted his remarks about tofu being yin. Macrobiotics now eat tofu regularly, 3-4 times a week. There are endless ways to prepare it. It's been years since Joel has heard that tofu is "too yin."

What did *The Book of Tofu* (published in Dec. 1975) do for tofu? It expanded its relevance for the Western diet. Before that book, most of the tofu in the United States was consumed by people of East Asian ancestry.

Charles Kendall played a key role in making and introducing natto, mochi, and amazake to Caucasian Americans. He made these foods in his home and sold them locally. Initially, it was not a formal / legal business. But today his business, Kendall Foods, sells $500 a week of these three foods. He has been making natto for 4-5 years. He was America's first Caucasian natto maker. Natto was served in macrobiotic restaurants in Boston.

The latest soyfood to hit Boston has been tempeh. It's been a phenomenal success. Macrobiotics are going crazy over it. Thom Leonard has been giving lots of tempeh classes for the past 1½ years. For more than a year, lots of sandwich makers in Boston have been making and selling tempeh sandwiches. Tempeh is made into cutlets, burgers, tempeh mock-tuna salad. Why is it so popular? Because it is rich and meaty in texture and flavor–the opposite of rice. Most macrobiotics crave rich, meaty foods.

Ron Kotzsch is very close to the Kushis. A very

unpretentious person with a wonderful sense of humor, he is now teaching in North Carolina. He is friends with Helen and Scott Nearing. He toured China and Japan with John Denver, the singer and songwriter–who did a benefit for Michio's new college.

How does Joes see the future of Erewhon? He thinks the company will focus on manufacturing only. Now is the critical time. He'd give Erewhon a 30-70% chance of survival. Address: Boston, Massachusetts.

1115. Nabben, Alexander. 1982. Re: Work with soyfoods in Germany and France. Letters to William Shurtleff at Soyfoods Center, Feb. 20 and July 17. 1 p. Typed, with signature. [Eng]
• ***Summary:*** "I have given our vegan restaurant [Wildwuchs] in Munich to friends, who are continuing to make tofu there. We [Irene and I] went with our friends from the Eire-Farm to the mountains of southwest France to start a new European Farm. In the beginning we are living in tents, planting a big soybean field and more. But we're still connected with Germany, so we're going to have a tour through the country, doing soy-cooking lessons in Berlin, Hamburg, Bremen, Frankfurt (at the International Bookfair), Stuttgart and in Munich. Beside all that we're working on a small book about soyfoods and life alternatives... Soon we'll have some people with us who worked in the tempeh plant on the Tennessee Farm." Address: Europa Farm, Ferme la Garringue, Besse-Festes St. André, 11300 France; or Berlin, West Germany.

1116. Brody, Jane E. 1982. Winged bean hailed as a potent weapon against malnutrition. *New York Times.* Feb. 23. p. C1, C4. [1 ref]
• ***Summary:*** "The winged bean, a plant virtually unknown six years ago, has definitely taken off." Prof. Theodore Hymowitz says, "it's like an ice cream cone–you eat the whole thing." "The winged bean seed rivals the soybean in the quantity and quality of its protein."

Like the soybean, the winged bean can be pressed to obtain an edible oil. It can also be sprouted, or made into tofu, tempeh ("an Indonesian fermented bean cake") or a nutritious milk-like drink. Address: New York.

1117. Tallent, W.H. 1982. Shoyu update. *Northern Regional Research Center, Notes from the Director* No. 1493. p. 2-3. Feb. 26.
• ***Summary:*** "On February 22-23, Drs. H. Hashimoto (manager, quality control) and D. Fukushima (executive vice president and general manager) of Kikkoman Foods, Inc., visited the Center [NRRC]. Their Walworth, Wisconsin, plant, which began producing fermented shoyu in 1973 with a capacity of 2.6 million gallons per year, now has expanded to produce about 5.2 million gallons. Their fermentation is based upon wheat and soybeans. Currently they have about 45% of the soy sauce business in the United States and sales are increasing rapidly.

"Total U.S. sales of soy sauce in 1956 was about 1 million dollars (consumption 15 ml per capita per year); this has now increased to 100 million dollars (148 ml per capita per year). Many years ago we supported yeast genetic work on this fermentation based upon Dr. L.J. Wickerham's (NRRC, retired) demonstration that the shoyu yeast had mating types and that improved strains could be developed in a genetic improvement program.

"Kikkoman now has a whole line of dehydrated products based on shoyu that are used to make instant teriyaki sauce for chicken, beef, and seafood. A relatively new product is a steak sauce that contains applesauce, shoyu, spices, and salt. H.L. Wang and C.W. Hesseltine (FL [Fermentation Lab]) supplied the Kikkoman visitors with information on tempeh and pointed out the similarities of the preparation of this food with their method of producing koji for the shoyu fermentation. Drs. Hashimoto and Fukushima also talked with W.J. Wolf and other Meal Products Research (OC [Oilseed Crops]) members concerning isoflavone analysis, phosphatidyl-choline autoxidation, and nutritional properties of soybean proteins." Address: Center Director.

1118. **Product Name:** Tempeh Salad (A Tuna-Fish-Style Crunchy & Creamy Salad or Sandwich Spread).
Manufacturer's Name: Cricklewood Soyfoods.
Manufacturer's Address: R.D. #1, Box 161, Mertztown, PA 19539.
Date of Introduction: 1982. February.
New Product–Documentation: Leviton. 1982. Soyfoods. Summer. p. 33. Packed in 8 oz. tubs with a 2 week shelf life. Ad in CRC Reports. 1982.

1119. **Product Name:** Tempeh (Fresh, Unfrozen), and Breaded Tempeh Cutlets.
Manufacturer's Name: Finger Lakin' Good.
Manufacturer's Address: 103 N. Aurora St., Ithaca, New York. Phone: 607-272-9177.
Date of Introduction: 1982. February.
How Stored: Refrigerated.
New Product–Documentation: Call from J.J. Schultz, who is doing a market study on tempeh for a class on food marketing at Cornell in New York. 1991. Nov. 17. About ten years ago a man named Bob Bohdan made tempeh at his restaurant in Ithaca, and sold it both in the restaurant and to natural food stores in the area.

Call from J.J. Schultz. 1992. Jan. 28. Bohdan's tempeh company was named Finger Lakin' Good, after the Finger Lakes region of New York. It was in business from 1982 to 1986, making 75 to 100 lb/week of regular soy tempeh and breaded tempeh cutlets. Most of his products were sold fresh at the very large and old Greenstar Food Co-op in Ithaca. He made these foods in the back of his shop and had a retail store in front, where he sold them along with

health foods and ice cream. He discontinued the business in 1986–he needed more time off–and went to work for a food distributor in New York. He works out of his home (Phone: 607-272-9177). Schultz wrote a report for his class and gave a free copy to Armand Ascher, who is a vegetarian interested in making tempeh. The report concluded that Ascher could make money making tempeh in Ithaca, but not a lot. The key would be to make second-generation tempeh products. Schultz interviewed many consumers on their attitudes toward tempeh.

Talk with Bob Bohdan and his wife Joan Tregaskin. 1992. Jan. 31. Bob first tasted tempeh in 1975 at The Tofu Shop (a soy deli or restaurant affiliated with Northern Soy) in Rochester, New York. He had been a vegetarian since 1974 and he liked it very much. Then their friend Hananya Kronenberg at Cornell got him even more interested. Bob has a BSc degree in nutrition from Cornell but was never introduced to tempeh as part of his studies. After graduation, he became director of the county's Community Food and Nutrition Program. But when President Reagan took office, his program was eliminated, so he started his own small business, Finger Lakin' Good, which had a small cafe in the front and a food manufacturing plant in the back. They started out making only honey-sweetened ice cream, but then they wanted to have some sandwiches in the café, so in January or February of 1982 they started making fresh tempeh. Some of the tempeh was served in the restaurant (the favorite was the Tempeh Reuben Sandwich, followed by Sweet & Sour Tempeh) and some was sold wholesale to other food retail stores, especially the Greenstar Cooperative Market in Ithaca. About half the company's income came from the retail store, and half from the wholesale food manufacturing operation in the back. The business was financially successful. The only employee in the shop was a Cambodian refugee named Hac Lay, who was an wonderful man. They felt the two keys making a top quality product were wet dehulling and selling the tempeh fresh (not frozen). Fresh tempeh has a better flavor and aroma, a better appearance (because of the fluffy white mycelium), and a better texture (because the beans are more tightly bound together by the mycelium). Using a wet dehulling process gives more whole soybean cotyledons (halves) and less small, broken pieces, which gives more interstitial spaces for the mycelium to grow, and thus a tighter bind and more mushroomy flavor. Of their three commercial products, fresh tempeh accounted for 70% of sales, black bean and soy tempeh 25%, and tempeh cutlets 5%. Not much ice cream was wholesaled, and then only for the first few years.

They ran the business for 5 years, then someone wanted to buy the building and Bob wanted his weekends free, so in the fall of 1986 he sold the location and equipment. He did not sell the tempeh business, but he could not find anyone to take it over. Hac Lay tried for a few months, then he stopped. He gave free consultation and advice to at least 3 other very interested parties. He feels that, to this day, anyone who uses his basic model, would have a successful business. He is still eager to help that person get started. It is there for the taking. Then he began to work for Casa Imports, which sells imported foods from Utica, New York.

1120. **Product Name:** Tempting Tempeh Burger, Barbecued Tempeh Burger, and Mock Chicken Salad.
Manufacturer's Name: Fresh Foods.
Manufacturer's Address: Boulder, Colorado.
Date of Introduction: 1982. February.
New Product–Documentation: Talk with Gloria Gilbert. 1989. Sept. 11. She got the idea of a tempeh burger sandwich from Marty Roth and Barbara Svenning in late 1981. It was a gift from them at the time Gloria bought their sandwich business. Gloria introduced the Tempting Tempeh Burger in late Feb. or early March 1982. She bought the basic seasoned tempeh burger from Steve Demos, then sold it between buns with all the trimmings, in a plastic wrap, to the same outlets as her amasake, to markets in the Boulder, Denver, Ft. Collins, and maybe northern New Mexico. In April 1982 she launched a Mock Tempeh Salad made with plain soy tempeh from White Wave. Then in about June 1982 she introduced Barbecued Tempeh Burgers, a variation on the original burger but with barbecue sauce. At the peak, she was making about 300 of the two tempeh burgers each week. Years later she made a Quinoa Salad without soy.

1121. Kronenberg, H.J. 1982. A quality control and spore production facility for tempeh makers. *Soyfoods.* Winter. p. 32-34, 38-40. [13 ref]
• ***Summary:*** An expert on the subject, with considerable experience making tempeh starter culture, discusses: Organoleptic evaluation (taste testing) vs. product parameters for determining quality (a pH of 6.5 and soluble solids content of about 21% are considered optimum). A quality control report for tempeh makers. The adequate space for a quality control laboratory (ideally not less than 80 square feet). Storage, waste disposal, physical comfort of the lab technician, a protected environment for aseptic microbiological transfers, a positive pressure hood vs. a filtered laminar air flow system (which provides more flexibility and freedom of movement). Standards of identity of tempeh.

The tests: Standard plate count, pH, viable spore count, coliform count, net weight, organoleptic evaluations, surface microbial count, microscopic examination.

Equipment and materials: Autoclave, pH sensitive paper, kitchen scale, thermometers, nutrient media, . magnetic stirring rods, pressure cookers, colony counter, incubator, inoculating needles, culture tubes and petri dishes, Fernbach flasks, glass pipettes, graduated cylinders, chemicals, other miscellaneous items.

Environmental control: Temperature, special epoxy

paints, cleaning compounds, high efficiency particulate air (HEPA) filter, positive pressure hood, laminar system, prefilters, ultraviolet lights. Contains numerous illustrations.

A table gives suppliers of lab equipment. Address: Cornell Univ., Ithaca, New York.

1122. Leviton, Richard; Shurtleff, William. 1982. The coming tempeh boom. *Soyfoods.* Winter. p. 26-34, 38-40. Cover story. [13 ref]

• ***Summary:*** Company profiles of Soyfoods Unlimited (San Leandro, California) and Pacific Tempeh (Emeryville, California). "On February 15, 1981, Valerie, John, and Gary Robertson began tempeh production in their state of the American art $100,000 plant in San Leandro, California." The 1,000 square foot plant has a capacity of 10,000 lb/week of tempeh. "While the three Robertsons are each principals, Valerie is the chief dynamo, tempeh-maker, and sales-stormer, staging three in-store product demonstrations (called 'Tempeh Tastings') every week while managing their line of three tempehs and tempeh burgers." "Soyfoods Unlimited produces 1,000 pounds of tempeh weekly and 1,000 pounds of marinated, steamed tempeh burgers. The tempeh intended for distributors is frozen immediately, then thawed and predated 16 days ahead of the day of delivery. Fresh tempeh is steamed then refrigerated until delivery. The Robertsons refrain from vacuum packing their tempeh in order to preserve the firm, white cake; the vacuum compression tends to darken and crush the fragile white mycelium. Although their tempeh was presented initially as a frozen food, the lack of product shelf visibility prompted the Robertsons to supply a refrigerated tempeh as well. The tempeh burgers, which are vacuum packed in six ounce plastic bags (with two burgers) are marinated in a steam kettle, then steamed... Their Brown Rice Soy Tempeh is fast becoming popular while the burgers are available in both round and square shapes (called "Tempeh Cutlets / Burgers").

"The energetic Valerie continually drives around the Bay Area to conduct new Tempeh Tastings in the high volume stores among the region's natural foods outlets. At a typical demonstration she offers samples of Tempeh with Herb Tomato Sauce, Sweet and Sour Tempeh, Mock Chicken Tempeh Salad, and Tempeh Burgers. To complement the demonstrations, the Robertsons have launched a cautious advertising campaign targeted for both the Bay area and selected national natural foods publications."

The plant has a powerful sanitation system, which is described in detail.

Pacific tempeh was launched in Aug. 1980 on a $40,000 investment that secured a 1,000 square foot facility in Emeryville, California. "The plant has a per week capacity of 5,500 pounds while current weekly tempeh production is 2,400 pounds."

Photos show: (Cover) Valerie Robertson standing behind a table of tempeh dishes and promotional materials.

(1) Valerie Robertson pulling a tray of finished tempeh in perforated plastic bags from a rolling rack. (2) Inside of the Soyfoods Unlimited plant. (2) Travis Burgeson holding a tray of finished tempeh. (4) A person vacuum packing tempeh burgers. (5) Travis Burgeson standing by a rolling rack. Address: 1. 100 Heath Rd., Colrain, Massachusetts 01340; 2. Soyfoods Center, P.O. Box 234, Lafayette, California 94549. Phone: 413-624-5591.

1123. Leviton, Richard. 1982. Soy delis: Fast, natural, and growing. *Soyfoods.* Winter. p. 35-37.

• ***Summary:*** Discusses the Well Bean Deli in Santa Cruz; Real Food Tofu Cafe in Redwood Valley; and The Tofu Shop in Arcata. All in California. Two photos show each location.

Concerning The Tofu Shop (768 18th St., Arcata, CA 95521): It "combines retail take-out with small scale tofu production and bakery products in a wood-lined airy storefront. Owner Matthew Schmit (who earlier managed a soy deli in Telluride, Colorado) has filled his 1,000 square feet with a small commercial cauldron-style tofu shop, small bakery, and 200 square foot retail front, all of which he launched on $11,000 investment on December 15, 1980. The cozy retail space features racks of soy cookbooks and crackers, teas, packaged miso, tofu and tempeh kits, noodles,

seaweed, and a handsome reach-in cooler where the tofu herb burgers, tofu spinach pies, vegetable tofu sushi rolls, tofu tahini salad, tofu herb dip, tofu cream pies, and bottled soymilk are displayed. Monthly sales average $3,500 with some outside distribution of tofu, soymilk, and burgers. The deli attracts walk-in customers from the nearby Humboldt branch of the University of California while tofu burgers and tofu spinach turnovers are probably the most popular products at the deli." Photos show: (1) Matthew Schmit standing at the wood-lined counter. (2) Matthew and Susan [Suzanne] Schmit with their shop's specialties. Address: 100 Heath Rd., Colrain, Massachusetts 01340. Phone: 413-624-5591.

1124. Pacific Trading Co. (Living Lightly brand). 1982. Product catalog. P.O. Box 40429, San Francisco, CA 94110. 12 p. [1 ref]
• ***Summary:*** Includes photocopies of all product labels, showing all ingredients. A pioneering and extremely creative product line. Address: San Francisco, California.

1125. **Product Name:** Living Lightly Tempeh Enchiladas.
Manufacturer's Name: Pacific Trading Co. (Marketer-Distributor).
Manufacturer's Address: San Francisco, California.
Date of Introduction: 1982. February.
Ingredients: Filling: Soy & brown rice tempeh, rennetless raw milk mild Cheddar cheese, onions, sea salt, spices, soy oil. Sauce: Water, rice flour, soy oil, chili powder, apple cider vinegar, sea salt, spices. Flour tortilla: Whole wheat flour, water, soy oil, sea salt.
Wt/Vol., Packaging, Price: 18 oz. Plastic wrapped on ovenable tray.
How Stored: Frozen.
New Product–Documentation: Label.

1126. **Product Name:** Living Lightly Tempehroni Pizza.
Manufacturer's Name: Pacific Trading Co.
Manufacturer's Address: P.O. Box 40429, San Francisco, CA 94110.
Date of Introduction: 1982. February.
Ingredients: Crust: Whole wheat flour, water, yeast, sesame seeds, salt. Sauce: Tomatoes, onions, carrots, parsley, soy oil, garlic, green pepper, spices. Rennetless mozzarella cheese, Tempehroni (Soybeans, brown rice, water, tempeh culture), shoyu soy sauce, herbs, spices.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Frozen.
New Product–Documentation: Label. "No Preservatives."

1127. **Product Name:** Living Lightly Sweet & Sour Tempeh (Meatless Chinese Entree).
Manufacturer's Name: Pacific Trading Co.
Manufacturer's Address: San Francisco, California.
Date of Introduction: 1982. February.
Ingredients: Soy & Rice tempeh, water, green pepper, mushrooms, carrots, onions, honey, soy oil, shoyu soy sauce, potato starch, apple cider vinegar, garlic.
Wt/Vol., Packaging, Price: 12 oz.
How Stored: Frozen.
New Product–Documentation: Label. "Ready to Eat. For delicious tempeh recipes see The Book of Tempeh by Shurtleff & Aoyagi."

1128. **Product Name:** Living Lightly Tempeh Patties (Meatless Burgers: Vacuum Packed).
Manufacturer's Name: Pacific Trading Co.
Manufacturer's Address: P.O. Box 40429, San Francisco, CA 94110.
Date of Introduction: 1982. February.
Ingredients: Soy tempeh (made from organic soybeans), natural soy sauce, herbs, spices.
Wt/Vol., Packaging, Price: 6 oz vacuum packed.
How Stored: Frozen or refrigerated.
Nutrition: Per 3 oz.: calories 120, protein 12 gm, sodium 443 mg, carbohydrates 8 gm, fat 4 gm.
New Product–Documentation: Label. Undated. 3.5 inch diameter. Red and blue on white. "Meatless, Ready to eat. Not fried! No cholesterol. Shelf life at 40ºF is up to 28 days."

1129. **Product Name:** Living Lightly Chili Con Tempeh (Meatless Chili).
Manufacturer's Name: Pacific Trading Co.
Manufacturer's Address: San Francisco, California.
Date of Introduction: 1982. February.
Ingredients: Pinto beans, soy & rice tempeh, tomato sauce, onions, water, jalapeno peppers, serrano peppers, soy oil, chili powder, spices, sea salt, shoyu soy sauce, garlic powder.
Wt/Vol., Packaging, Price: 12 oz.
How Stored: Frozen.
New Product–Documentation: Label. "Ready to Eat. For delicious tempeh recipes see The Book of Tempeh by Shurtleff & Aoyagi."

1130. Shurtleff, William; McBride, G.; Robertson, G.V.J.; Burgeson, T. 1982. Dealing with tempeh contamination. *Soyfoods.* Winter. p. 29-32. [1 ref]
• ***Summary:*** The cause is probably a "Bacillus problem," a buildup in your shop of bacteria of the genus *Bacillus,* more specifically *Bacillus subtilis,* the bacterium used to make natto. Steps to take when a Bacillus problem occurs (listed in approximate order of importance and effectiveness): 1. Have a sample of your tempeh tested at a reputable food laboratory. 2. Test your starter and increase dosage. 3. Try to find out how your problem started. 4. Lower incubation temperature. 5. Sanitize your shop. 6. Cool beans before inoculation. 7. Increase your vinegar usage. 8. Cook soybeans longer. 9. Experiment with various mixes of the

*** Tempeh Makers: Post this in your plant for emergencies.***

DEALING WITH TEMPEH CONTAMINATION

By William Shurtleff, Gordon McBride, Gary, Val, and John Robertson, Travis Burgeson

Symptoms: Tempeh that usually turns out beautifully suddenly looks bad. Each cake is unusually wet, the mycelium is often very weak, the incubation time is longer than usual, and the finished tempeh and incubation room have a strong sweet-sour smell of ammonia or *natto*.

Cause. You probably have a "Bacillus Problem," a buildup in your shop of bacteria of the genus *Bacillus*, probably *Bacillus subtilis* (pronounced *buh-SIL-us SUT-il-us*). These bacteria, widely used in Japan to produce the fermented soyfood natto, wreak havoc in tempeh. They may have entered your plant on a recent shipment of soybeans. Or they may have multiplied because of generally unsanitary manufacturing conditions, poor production techniques, or a spell of hot weather. Most *Bacillus* problems occur in summer, or in warm humid weather. Note: Tempeh can also be contaminated by microorganisms other than *Bacillus*. A list of these less common forms is given at the end of this article.

About Bacillus: *Bacillus Subtilis* is a very common bacterial contaminant, widely found in soil or dust (as on soybean seed coats), air, or water. Microscopic, rod-shaped, aerobic (requiring air to grow), and thermophilic (liking warmth), these bacteria are extremely difficult to get rid of, in part because they produce spores within their own bodies (intracellular endospores), which are extremely resistant to heat. While the bacteria themselves are generally killed by 1 to 4 minutes of boiling, and less than 1 percent of their *spores* will survive 20 to 30 minutes of boiling in water at atmospheric pressure;[1] some of their spores can survive boiling at atmospheric pressure for 1 hour or more; some even survive pressure cooking (autoclaving) at 15 pounds pressure for 20 minutes (but not 30 minutes). During soaking of your soybeans, the spores will tend to sporulate into vegetative cells (which are easily killed by boiling); however don't soak for longer than 8 hours at room temperature, or the new bacteria will begin to produce more spores.[1]

The only chemical acceptable in a food plant that will kill these spores is bleach (5% sodium hypochlorite; *Clorox, Purex*). *Bacillus subtilis* grows best at about 40°C (104°F) in a moist environment. And while they will not cause food poisoning, they will spoil your tempeh. They grow especially well on soybeans. The following steps, then, are designed to create conditions in your plant which are favorable to the growth of *Rhizopus* and unfavorable to *Bacillus*.

HOW TO PREVENT A BACILLUS PROBLEM

1. Develop a Rigorous Plant Sanitation Program: Start by reading several good books on food sanitation and studying or re-studying the chapters on soy plant sanitation in *Tempeh Production* and *Tofu & Soymilk Production* (by Shurtleff & Aoyagi). Then call the local branch of one of America's major sanitation supply companies (Oxford Chemical Co., Bonewitz Chemical Co., Klenzade, Diversey-Wyandotte) for a *free* plant visit and consultation. They will help you to design a sanitation program suited to your budget, food product, and philosophy, which almost certainly will save you money in the long run. They will analyze problems, answer questions, help train your cleanup crew, and even give free emergency visits. Then put your sanitation program into writing and see that it is understood by all and followed.

2. Watch out for Bacillus-Contaminated Soybeans: Virtually all batches of soybeans contain some level of *Bacillus* contamination on or inside the seed coat, but some batches have much higher contamination levels than others. Beans containing higher than 10 percent moisture tend to have higher *Bacillus* loads. Environmental conditions during harvesting and storage can also affect the load. Be sure to store your beans in a dry, cool, dust-free location to help keep down the load. If you have had no *Bacillus* contamination problems in the past, keep buying from your same soybean supplier. If you are forced to change suppliers, test the new beans (before using them regularly in your shop) by making a small sample batch of tempeh at home, or by crushing a few of the new beans, moistening them, putting them on a nutrient agar culture plate, incubating them for 24 hours, then testing for the level of contamination compared with beans you have been using. Be sure to keep soybeans which are heavily contaminated with *Bacillus* out of your shop at all costs. Large shops may want to test a sample of beans from every shipment they receive.

1. Swain, E.W., Wang, H.L. and Hesseltine, C.W. In press. "Heat resistant aerobic bacterial spores in soybeans," *Applied and Environmental Microbiology*.

STEPS TO TAKE WHEN A BACILLUS PROBLEM OCCURS

The following are listed in approximate order of importance and effectiveness.

1. Have a Sample of Your Tempeh Tested at a Reputable Food Laboratory: Just as each person or family should have a doctor they know to turn to in emergencies, so each tempeh plant should have established a good working relationship with a nearby, professionally-run food laboratory. To locate such a lab, look in the Yellow Pages of your phone directory under "Laboratory--Testing" or contact your nearest city, county, or state health inspector (listed in the phone book). Ask the lab for a list of bacterial contaminants present in the tempeh, with special emphasis on *Bacillus* species; tell them also of the other possible contaminants listed at the end of this article. After the analysis, ask them about solutions to your problem. Many lab workers are friendly and willing to spend time helping you. They may show you how to do your own tests in the future.

2. Test Your Starter and Increase Dosage: A viable propagule count (probably best done by the same food lab) will tell you if your starter has the required number of propagules per unit, and if it contains any contaminating organisms. If your starter is okay, increase the dosage you are using by 60%; if that solves the problem, next time increase it by only 30%, until you find the lowest dosage required to give good tempeh, allowing the *Rhizopus* a strong advantage over the *Bacillus* "invaders."

3. Look for Other Clues and Keep Careful Production Records: While having your tempeh tested and increasing your starter, look for other clues to the cause of your problem. Did your problem start with beans from a new shipment? If so, examine the beans for *Bacillus* contamination, as described above. Did you just have a spell of hot and or humid weather, which always aggravates contamination problems? If so, proceed with the steps below.

One key aid to tracking problems is to keep records in a ledger of each batch of tempeh made. Record the date, outside temperature and relative humidity, starting time, amount of beans, amount of vinegar, cook time, centrifuge and rinse times, amount of starter used, date of starter, number of bags filled, times in and out of incubator, total time in incubator, incubator and exhaust fan settings, and (most important) your comments and observations.

4. Lower Incubation Temperature: Set your incubation room thermostat to 28-29 °C (82-84 °F) and set the ceiling exhaust fan to go on at 29.5-30 °C (85-86 °F). Be sure the exhaust fan is powerful enough to prevent temperature buildup in the incubation room. To check this, put a maximum-minimum thermometer in the room at the level of the tempeh and check the maximum temperature.

5. Intensify Your Sanitation Program: Make a mixture of 7:3 bleach to water. Spray this on all food contact surfaces and any areas that tend to stay wet, such as under centrifuges. Leave for 4 hours, then rinse off to prevent corrosion of stainless steel. This will kill *Bacillus* vegetative cells and spores. To kill *Bacillus* vegetative cells, use a quat (quaternary ammonium), sponging it on the walls, ceiling, and floor of your incubation room, and on working surfaces. Note that quat also kills *Rhizopus*, so rinse it off well, *Do Not mix bleach and quat:* the mixture produces a toxic gas.

Call in your sanitation supply company salesman and ask for his free help and advice. Go over your entire sanitation program. (1) Do you wash and sanitize your shop thoroughly after each production run, especially hard-to-reach areas such as inside the centrifuge? (2) Do you have several dipping stations in the plant (basins filled with 1 ounce iodine mixed with 5 gallons water) for regularly dipping your hands? (3) Do all workers maintain high standards of personal hygiene: clean clothes, aprons, footwear, hair-and-beard nets, etc.? (4) If you have a boiler, do you use a steam gun with a disinfectant inlet? This is a potent weapon against contaminants. You may also try using a "power jet fogger" (cost: $75 new from Oxford Chemicals; also called "atomizer-mister") which can fill your shop or incubation room with a fine mist of sanitizer.

6. Cool Beans Before Inoculation: Spray them in the centrifuge with sanitary tap water. Measure the temperature of the beans in the mixing bowl or vat with a thermometer, letting it drop to 36-37 °C (98 °F) before inoculation. Any hotter temperature aids *Bacillus* growth.

7. Increase Usage of Vinegar or Lactic Acid: Try using 20% more vinegar than you have been. Molds grow better at low pH than bacteria. Too much vinegar, however, will inhibit mold growth. Even better, try using lactic acid, which gives a low pH with little mold inhibition.

8. Cook Soybeans Longer: Boil beans for 60 to 75 minutes. This will help kill *Bacillus* vegetative cells. Longer cooking may require slightly longer cooling.

9. Call the Fermented Foods Contamination Hotline: GEM Cultures in Fort Bragg, California, has established a hotline (phone: 707-964-2922) to help you with contamination problems and to keep track of general problems occurring throughout North America.

10. Experiment with Various Mixes of the Above: Pay special attention to and keep records on how the weather and seasons affect your tempeh, and what processing changes are required to give good tempeh under various conditions. Watch for patterns in the comments on your production records. Please write The Soyfoods Center (P.O. Box 234, Lafayette, CA 94549) to report any new techniques you find to be effective in dealing with any type of tempeh contamination problem; we will then share that information with others in future editions of our book *Tempeh Production*.

Other Tempeh Contaminants: In addition to *Bacillus subtilus*, there are a number of other tempeh contaminants, which you and your food lab should watch out for:

A. *Rhodotorula Yeast*: These red-orange, red, pink or yellow yeasts may cause tempeh discoloration (colored spots or areas) after 2 to 3 days.

B. *Pseudomonas:* These food-putrifying bacteria, which grow well at refrigeration temperatures, give tempeh an undesirable sharp odor; they may have a mustard-yellow color, or be colorless.

C Slime Molds: These can make tempeh bright yellow.

None of these organisms cause food poisoning, but they can easily spoil your product.

above.

Photos show: (1) A person spraying sanitizers onto a rolling rack after production. (2) John, Valerie, and Gary Robertson smile through their hairnets. (3) Valerie Robertson preparing tempeh for freezing or steaming before delivery to increase its shelf life. Address: 1. Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1131. Shurtleff, William. 1982. Otten's Indonesian Foods. *Soyfoods.* Winter. p. 28.
• ***Summary:*** This company is run by Mary and Irene (mother and daughter) Otten, of Indonesian descent. "Mary Otten started the earliest known U.S. tempeh shop in 1961 in Albany, California, where she produced it in a basement and sold it to friends and catered parties." Mary and Irene moved to Oakland, then to 322 Key Blvd. in Richmond, California, where in 1976 they started Otten's in a small plant behind their home. In addition to tempeh they make a line of ready-to-eat tempeh dishes: Sambal Bali Tempeh, Tumis Tempeh, Oblok-Oblok Tempeh, Sayur Lodeh Tempeh, Sweet & Sour Tempeh, Sambal Goreng Tempeh, Terik Tempeh, and Sambal Goreng Udang dan Tempeh. A photo shows Mary and Irene Otten. Address: Lafayette, California.

1132. *Soyfoods.*1982. Soyfoods marketer. Winter. p. 57.
• ***Summary:*** "Mark Brawerman's Pacific Trading Co. distributes a diverse line of frozen and refrigerated soyfoods around the greater San Francisco area. Besides his stock of yogurt, cheeses, juices, eggless honey dairy ice cream, and middle eastern specialty foods, Brawerman distributes soyfoods from three West coast producers including Island Spring (Smoked Soyloaf, Steamed Tofu), Redwood Valley (Almond Creamie, Berry Creamie, Soysage, Tofumous, Missing Egg), and Soyfoods Unlimited (Tempeh, Tempeh Burger). Brawerman also handles two brand name lines of his own, Jolly Licks Non-Dairy Frozen Desserts and Living Lightly. The Jolly Licks line of soymilk ice creams was introduced in July 1980 and includes these flavors: Toasted Almond, Strawberry, Coffee, Carob, Orange, Carob Mint, Vanilla, Chocolate, (in pints and 5 oz cups). The Living Lightly line includes soft and firm tofu (water-packed and vacuum packed), tofu cutlets, SoyMoo beverage (plain, vanilla-cinnamon, in pints and quarts), two flavors of Tofu No-Cheese Cake (Hawaiian, Strawberry, at 12 oz), and six frozen tofu entrees, (Tofu Tamale, 7 and 12 oz; Tofu Enchilada, 12 oz; Tofu Lasagna, 18 oz; Tofu Ravioli, 14 oz; Tofu Italian Salad, 8 oz; and Tofu No Egg Salad, 8 oz)."

1133. *Soyfoods.*1982. Welcome to the all tempeh restaurant. Winter. p. 29.
• ***Summary:*** About Java Murni Indonesian Ricetable (4509 Adams St., Carlsbad, California 92008). Lists all the tempeh dishes on the menu. Java Murni also produces a tempeh burger.

1134. Tibbott, Seth. 1982. Turtle Island Tempeh, Oregon. *Soyfoods.* Winter. p. 31.
• ***Summary:*** "Turtle Island Soy Dairy is a small tempeh shop in Forest Grove, Oregon. Three of us make tempeh four nights a week in an old creamery building and we make three tempeh products: plain old soy tempeh, Five Grain, and Tempehroni (the soy tempeh with herbs)... We make our Five Grain style from soybeans, millet, rice, sunflower and sesame seeds... Since pizza was always one of our favorite ways to eat tempeh, we designed Tempehroni to be sliced into attractive two-inch rounds similar to its more well-known cousin, pepperoni. After much experimentation we settled on marjoram, basil, oregano, thyme, and summer savory [as Tempehroni seasonings]. Tempehroni's relatively high price ($1.28 for 8 oz) reflects the high labor costs involved, chiefly funneling all those beans down a thin chute into a specially made bag."

A photo shows 3 Turtle Island tempeh products. In illustration shows the Turtle Island Soy Dairy logo. Address: Owner, Turtle Island Soy Dairy, Forest Grove, Oregon.

1135. Funcación Tao-Fu. 1982. Proyecto piloto para la produccion e introduccion de los productos derivados de la soya en Quito, Ecuador [Pilot project for the production and introduction of soyfoods to Quito, Ecuador]. Quito, Ecuador. iii + 21 p. March 1. Unpublished manuscript. [Spa]
• ***Summary:*** Proposal submitted by Richard Jennings and Ismael Janisch. In Feb. 1980 la Fundacion Tao-Fu began its work to introduce soy protein foods to Ecuador. To date, they have developed tofu (seasoned and natural), tempeh, soy yogurt, and soymilk. Address: Casilla 252-A, Quito, Ecuador.

1136. Hamlin, Suzanne. 1982. Tempeh: Super soy food from Indonesia. *Chicago Tribune.* March 11. p. S_A15.
• ***Summary:*** This syndicated article first appeared in the *Daily News* (New York). Jan. 6. Good Living section. p. 1, 3, 7. Wed.

1137. **Product Name:** Earth Angel Tempeh.

Manufacturer's Name: Earth Angel Soyfoods.
Manufacturer's Address: 53 Stanley Ave., Mt. Waverley (E. Oakleigh), VIC 3149, Australia. Phone: 03-544-8020.
Date of Introduction: 1982. March.
Ingredients: Organic soybeans, cider vinegar, tempeh starter (Rice, Rhizopus oligosporus culture).
Wt/Vol., Packaging, Price: 250 gm.
New Product–Documentation: Letter from Debbie Schmetzer. 1982. March 3. Earth Angel is just getting underway and their first product is tempeh. They soon hope to produce tofu and tofu puddings for the health food stores. Label. 1983, undated. 4 by 8 inches. Black on tan. 250 gm. Illustration of a a winged elf, with soybean leaves on both sides.

1138. Herath, H.M.E. 1982. [Soybeans in] Sri Lanka. *INTSOY Series* No. 22. p. 172-75. J.B. Sinclair and J.A. Jackobs, eds. Soybean Seed Quality and Stand Establishment (College of Agric., Univ. of Illinois at Urbana-Champaign).
• ***Summary:*** Contents: Introduction. Liquid soymilk. Dried soymilk. Full fat soy flour. Soy-fortified bakery and other products. Low cost weaning food. Tofu. Tempeh. Soy dhal. Home level training and demonstrations.

"At the present time, the government has included soybeans with a few other field crops into a floor price system. During the last 12 months, the demand for soybeans has increased tremendously, with their use by some agencies in fortification programs... There is an immediate demand for 30,000 ha of soybeans. This target will be achieved by 1982.

"The bulk of the area under soybeans is presently confined to the rainfed highland... The primary objective of the Sri Lanka program is to develop a balanced soybean industry including production, marketing, processing and utilization...

"Accomplishments of the Soybean Food Research Centre (SFRC) include: Liquid soymilk. Dried soymilk: Nearly 5,000 lbs of dried soymilk (DSM) was manufactured... as a coconut milk extender/substitute. DSM has been found acceptable as a coconut milk extender by General Hospital in Kandy and Teaching Hospital in Peradeniya. The Rajarata Food Grain Processing Co., Ltd., a joint venture of the GSL and the private sector, is putting up a 4-ton FFSF/DSM plant in Maha Illuppallama, under the technical guidance of the staff at the SFRC.

"Full fat soy flour:... Nearly 70,000 lbs of FFSF has been produced at the pilot plant and sold through various sales outlets for fortifying wheat/rice flour at 5-10 percent levels... Soy-fortified noodles are being successfully marketed by Forbes and Walker...

"Tofu: Regular production of about 20 lbs of tofu per day has been done with a view to testing its acceptance for use in various curry preparations... Tempeh: Processing parameters for the production of tempeh at the cottage scale have been standardized... Soy dhal.

"By May, 1981, 1,077 trainees had followed the one- to two-week regular course, and 483 had completed the 'Sandwich Course.' More than one hundred demonstrations have involved about 6,000 participants, both from governmental and voluntary organizations." Address: Coordinator, Sri Lanka Soyabean Production Project, Deputy Director of Horticulture, Ministry of Agricultural R&D, Sri Lanka.

1139. Langley-Danysz, Pernette. 1982. Une technique séculaire de fermentation du soja [An ancient technique for fermentation of soya]. *Biofutur*. March. p. 33-35. [5 ref. Fre]
• ***Summary:*** About tempeh.

1140. Shurtleff, William; Aoyagi, Akiko. 1982. Terrific tempeh. *Ziriuz* (*Australia*). March. p. 7-8.
• ***Summary:*** Contents: An introduction to tempeh. Rich in protein and vitamin B-12. Tempeh comes West. How tempeh is made. The miracle of fermentation. Buying and storing tempeh. Favorite tempeh recipes (four recipes). Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1141. Shurtleff, William; Aoyagi, Akiko. 1982. History of the soyfoods movement in North America. Soyfoods Center, P.O. Box 234, Lafayette, CA 94549. 50 p. March. Unpublished typescript.
• ***Summary:*** A comprehensive history of the subject. Contents: New image of soyfoods and causes of interest: Good health, nutrition and fatness, weight loss diets, low-cost protein, meatless and vegetarian diets, world hunger, appropriate technology and right livelihood, voluntary simplicity, ecology and conservation, interest in East Asian cultures, spiritual practices, and cuisines.

Allied movements: Macrobiotics, natural foods, Rodale Press, vegetarianism.

Characteristics of the soyfoods movement: Major foods and types of products, comparison of soy protein industry (high tech) and soyfoods industry (low tech), appropriate technology, relevance to the Third World, conclusion.

The Farm in Tennessee. *The Book of Tofu* and Soyfoods Center. Early soyfoods manufacturers. Soyfoods delis and restaurants. Second-generation soyfoods manufacturers and distributors (e.g. Swan Foods in Florida). Tofu kits and equipment. Soyfoods terminology. Founding of the Soycrafters/Soyfoods Association of North America: Richard Leviton. Growth of the Soyfoods Association: First conference, Soyfoods magazine, subsequent conferences, SANA problems, The New Soyfoods Association–Gary Barat and Michael Austin of New York City.

Soyfoods books and booklets. Media coverage. Growth of the soyfoods industry, including the Soycrafters Apprenticeship Program. Soyfoods Marketer/Distributors: Yellow Bean Trading Co., Garden of Eatin', Jolly Licks. Soyfoods in foodservice institutions. Influence and activities

abroad. The future.

Note: This is the earliest document seen (Oct. 2008) that uses the term "Second-generation" in connection with soyfoods to refer to a soyfood product which uses a basic soyfood as its major ingredient. Thus, Tofu Cheesecake, Tempeh Lasagne, and Instant Miso Soup are all commercial "second-generation soyfood products." If made at home for home use, they would be "second-generation soyfoods." For some products, the line between basic and second-generation soyfood products is blurred, since some second-generation products that have as long history have come to be thought of as basic. For example: Deep-fried tofu burgers (*ganmodoki*), teriyaki sauce, etc. Address: Lafayette, California. Phone: 415-283-2991.

1142. S.M. [S. Milius]. 1982. Faster tempeh. *Organic Gardening.* March. p. 102-07.
• ***Summary:*** "A new method for preparing this cheap, nutritious soyfood takes 45 minutes instead of four hours." The new method, developed by researchers at the Rodale Food Center kitchens, starts with roasted soybeans. These don't have to be soaked overnight and hulled, the most time-consuming steps.

1143. Soy Plant Co-op Inc. (The). 1982. Price list effective 3/22/82 [22 March 1982]. Ann Arbor, Michigan. 1 p. 28 cm.
• ***Summary:*** This typewritten sheet contains three columns: Supplier, product, and price. The Soy Plant is supplier of (packaged or in bulk): Tofu (1 lb tub), plain soy milk and flavored soy milk (quarts), tempeh (8 oz), soysage (8 oz), miso garlic dressing (16 oz), Soyanaise (soy mayo, 16 oz), carob tofu pies, missing egg salad, tofu spinach quiche, gomaseao [gomashio]. Other suppliers are Micro Farms (alfalfa- or mung bean sprouts), Westbrae Foods (miso–3 types), The Grocery (The Tofu Cookbooklet), and Learning Tree (tofu kit, $13.50 each).

New products available soon: Tempeh salad. Tofu tahini spread. Address: 711 Airport Blvd., Suite #1, Ann Arbor, Michigan 48104. Phone: (313) 663-8638.

1144. *Whole Foods* (*Berkeley, California*).1982. New England Soy Dairy [distributing tempeh products]. March. p. 51.
• ***Summary:*** New England Soy Dairy has entered into an exclusive distribution agreement to distribute Soyfoods Unlimited Tempeh Burgers and Cutlets and the Pacific Tempeh Burger.

1145. Welters, Sjon. 1982. Re: Recent developments with soyfoods in Europe, and ties with macrobiotics. Letter to William Shurtleff at Soyfoods Center, April 16. 6 p. Typed, with signature on letterhead (photocopy).
• ***Summary:*** This letter, whose letterhead reads "Manna Natuurlijke Levensmiddelen," contains names and addresses of many new soyfoods companies, many of them started by people interested in macrobiotics. Names and addresses of the following companies are given: Tofu Denmark (in Valby, run by Per Fruergaard, a macrobiotic), Bernard Storup, Ab & Paulien Schaft (Dutch, setting up a small shop in Baillestavy, France, to make miso, shoyu, natto, and koji), Traditions du Grain (Jean Luc Alonso is setting up a macrobiotic tempeh shop in Ivry France; they will start this summer), Paul Jones (Tofu shop in London), Saskia de Jong (may make miso in Ireland), de Brandnetel (tofu shop in Antwerp, Belgium), Jonathan (makes tofu, ganmo, seitan, mochi in Ekeren, Belgium. Run by J. v. Ponseele), Seven Arrows (Leuven, Belgium; making tofu), Lima Foods (now sell miso made at their plant and farm in France), Witte Wonder (Den Haag, Netherlands), De Morgenstond (Bakkeveen, Netherlands), Jakso (Heerewaarden, Netherlands. Run by Peter Dekker. The first and only shop making tempeh from organic soybeans), Firma Lembekker (Amsterdam), Unimave (Lisbon, Portugal), Jose Parracho (Setubal, Portugal), Swame [sic, Swami] Anand Svadesha (Furth im Wald, West Germany), Bittersuess (Cologne, West Germany. Attn: Thomas Kasas/Karas). Three distributors of soyfoods and natural foods in Germany are YinYang (Berlin), Rapunzel (Heimraadshofe), and Mutter Erde (Werbelen). In Finland: Luonnonruokakauppa AUMA (Helsinki). In Switzerland: Verena Krieger of Sojalade (Engelberg, tofu shop), Hans Rudolph Opplinger (Cham, tofu shop), Marty Halsley (Nyon, tofu & tempeh), Restaurant Sesam (Bern). P. Ton van Oers is a Dutch priest who works in Kananga, Zaire. The natives have grown soya for 10 years and he is thinking of making tofu and soymilk from them.

"In Great Britain the East West Centre is very active in promoting soyfoods. As a part of the Kushi Institute program they have home-scale processing, in which tofu, tempeh, and miso-making are taught by Jon Sandler [Sandifer?]. He is the tempehmaker of the EWC too at Community Health Foundation, 188 Old St., London EC1. In the Netherlands, a great deal of soyfoods promotion is done by the East West Center and Manna. As you probably know, Manna was the first to introduce miso, tamari, shoyu, tempeh, tofu and koji to the larger public and we are still the main promoters of soyfoods as part of a more natural, vegetarian, and economic diet. Manna has been followed by a lot of other distributors of natural and health foods. We have two competitors in the tofu business: Witte Wonder and De Morgenstond.

"At the moment I'm the only teacher giving lectures on homescale miso-, tofu-, tempeh-, shoyu-, tamari-, natto-, and koji-making in the Netherlands. Mainly at the East West Centre and sometimes at different places in the country. People are starting to get interested."

Note: This is the earliest document seen (Jan. 2003) concerning the work of Swami Anand Svadesha of West Germany, and of Thomas Karas of Bittersuess (Cologne, West Germany). Address: Stichting Natuurvoeding

Amsterdam, Meeuwenlaan 70, 1021 JK Amsterdam-N, Netherlands. Phone: 020-323977.

1146. Dreyer, Lawrence. 1982. Re: International fair and symposium on soya products in Salzburg. Letter to William Shurtleff at Soyfoods Center, April 27. 2 p. Typed, with signature. [Eng]
• ***Summary:*** "The Way of Nature (*Weg der Natur*), a foundation, was established in Austria with the express purpose of disseminating information about macrobiotics, food, and their relationship to our health. Each of the founding members have had at least 2 months training at a temple in Japan." The foundation plans to hold an international fair named Bio Life 2000 in Salzburg from 17-20 Nov. 1982. "The foundation has, for the past two years been linked to a Natural Food Shop and has been, for this period, producing tofu and miso. This shop will be represented at the Fair and will be exhibiting and selling macrobiotic foods, snacks, and drinks. To run concurrently with the Fair, the Foundation is also planning a symposium on Soya products, Miso, Tofu, Tempeh, etc.

"The program will include lectures and discussions on planting and growing soya beans, making soya products, the suitability and advantages of soya products in the diet of Mankind with particular emphasis on the peoples of the West, and the substitution of soya products for animal products as a source of protein. There will also be demonstrations on cooking natural foods and the production of tofu and miso.

"The symposium will be conducted in both English and German and possibly also in French. The media, press, radio and TV have all expressed a keen interest in this fair, so a wide coverage is assured. We would be delighted if you, as the initiator of the use of tofu in the West, would be prepared to participate in this fair."

Note: A handwritten letter from Lawrence Dreyer (1983 Feb. 15) states that this fair was never held. His company is still producing tofu with equipment purchased in Japan a couple of years ago. Address: Director.

1147. Hamlin, Suzanne. 1982. The latest soybean-based wonder food. *Boston Globe.* April 28.
• ***Summary:*** This article about tempeh is a reprint of her 1982 article titled "Tempeh: 'New' food for the 80s," in the *Daily News* (New York). Jan. 6. Good Living section. p. 1, 3, 7. Wednesday. Address: Massachusetts.

1148. Hamlin, Suzanne. 1982. Tempeh's an ugly food, but its rich in nutrients. *Miami Herald.* April 29. p. 6F. Thursday.
• ***Summary:*** This syndicated article first appeared in the *Daily News* (New York). Jan. 6. Good Living section. p. 1, 3, 7. Wed. An illustration (line drawing) shows a cake of tempeh which "might be said to resemble a piece of moldy stucco wall." Contains 9 recipes. Address: New York News Service.

1149. Everybody's Vegetarian Restaurant. 1982. Menu. Nashville, Tennessee. 1 p.
• ***Summary:*** Contains many recipes using tofu, tempeh, cooked whole soybeans, plus soymilk ice cream ("The original soy milk Ice Bean" in cones, cups, milk shakes, or sundaes), soy sour cream or mayo, soy milk shakes, tofu cheesecake, and apple crisp a la mode. Address: 120 21st Ave. North, Nashville, Tennessee. Phone: 329-2000.

1150. **Product Name:** Tempeh.
Manufacturer's Name: Imagine Foods, Inc.
Manufacturer's Address: Moniteau Farm, R.R. 1, Box 11, Jamestown, MO 65046. Phone: 816-849-2583.
Date of Introduction: 1982. April.
New Product–Documentation: Form filled out by David Carlson, ca. 1982. They opened on 6 Jan. 1982 and now produce tempeh, tofu, and miso.

Talk with Robert Nissenbaum. 1988. Jan. 5. Imagine Foods' first product was tempeh. Production started in April 1982. David Carlson and Ken Sloan were the original tempeh makers. Robert arrived in the fall of 1982 and soon started to make amazake.

1151. Kawamura, Wataru. 1982. Daizu to daizu shokuhin no hakubutsu-shi. Tenpe to wa? [Natural history of soybeans and soyfoods. What is tempeh?]. *Daizu Geppo* (*Soybean Monthly News*). Feb. p. 26-30; March p. 43-45; April p. 27-29. [Jap]
Address: 2-4-7 Kugenuma, Tachibana, Fujisawa-shi, Kanagawa-ken 251, Japan.

1152. Leviton, Richard. 1982. The coming age of soyfoods: Soyfoods have grown from obscurity into a booming grassroots industry in seven years. *New Roots* (*Amherst, Massachusetts*) No. 23. Spring. p. 41-46.
• ***Summary:*** Contents: Introduction. The soybean sprouts in New England. Soyfoods: Becoming big business in America. The tofu shop on every corner myth. Growing pains of an emerging industry. Building a strong base of support. Resources.

Note: On page 45 are large ads for "Crystal Hills Tofu" (Bethlehem, New Hampshire) and "Tempeh: The soyfood with culture" (The Tempeh Works, Greenfield, Massachusetts). Address: 100 Heath Rd., Colrain, Massachusetts 01340.

1153. **Product Name:** Deli Salad (A Tuna-Fish-Style Crunchy & Creamy Tempeh Salad or Sandwich Spread).
Manufacturer's Name: Pacific Tempeh.
Manufacturer's Address: 1508 62nd St., Emeryville, CA 94608.
Date of Introduction: 1982. April.

New Product–Documentation: Shurtleff & Aoyagi. 1985. History of Tempeh. p. 52. America's first product of this type.

1154. Shieh, Y.-S. Carol; Beuchat, L.R. 1982. Microbial changes in fermented peanut and soybean pastes containing kojis prepared using *Aspergillus oryzae* and *Rhizopus oligosporus. J. of Food Science* 47(2):518-22. March/April. [14 ref]
• ***Summary:*** Traditional Japanese miso, a popular semi-solid fermented food is made from rice koji, soybeans, salt (sodium chloride) and water. It is made with the mold *Aspergillus oryzae,* which is typically cultured on steamed rice to make koji.

Experiments were designed to compare the mold *Rhizopus oligosporus* (which produces neither aflatoxin nor kojic acid) with *Aspergillus oryzae. Rhizopus oligosporus* is traditionally used in Indonesia to ferment whole soybeans to produce tempeh (*tempé*). Address: Dep. of Food Science, Univ. of Georgia, Athens, GA 30602.

1155. **Product Name:** [Tempeh, Tofu, and Natto].
Manufacturer's Name: Soy Joy.
Manufacturer's Address: Chemin de la Prelaz 1, CH-1260 Nyon, Switzerland. Phone: 022-61-9312.
Date of Introduction: 1982. April.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Marty Halsey. Form filled out by Martin Halsey ca. 1982. Company opened in April 1982. "Working on miso. Supplying macrobiotic community on a small scale." Letter from Sjon Welters. 1982. April 16. Gives his home address as c/o Costello, Mafroi 6bis, 1260 Nyon, Switzerland. He is "An American sportsman who started a small tofu and tempeh shop."

R. Leviton. 1983. Report on trip to Europe with American Soybean Assoc. Oct-Nov. p. 17. Marty Halsy [sic, Halsey] makes 200 kg/week of tofu, plus some handmade tempeh.

1156. **Product Name:** Tempeh.
Manufacturer's Name: Spring Mills Foods.
Manufacturer's Address: 304 S. Pugh, State College, PA 16801. Phone: 814-238-2082.
Date of Introduction: 1982. April.
Wt/Vol., Packaging, Price: 8 oz package.
How Stored: Frozen.
New Product–Documentation: Shurtleff & Aoyagi. 1982. Soyfoods Industry: Directory & Databook. p. 3-4. Soyfoods Center Computerized Mailing List. 1982. July 23. Owners: Don Smith & Walt Tomasch. Form filled out by Don Smith and Walt Tomasch. Label. 1982, undated. 6.5 inches square. Brown on yellow. City is Spring Mills, Pennsylvania 16805. Leaflet (black on yellow, 8½ by 11 inches). 1981. "Spring Mills introduces tempeh, the newest soyfood. Made from whole soybeans. High in vitamin B-12. Stored frozen. 8 ounce package. Recipes included."

1157. Wagner, Martha. 1982. Tofu gains a toehold. *Nutrition Action.* April. p. 12-13.
• ***Summary:*** Discusses: The parallels between tofu and yogurt. *The Book of Tofu,* by Shurtleff and Aoyagi. Surata Soyfoods in Eugene, Oregon. Al Jacobson and his Garden of Eatin' in Los Angeles.

1158. Hamlin, Suzanne. 1982. Indonesian soy food could hardly be any healthier or homelier. *Chicago Tribune.* May 6. p. N_A13A. [1 ref]
• ***Summary:*** This syndicated article first appeared in the *Daily News* (New York). Jan. 6. Good Living section. p. 1, 3, 7. Wed.

1159. **Product Name:** [Tempeh].
Manufacturer's Name: De Hobbit.
Manufacturer's Address: Waterstraat 4, B-9980 St. Laureins, Belgium. Phone: 091/79.96.22.
Date of Introduction: 1982. May.
New Product–Documentation: Form filled out by Eric Dewilde. 1983. They started making tempeh 11/5/1982. They now use 200 lb/day of dry soybeans, apparently to make tempeh. Soya Bluebook. 1985. p. 100. Eric is General Manager. Soya Bluebook. 1985. p. 100. Le Compas. 1986. March-April. p. 34. Address is "Sint-Lauriens." Phone: 091/79.96.22.

Letter from Bernd Drosihn of Viana Naturkost. 1994. Feb. 14. Eric de Wilde of De Hobbit is one of Europe's leading experts on tempeh production, and also one of Europe's largest tempeh manufacturers.

1160. Krieger, Verena. 1982. Die tausend Talente von Tofu [The thousand talents of tofu]. *Natuerlich* 2(5):69-73. May. [Ger]
• ***Summary:*** An excellent overview, with numerous color photos of recipes, products, and plants. "Tofu found its way to Europe not over the steppes of Asia but through the kitchens of North America, starting with *The Book of Tofu* by Shurtleff and Aoyagi."

Contents: What is tofu? Why tofu? Soya–king of the beans (Switzerland imports 100,000 tonnes of soybeans each year to feed to animals). Tofu and its brothers. Is soy an exotic plant? The most important traditional soyfoods of East Asia: Tofu, miso, soymilk, tamari, shoyu and soy sauce (*sojasauce*), tempeh, soy sprouts (*sojakeime*).

1161. Leviton, Richard. 1982. Tour: April 21-28, 1982. Itinerary and notes from trip to study soyfoods on the East Coast and in the Midwest. Colrain, Massachusetts. 21 p. Unpublished typescript. 28 cm.

• ***Summary:*** Visited: Nature's Grace (Honesdale, Pennsylvania), Real Foods (Allentown, PA), Cricklewood Soyfoods (Mertztown, PA), Kingdom Foods (Washington, DC), Sam Sung Tofu Co. (Washington, DC), Edward & Sons Trading Co. (Saluda, North Carolina), American Miso Co. (Rutherfordton, NC; April 24), Blue Ridge Soyfoods (Fletcher, NC), The Farm (Summertown, Tennessee), Everybody's Restaurant (Nashville, TN), Soya Food Products (Cincinnati, Ohio), Rising Sun Soy Farms (Columbus, OH), Hip Pocket Tofu Deli (Columbus, OH), Legume (Verona, New Jersey), The Bridge (Middletown, Connecticut). Includes directions by car to each place. Address: 100 Heath Rd., Colrain, Massachusetts 01340. Phone: 413-624-5591.

1162. Magarinos, Hélène. 1982. Le Tempeh: "Usine" à protéines et vitamines. En provenance d'Indonésie [Tempeh: A protein and vitamin factory from Indonesia]. *Compas* (*Le*) (*France*) No. 21. p. 23-29. Spring. Illust. 27 cm. [1 ref. Fre]
• ***Summary:*** Following a description of tempeh and its benefits (including its content of vitamin B-12), the author explains how to make tempeh at home, with 8 photos. She then gives 3 tempeh recipes: Fried tempeh. Tempeh stew with mushrooms. Tempeh fritters with coconut. Pages 28-29 describe the characteristics of good homemade tempeh, and give troubleshooting advice if your tempeh did not turn out properly. Much of this material is excerpted from *The Book of Tempeh,* by Shurtleff & Aoyagi, a favorable review of which appears on p. 29. Photos show: A hand holding a cake of freshly-made tempeh. Five steps in the process of making tempeh at home. Fried tempeh slices on a plate.

1163. Mandoe, Bonnie. 1982. Soy power! Part I. *Bestways.* May. p. 98, 99, 101.
• ***Summary:*** "However familiar–or unfamiliar–we may be with soy foods, the eighties are certain to increase our appreciation of these versatile and varied products. The same marketing skills that turned yogurt from the curious 'health-food oddity' it was in the sixties, to the popular supermarket item it is today, are being applied to soy foods, particularly tofu, tempeh, and soya ice cream."

Contains a short section on tofu that mentions Larry Needleman and *Soyfoods* magazine, and a shorter section on tempeh. Gives 3 tofu recipes and 4 tempeh recipes. Photos show: (1) Bonnie Mandoe. (2) A cake of tofu.

1164. Rathbun, Bonnie L. 1982. Mass and heat transfer effects in tempeh, a solid substrate fermentation. MSc thesis, Cornell University, Ithaca, New York. 145 p. May. [50+ ref]* Address: Cornell Univ.

1165. Shurtleff, William; Aoyagi, Akiko. 1982. Soyfoods directory and databook. 1st ed. Lafayette, California: Soyfoods Center. 21 p. May. 28 cm. [0 ref]. 2nd ed. published in June as Soyfoods Industry: Directory and Databook. 52 p. [24 ref]
• ***Summary:*** A detailed study of the rapidly emerging soyfoods industry and market. Contains original statistics compiled by the Soyfoods Center through interviews with companies. Contents of 2nd edition: 1. Terminology: The many types of soyfoods, traditional and modern. 2. Soyfoods industry directory: Names and addresses of over 850 soyfoods manufacturers in the Western world, plus major soymilk, miso, shoyu, and yuba manufacturers in East Asia. 3. Analysis of the soyfoods industry in the U.S. 4. Trends in U.S. and world soybean production. 5. Analysis of the tofu industry in the West. 6. Analysis of the tempeh industry in the West. 7. Analysis of the worldwide soymilk industry. 8. Analysis of the soy sauce/shoyu and miso industries worldwide. 9. Other: Analysis of the soynuts industry in the U.S., North America's larger soyfoods delis, cafes & restaurants, soybean crushing industry; overview. 10. Soyfoods terminology and standards. 11. Names of soyfoods around the world: 40 products. 12. Key institutions working with soyfoods in the West.

Note: This is the first market study published by Shurtleff. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1166. Soyplant Co-op Inc. (The). 1982. Price list: Effective 5/21/82 (Leaflet). Ann Arbor, Michigan. 1 p. 28 cm.
• ***Summary:*** This is a photocopy sheet, black on white. At the top center is the company logo, two soybean plants growing out of a round Planet Earth. Office hours: 9:00–4:00 M-F. These are wholesale prices, with suggested retail prices listed in parentheses. "A minimum order of $25.00 is required for all deliveries."

Tofu–1# tub. $0.85 per lb ($1.10).

Tofu–Bulk. $0.70 per lb plus 5¢/lb outside Ann Arbor.

Plain soy milk. $0.80 per quart ($1.04).

Flavored soy milk. $0.88 per quart ($1.14).

Plain soy milk–Bulk. $2.10 per gallon (5–gallon minimum).

Flavored soy milk–Bulk. $2.50 per gallon (5–gallon minimum).

Tempeh. $0.90 per half lb ($1.25).

Tempeh–Bulk. $12.00 per 8 lb sheet. Address: 771 Airport Blvd. Suite 1, Ann Arbor, Michigan 48104. Phone: (313) 663-8638.

1167. **Product Name:** 3 Grain & Soy Tempeh (With Brown Rice & Millet & Barley).
Manufacturer's Name: Tempeh Works (The).
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01301.
Date of Introduction: 1982. May.
Ingredients: Organically grown soybeans, millet, brown rice, barley, water, Rhizopus culture.

Wt/Vol., Packaging, Price: 7 oz or 8 oz package.
How Stored: Refrigerated.
Nutrition: Per 4 oz.: Calories 190, protein 12 gm, carbohydrate 25 gm, fat 4 gm, sodium 15 mg, iron 1.5 mg.
New Product–Documentation: Spot in Soyfoods. 1982. Summer. p. 54. "Grains and Beans in One Tempeh." Ad in New Age. 1982. July and Dec. p. 26; Shurtleff & Aoyagi. 1985. History of Tempeh. p. 52.

1168. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Traditions du Grain.
Manufacturer's Address: 16 Avenue Jean-Jaurès, 94400 Ivry, France. Phone: 46.71.89.88.
Date of Introduction: 1982. May.
New Product–Documentation: Note: Ivry is a suburb of Paris, located about 7 km (4 miles) southeast of the city's center. Letter from Sjon Welters. 1982. April 16. Traditions du Grain is a macrobiotic centre which is setting up a tempeh shop. They will start in summer. Contact Jean Luc Alonso, 16 Rue Jean Jaureo, Ivry 92200, France. Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Jean Luc Alonso. No phone.

Letter from Anita Dupuy and Jean Luc Alonso of Traditions du Grain. 1983. May. "We introduced tempeh 1 year ago on a commercial scale. I think there is no other tempeh production in Paris (or France) on a commercial scale."

Richard Leviton. 1983. Oct. 16. Trip to Europe with American Soybean Assoc. Jean Luc Alonso, a tempeh maker 20 miles from Paris at Traditions du Grain, runs France's first tempeh shop. Ad in Le Compas. 1986. No. 26. p. 34.

Talk with (call from) someone from France. 1989. Dec. 11. Jean Alonso and Rachel Revesz are starting a new tempeh shop in Bergerac, France, to make soya tempeh. The company has no name yet.

Letter from Rachel Revesz. 1989. Dec. 11. "The former tempeh-workshop in Paris was called Tradition [sic, Traditions] du Grain. It existed for 2½ years. Jean-Luc Alonso was selling only in Paris and its suburbs. The production and sales were small. Nobody knew about tempeh and the work needed for making it known exceeded his financial capabilities. Ten years later, after more experience in macrobiotics and business, we plan to start our new project. It will be a plant of 600 square meters located in the countryside 9 km from Bergerac in Dordogne, near Bordeaux, with a maximum production (during the first year) of 12,000 pieces of tempeh (300 gm each) per month. We also plan to produce 10,000 tempeh burgers and 10,000 croquettes monthly, as well as a bit of fried tempeh, all prepared with spring water. They will be vacuum packed. Before starting, we did a market study, which gives us hope. During the first year we will be 3 persons working in the enterprise, which will be called Enzo Future Foods, located in Queyssac, 24140 Villamblard, France."

Letter from Roland A. di Centa. 1993. Aug. 9. Roland was one of the first people to introduce soyfoods to Italy. He was very interested in macrobiotics and was a close friend of Michio Kushi. "My interest in food was to heal people with food and I had a lot of success using a holistic approach to help people with major diseases. For all these cures I used a lot of miso, tempeh, and tofu. Good miso was available. However tempeh and tofu had to be locally produced. I cured people from 1980 until about 1985... Tempeh: There was only tempeh available for Paris, made by a lady there named Anita Dupuy, who delivered to Le Bol en Bois (a macrobiotic restaurant in Paris) and to some consulates and embassies (such as the Philippines). As I was busy elsewhere I sent Giovanna Mazzieri (of Milan, Italy) to Paris to study the process [in Feb. 1983]. Anita taught Giovanna how to make tempeh. Giovanna was a very busy lady and a fan of macrobiotics after I healed her husband of a very difficult disease. She was very smart and she produced in tempeh in Milan in about 1980 [sic 1983]. It was perfect and of very good quality. It was sold in a few health food stores." Anita Dupuy is at Rue du 18 Juin, 25-94400 Vitry [Ivry?], France. Vitry [Ivry?] is a suburb of Paris.

Letter from Giovanna F. Mazzieri. 1993. Oct. 6. She went to Paris for one week in February 1983 and Anita Dupuy taught her how to make and cook with tempeh. At the time, Anita was definitely selling her tempeh to many shops in Paris, including Le Bol en Bois, other natural food or macrobiotic shops, and also to the Indonesian Embassy in Paris. She returned to Milan, Italy and made tempeh non-commercially starting in mid-1983.

1169. Hamlin, Suzanne. 1982. Tempeh: Super new soy food. *Hartford Courant* (*Connecticut*). June 2. p. E1 + E10.
• ***Summary:*** This syndicated article first appeared in the *Daily News* (New York). Jan. 6. Good Living section. p. 1, 3, 7. Wed.

1170. *Hartford Courant* (*Connecticut*).1982. Tempeh: Here's how to prepare it. June 2. p. E11.
• ***Summary:*** This syndicated article first appeared in the *Daily News* (New York). Jan. 6. Good Living section. p. 1, 3, 7. Wed.

1171. Krieger, Verena. 1982. Re: Recent developments with tofu in Switzerland. Letter to William Shurtleff at Soyfoods Center, June 14. 3 p. Typed, with signature. [1 ref]
• ***Summary:*** A person who is knowledgeable on macrobiotics and soyfoods in Europe is Mario Binetto from the Macrobiotic Center in Bern. He can be reached at Restaurant Sesam, Monbijourstr. 19, CH-3011 Bern. Marty Halsey is doing work at his tofu shop. Tevan Thieu is trying to start a tofu business in the Basel-area. In the late 1970s Verena worked at a natural foods vegetarian restaurant near Chicago,

Illinois, where tempeh and tofu were made frequently. In June 1979 she and her husband David returned to her native Switzerland and began work that played a key role in getting soyfoods into the Swiss consciousness and Swiss kitchens.

"The milestone was set, when I managed to publish my article 'Gestern Steak, morgen Tofu.'...into a Sunday magazine, which is respectable and progressive at the same time and widely read in Switzerland.

"Thanks to the foresight of my friend Lukas Kelterborn, who knew that this publication would stir a wave of interest, we [she and 4 other people interested in tofu] hastily set up a tofu shop to meet the coming demand for tofu. This was the birth of the 'Sojalade.'

"Two months later Swiss national TV did a 30-minute show during prime time on soybeans, using basic information from 'Das Tofu-Buch' (the book was actually shown and recommended through the channel), at the end of which I was given a few minutes to present a meal of five tofu dishes, tailored to the Swiss palate. Since then tofu has been a favorite child of the medias. A couple of weeks ago, our tofu group was even mentioned in the 'Blick' (the 'National Enquirer' of Switzerland)... With all this noise, things have remained small and still beautiful. Our shop is approaching the 1,000 lb/week production level, and we are distributing our tofu mainly in Zurich (population about half a million). Demand has gone up steadily, especially in Zurich. Considering that Switzerland is a classic dairy country, where the cow is held more holy than in India, where milk is the next best thing to our life-blood, and where there is no Asian population to speak of, this is a compliment to both tofu and the Swiss. Of course, the bulk of tofu is still being sold in health and natural foods markets...

"The present soyfoods market wants only organically grown soybeans, and to promote soybean growing just on that basis is ten times harder than conventionally grown beans...

"For the fall, Swiss national radio plans a series of two programs on soybeans, especially directed to farmers." Address: Bruchmattstr. 24, CH-6003 Lucerne, Switzerland. Phone: 041-22 50 34.

1172. Van Gessel, Ike. 1982. History of Van Dappern Tempeh Co. in the Netherlands (Interview). Conducted by William Shurtleff of Soyfoods Center, June 19. 2 p. transcript.
• ***Summary:*** The company started in Rotterdam in 1969. They learned how to make tempeh from a Dutch-Indonesian sailor, who had started to make tempeh in the Netherlands in 1949. He made it for family and friends, but did not sell it commercially. Address: 2272 Santa Anita Rd., Norco (near Los Angeles), California 91760. Phone: 714-734-2034.

1173. Cohen, Michael. 1982. New developments at The Tempeh Works (Interview). *SoyaScan Notes.* June 30. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** His weekly tempeh production peaked at 6,800 lb in Sept. 1981; it stayed at this level for 3 weeks. Then in early 1982 five competitors appeared in his market area; his production dropped by 35%. He was also slow to introduce variety tempehs and second generation tempeh products. In May 1982 he introduced 3 grain and soy tempeh, and in July tempeh burgers–with more new products planned for this summer. Now sales are rebounding, having reached 4,000 to 4,500 lb/week during June 1982. In the winter of 1981-82 he expanded his incubation space by adding 650 square feet with trailers. Address: Greenfield, Massachusetts.

1174. **Product Name:** Tempeh Brothers Tempehburger. Renamed Tempeh Brothers Tempeh Burgers by early 1983.
Manufacturer's Name: Appropriate Foods, Inc.
Manufacturer's Address: 137 New Hyde Park Rd., Franklin Square, Long Island, NY 11010.
Date of Introduction: 1982. June.
Ingredients: Organic soy tempeh, shoyu, herbs & spices.
Wt/Vol., Packaging, Price: 7 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1982. June 15. 3 inch diameter. Yellow, red, blue and white. Spot showing label in Soyfoods. Winter. 1983. p. 50. "The Tempeh Burger Takeover. Nationwide at least 7 brands of prepared tempeh burgers are produced." The label reads "tempeh burgers." Also in Soyfoods. 1984. Summer. p. 43. Interview with Robert Werz. 1987. Sept. 9.

1175. Five Seasons Restaurant (The). 1982. Menu. Jamaica Plain, Massachusetts. 1 p.
• ***Summary:*** This menu, dated June 1982, printed with dark brown ink on beige paper, is divided into the following categories: Appetizers: incl. Tofu cream cheese & crackers, Tenpura nori roll, Marinated tofu. Staples. Salads: incl. Chef's salad with slices of seitan and marinated tofu, Tofu cream cheese platter. Desserts. Luncheon specials. Sandwiches: incl. Fried tempeh sandwich, Tofu cream cheese sandwich. Noodles: incl. With tofu & vegetables, topped with fried tofu or tempeh. Pan-fried rice or noodles. Side orders: incl. fried tofu, fried tempeh. Beverages. To go: Tofu cream cheese. Address: Jamaica Plain (near Boston), Massachusetts.

1176. Lappé, Frances Moore. 1982. Diet for a small planet. Tenth anniversary edition. Completely revised and updated. New York, NY: Ballantine Books. xiv + 498 p. Illust. by Marika Hahn. Index. 21 cm. [250* ref]
• ***Summary:*** Listings of soyfoods in index: Soy flour & grits p. 16, Tofu p. 14, Soybeans p. 7, Soy foods (tofu, tempeh) p. 229. Tempeh p. 3. The section titled "Recommended paperback cookbooks" (p. 454-55) includes *The Book of Tofu, The Book of Miso,* and *The Book of Tempeh,* by

William Shurtleff and Akiko Aoyagi, and an invitation to send a long, self-addressed stamped envelope to their Soyfoods Center in Lafayette, California. Address: Inst. for Food & Development Policy, San Francisco, California.

1177. Leviton, Richard. 1982. Tofu, tempeh, miso and other soyfoods. New Canaan, Connecticut: Keats Publishing Inc. 26 p. June. No index. 22 cm. [46 ref]
• ***Summary:*** Contents: The neighborhood soy deli. What are soyfoods? Soybeans from China. Soyfoods have marched west. The nutritional side of soyfoods. Soyfoods in your kitchen (3 recipes from other cookbooks). The future. Bibliography. A list of soyfoods cookbooks. Address: 100 Heath Rd., Colrain, Massachusetts 01340. Phone: 413-624-5591.

1178. Lotus Cafe (The). 1982. Menu. Rochester, New York. June.
• ***Summary:*** This original menu, dated June 1982 and typed on beige paper, is divided into: Soups. Salads (incl. Hummus, Devilled tofu, Tempeh salad). Sandwiches (all with the Lotus Cafe's original tofu mayonnaise): Tofuburger, Tempehburger, Not dog, Tempeh Reuben, Pita sandwiches in Syrian pocket bread (incl. Tofulafel, Temptation). Entrees: Incl. Tofu spinach pie, Tofu ravioli, Tofu and sauce with brown rice and marinated tofu. Side dishes. Beverages: Incl. Shakes with fresh soymilk (Banilla, Carobanana, Banana colada), freshly made juices, sparklings, glass of soymilk or carob soymilk. Desserts: Incl. Almond cream cheese tart, Maple walnut pudding, carob brownie, ice cream (Ice Bean). Address: 686 Monroe Ave., Rochester, New York 14607.

1179. Shurtleff, William; Aoyagi, Akiko. 1982. Report on soy delis, cafes and restaurants. Lafayette, California: Soyfoods Center. 116 p. Illust. June. 28 cm. [21 ref]
• ***Summary:*** Contains 150 recipes. Based on extensive original surveys conducted by Soyfoods Center, including questionnaires sent to each of the soy delis. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1180. **Product Name:** Tempeh (Soya Karawala) [Dried, or Fresh].
Manufacturer's Name: Soya Foods Research Centre. Sri Lanka Dept. of Agriculture.
Manufacturer's Address: P.O. Box 53, Peradeniya, Sri Lanka.
Date of Introduction: 1982. June.
Ingredients: Split soya beans, tempeh culture, rice flour (aids culture growth and binding).
Wt/Vol., Packaging, Price: Fresh: 300 gm bag retails for Rs. 4/50. Dried: 100 gm bag with label and recipe retails for Rs 4/-.
Nutrition: Fresh: 19.5% protein. Dreid: 50.6% protein.
New Product–Documentation: Label. 1988. 5 by 3.5 inches. Purple on white paper. "Tempeh (Soya Karawala [Karawala means 'dried fish']) (High Protein)." In English and Sinhala. Form filled out by Jane Gleason. On 23 March 1988 she met with Mr. H.G. Jayatissa, Project Manager, at Plenty Soya Food Centre. Plenty has marketed SFRC (Soya Foods Research Center) products since Oct. 1987. In addition, they are available at the SFRC retail outlet in Gannoruwa, as they have been since each product was introduced. Plenty is currently assisting an entrepreneur, Mr. Ratnayeke of Welligama, near Gampola, in starting production of dried tempeh at his rice mill. On 25 April 1988 Gleason met with Mrs. K.G.S. Ariyaratne, Agriculture Instructor. At the SFRC shop dried tempeh is sold in a 100 gm unlabeled bag for Rs. 3/- and fresh tempeh in a 250 gm bag for the same price.

1181. **Product Name:** Multi-Grain Tempeh (Sprouted Soybeans & Rice & Millet).
Manufacturer's Name: Surata Soyfoods.
Manufacturer's Address: 302 Blair Blvd., Eugene, OR 97402.
Date of Introduction: 1982. June.
Ingredients: Sprouted organically grown soybeans, rice, millet, water, apple cider vinegar, tempeh culture (Rhizopus oligosporus).
Wt/Vol., Packaging, Price: 10 oz in poly bag.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label, undated. Originally a 1 x 3 inch, white-on-brown add-on for basic tempeh label. Then a 7 x 8-inch preprinted poly bag, red on yellow. "An Oregon Cooperative. A Pre-Cooked Cultured Soyfood. A Complete Protein." Recipes on back: Tempeh Stroganoff, Tempeh Burgers, and Tempeh Spaghetti Balls.

Talk with Surata Soyfoods. 1982. June 6. They are using soybeans that have been sprouted overnight to make their tempeh. Sprouting increases the levels of B and C vitamins, increases the tempeh yield by 11%, and makes it easier to do wet dehulling.

Form filled out by Shevah Lambert. 1990. July 2. Surata now makes 875 lb/month of this product. Production started in Feb. 1982.

1182. Ko Swan Djien. 1982. Re: History of his work with tempeh, and why so few Indonesians studied tempeh before World War II and during the two decades thereafter. Letter to William Shurtleff at Soyfoods Center, July 1. 2 p. Typed, with signature on letterhead. [2 ref]
• ***Summary:*** Ko studied at the University of Wisconsin at Madison from August 1959, then did research at the Northern Regional Research Center (NRRC, Peoria, Illinois), from February to Aug. 1960. Thereafter he returned to the Bandung Institute of Technology, where his Laboratory for Microbiology began doing cooperative research on tempeh with the Cornell University (New York) and NRRC groups.

Ko's first article, co-authored with Dr. Hesseltine in 1961, was titled "Indonesian Fermented Foods." With this article, Ko became the second Indonesian to publish scientific research about tempeh.

It is curious to note that, despite the fact that tempeh has long been a very important and widely used Indonesian food, all of the scientific studies on tempeh from 1895 to 1960 (and virtually all of the references in any language) were done by Europeans living in Indonesia. There are several reasons for this. First, while Indonesia was a Dutch colony, very few Indonesians were able to attend a university or do scientific research of any type. There were very few Indonesian food scientists or microbiologists and these were not encouraged to study indigenous foods. Second, During Dutch colonial rule, public opinion was strongly influenced by the Dutch emphasis on Western values and lifestyles, and the devaluation of indigenous values and lifestyles. Consequently a food such as tempeh, which was unknown in the West, and which was a low-priced food of the common people, acquired the image of an inferior, lower-class, or even poor-people's food, even though it was consumed by Indonesians of all classes. No Indonesian scientists felt it was worthy of their attention or research. Unfortunately, this attitude persisted even after independence.

"The enclosed photocopy of Indonesian newspaper articles (from Sept. 1965) illustrates the feeling of amazement at that time, when a reporter discovered that I studied tempeh at the university. Headings like 'Tempe Naik Tahta' (Tempeh steps to a higher throne) in large letters decorated their reports." Address: Dep. of Food Science, Agricultural Univ., Wageningen, Netherlands. Phone: (08370) 84162/82888.

1183. Bhatnagar, P.S. 1982. Re: Request for proforma invoice for publications and materials. Letter to William Shurtleff at Soyfoods Center, July 8. 1 p. Typed, with signature on letterhead.
• ***Summary:*** He would like to order popular books on miso, tofu, and tempeh. Address: Project Coordinator, All-India Coordinated Research Project on Soybean, G.B. Pant Univ. of Agriculture and Technology, Pantnagar (Uttar Pradesh), India. Phone: 291-292 Rudrapur.

1184. Dominguez de Diez Gutiérrez, Blanca. 1982. Re: Names of soyfoods around the world: Spanish. Form filled out and returned to William Shurtleff at Soyfoods Center, July 9. 1 p. Handwritten. [Eng]
• ***Summary:*** Gives the names of all the various soyfoods in Spanish. Note: A typed list of these names is published in *Soyfoods Industry and Market: Directory and Databook,* 1985. 5th ed. p. 164.

"Fresh green soybeans–Frijol de soya tierno o ejote de soya. Whole dry soybeans–La soya, Frijol de soya. Black soybeans–Frijol de soya negro. Fresh soy puree–Pure de frijol de soya. Soy sprouts–Germinados de soya. Soynuts–Soya-nuez (nuez means walnuts or pecans), Soya-huate (means peanuts from cacahuate). Oil roasted soynuts–Soya nuez tostada (meaning nut). Dry roasted soynuts–Soya-huate tostado (meaning peanuts). Soynut butter–Mantequilla de soya. Roasted soy flour–Harina de soya tostada (kinako). Soy coffee–Soyafee. Soy chocolate–Soyalate. Soymilk–Leche de soya. Soymilk ice cream–Helado de leche de soya. Soymilk curds–Cuajada de soya, Jocoque de leche de soya. Tofu–Tofu, Queso de soya, Cuajada de soya. Soft tofu–Tofu blando. (Regular) Tofu–Tofu comun. Firm Tofu–Tofu firme. Extra firm tofu–Tofu extra firme. (Deep fried) Tofu cutlets–chuletas de tofu. (Deep fried) Tofu burgers–Hamburguesas o tortitas de tofu. (Deep fried) Tofu pouches–Saquitos de tofu. Silken tofu–Tofu sedoso. Pressed silken tofu–Tofu sedoso prensado. Grilled tofu–Tofu a la parrilla. Dried frozen tofu–Tofu seco congelado. Okara or soy pulp–Okara, pasta de soya, pulpa de soya. Yuba–Yuba. Soy nuggets–Palanquetas de soya. Miso or soybean jian–Miso (el). Soy sauce–Salsa de soya. Shoyu–Shoyu (el). Tamari–Tamari. HVP soy sauce–Have not found it. Tempeh–Tempeh (el). Fermented tofu–tofu fermentado. Fermented / cultured soymilk–Leche de soya fermentada. Natto, thua-nao, kinema–Natto (el). Soy oil–aceite de soya. Soy lecithin–Lecitina de soya. Soy four–Harina de soya. Whole (full fat) soy flour–Harina de soya entera. Defatted soy flour–Harina de soya degrasada. Soy grits and flakes–Soya martajada y hojuelas de soya. Cereal-soy blends (CSM, WSB, etc.)–Soyavena (with oatmeal). Soy protein concentrate–Concentrado de proteina de soya. Soy protein isolate–Aislado de soya. Textured soy protein product–Productos de soya texturizada. Textured soy flour, TSF, or TSP–Harina de soya texturizada. Textured soy concentrates–Concentrados de soya texturizada. Textured soy isolate–Aislados de soya texturizada. Spun soy protein fibers–Fibra de proteía hilada de soya. Soy casmar, Soya Cocoa, Coco soya–Beverages made with chocolate or cocoa. Pastisoya–Like spaghetti or noodles of different kinds made with soy flour–commercial products. Vegesoya–Commercial products for soups. Soya mex and Chocosoya–for beverages. Soya pac–Textured soya like meat, also a commercial product." Address: Apdo. Postal 226, Jalapa, Veracruz, Mexico.

1185. Shurtleff, William; Aoyagi, Akiko. 1982. History of other fermented soyfoods. Soyfoods Center, P.O. Box 234, Lafayette, CA 94549. 7 p. July 18. Unpublished typescript.
• ***Summary:*** A comprehensive history of the subject. Contents: Introduction. Soy wine, 321 A.D. Cantonese wine starter (*kiu-tsee*), 1878. Soy fermentation pellicle (*tou-huang*), 1911. Meitauza (*Mucor*-fermented okara tempeh), 1937. Okara onchom, 1901. Soy onchom, 1965. Soy idli, dosa (or dosai), and dhokla, 1976. Soy-ogi, 1966. Sere or seredele (Bali) discussed in chapter on whole dry soybeans. Address: Lafayette, California. Phone: 415-283-2991.

1186. **Product Name:** Millet Tempeh.
Manufacturer's Name: 21st Century Foods.
Manufacturer's Address: Brookline, Massachusetts.
Date of Introduction: 1982. July.
New Product–Documentation: Spot in Soyfoods. Summer. p. 57. Company began in September 1981. Lucio Armellin reports total tempeh production of 400 pounds a week.

1187. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Alexander's Tofu Shop.
Manufacturer's Address: Leonrodstr. 19, 8000 Munich 19, West Germany. Phone: 089-160-474.
Date of Introduction: 1982. July.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Alexander Nabben. Note: This was the earliest known tempeh ever made in Germany.

1188. **Product Name:** Tempeh.
Manufacturer's Name: Ashland Soy Works.
Manufacturer's Address: 280 Helman St., Ashland, OR 97520. Phone: 503-482-1865.
Date of Introduction: 1982. July.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: James Muhs.

1189. **Product Name:** Tempeh.
Manufacturer's Name: Bud, Inc.
Manufacturer's Address: 1100 Wicomico St., Baltimore, MD 21230. Phone: 301-837-4034.
Date of Introduction: 1982. July.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Aaron C. Liu. Company name is given as Bud. Inc. Soyfoods.

1190. **Product Name:** Tempeh.
Manufacturer's Name: Community Health Tempeh.
Manufacturer's Address: c/o Community Health Centre / Foundation, 188 Old Street, London EC1V 9BP, England. Phone: 01-251-4076.
Date of Introduction: 1982. July.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. The tempeh makers are Jon Sandifer and Andrew Leech.

Talk with Thomas Andersen of Thomas Tempeh. 1990. May 24. In about 1985, he learned how to make tempeh at this Centre, which is a macrobiotic education and natural healing/therapy center. There were two tempeh makers at the time. One was Roger Green.

1191. **Product Name:** Tempeh.
Manufacturer's Name: Creative Soyfoods Inc.
Manufacturer's Address: 526 N. Clark St., River Falls, WI 54022. Phone: 715-425-0467.
Date of Introduction: 1982. July.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: David Nackerud. Poster and recipe leaflets. 1982, undated. Label. 1983, undated. 4.5 by 6 inches. Brown and orange on tan.

1192. **Product Name:** Tempeh.
Manufacturer's Name: Current River Soy Products.
Manufacturer's Address: 707 Lafayette St., Doniphan, MO 63935. Phone: 314-996-4982.
Date of Introduction: 1982. July.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Sheldon Zola.

1193. Fiering, Steve. 1982. Vacuum-packing: Is it the new wave for soyfoods? *Soyfoods.* Summer. p. 42-48.
• ***Summary:*** "Two packaging technologies–pasteurization and vacuum packing–can extend tofu shelf life to one month or more. As competition for the large warehouse accounts heats up, it seems certain that most of the sales will be captured by tofu with the 30 day shelf life." Discusses: 1. What is vacuum packaging? "Possibly the most important marketing consideration is that most of the other familiar protein foods, such and cheese and lunchmeats, are also vacuum packaged... Most of the common spoilage organisms are aerobic... Tests done for Nasoya Inc. indicate that the total plate count of tofu is reduced by at least 80% after vacuum packaging..." Is botulism a reasonable concern? Maybe. But not if an oxygen permeable film is used. Most films have a polyethylene inside and nylon outside, which permits some oxygen permeability. 2. What is botulism? 3. Botulism and vacuum packaging. 4. Vacuum packaging equipment "Available machinery varies according to evacuating, sealing, and product handling systems." Chamber system, nozzle type machine, double chamber style machine, conveyor chamber, horizontal form-fill-seal machine (which start at $50,000). 5. The companies. Cryovac, Hantover Inc., Koch Supplies Inc., T.W. Kutter, Inc., Packaging Aids Corp., Smith Equipment Co., Tipper Tie. Photos show Kutter's Tiromat in action at Nasoya Foods in Massachusetts. Address: The Soy Plant, Ann Arbor, Michigan.

1194. **Product Name:** [Tempeh].
Manufacturer's Name: Jose Parracho Tofu.
Manufacturer's Address: Quinta da Portugesa, Fieguesia da Annuciada, Setubal, Portugal.
Date of Introduction: 1982. July.
New Product–Documentation: Letter from Sjon Welters. 1982. April 16. "In Portugal some macrobiotic centres are

busy in promoting soyfoods as part of the macrobiotic diet... A friend who studied at Manna for a while, José Parracho is planning to make tempeh and tofu in Portugal. The business will be Quinta da Portugesa in Setubal."

Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Jose Parracho.

1195. **Product Name:** Tempo Tempeh Salad, and Soybean-Brown Rice Tempeh.
Manufacturer's Name: Kingdom Foods.
Manufacturer's Address: 513 Morse St. N.E., Washington, DC 20002. Phone: 202-543-7107.
Date of Introduction: 1982. July.
New Product–Documentation: Talk with Eileen Judge. 1990. Sept. 25. She started selling these two tempeh products in July 1982 in Washington, DC.

1196. Kronenberg, H.J. 1982. Biotechnology and fermented soyfoods. Tests of solid state rotary drum fermentation with soybeans for tempeh production... *Soyfoods.* Summer. p. 24-27. [12 ref]
• ***Summary:*** "... revealed that soybeans could ferment in beds up to 4 inches thick while the process might have wide applications in industry."

Contents: Introduction. Fermentation process and variables. Evolution of solid-state fermentations. Applications to fermented soyfoods.

Fermentation processes are typically described as either liquid, semi-solid, or solid systems. Penicillin is made in a liquid system whereas tempeh is made in a solid system.

Illustrations show: (1) Rotary drum fermentation of mold bran. (2) Continuous tray method for mold enzyme production. (3) Rotary fermentor used to make koji (adapted from Ebine 1972). A photo shows a small rotary fermentor for tempeh.

Note: A fermentor is the vessel where fermentation happens. A fermenter is the microorganism that makes the fermentation happen. Address: Cornell Univ., Ithaca, New York.

1197. Leviton, Richard. 1982. Touring for soyfoods. *Soyfoods.* Summer. p. 32-37, 41.
• ***Summary:*** At The Farm in Tennessee, the soy dairy, managed by Chuck Haren, "operates 3 days a week, turning out 7,500 lb/week of calcium sulfate tofu for immediate consumption by the Farm's 1,300 soyfood lovers."

Legume: "Gary and Chandri Barat and Robert Shapiro have a booming company on their hands after 1 year of business with an impressive line of prepared frozen tofu entrees and desserts. Jan. 1981 rented facility in Verona, New Jersey. May 1981 Celantano started co-packing. Photos show: Chandri Barat, Gary Barat, and Robert Shapiro of Legume (see also photo on p. 3).

The following people and their companies are also discussed, with photos: Tim Nusser of Rising Sun Soy Farms (Columbus, Ohio). Jim Saunders of Real Foods (tofu shop in a supermarket in Allentown, Pennsylvania). Renate and Karl Krummenoehl of Cricklewood Soyfoods. Jamie and Nancy Stunkard of Nature's Grace. Joel Dee of Edward & Sons in Saluda, North Carolina (marketers of Miso-Cup). Henry Salazar of Sam Sung Tofu Co. Eileen Foote and Eileen Judge of Kingdom Foods. Bob Hunt of Blue Ridge Soyfoods. Soya Food Products in Cincinnati (Ben & Nina Yamaguchi). Rising Sun Soy Farms. Bill Lutz of Hip Pocket Tofu Deli (Columbus, Ohio). Robert Marrochessi and Bill Spear of The Bridge (Middletown, Connecticut). Suzy Jenkins and Laurie Praskin of Plenty (Summertown, Tennessee). Address: 100 Heath Rd., Colrain, Massachusetts 01340. Phone: 413-624-5591.

1198. Leviton, Richard. 1982. Multimarket targeting: Where is the soyfoods market? *Soyfoods.* Summer. p. 61-68.
• ***Summary:*** Discusses Pacific Tempeh, White Wave, Quong Hop Tofu Cutlets Marinara, Burgers, Cannoli. Photos show: Jim Miller and his wife Emily of Quong Hop, with the New Leaf products. Steve Demos at Pat Calhoun in the White Wave booth at the Natural Foods Expo, 1982, Anaheim, California. Address: 100 Heath Rd., Colrain, Massachusetts 01340. Phone: 413-624-5591.

1199. Leviton, Richard. 1982. Everybody's Restaurant. The Farm brings soyfoods to Nashville. *Soyfoods.* Summer. p. 38-39.
• ***Summary:*** Everybody's Vegetarian Restaurant, founded and owned by Judd and Diane Hoffman, opened in July 1980 in the university district of Nashville, Tennessee, and now seats 45. Many of the items on the meatless and dairyless [vegan] menu feature soyfoods–especially tofu, soymilk, and tempeh. The facility has 2,700 square feet, with 1,500 for retail and 1,200 for kitchen. The 12 restaurant workers, who are all members of The Farm (Summertown, Tennessee), live together communally in a large house outside Nashville.

Photos show: (1) Judd and Diane Hoffman. (2) A view of the front of the restaurant from outside. (3) Inside the kitchen. Address: Colrain, Massachusetts.

1200. **Product Name:** [Manna Tempeh].
Foreign Name: Manna Tempeh.
Manufacturer's Name: Manna Natuurvoeding B.V. (Marketer). Made in The Netherlands by Yakso.
Manufacturer's Address: Meeuwenlaan 70, 1021 JK, Amsterdam, The Netherlands. Phone: 020-323-977.
Date of Introduction: 1982. July.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. Owners: Sjon Welters & Robert Hendriks. Soya Bluebook. 1985. p. 100. Letter from Sjon Welters. 1989. Aug. 9. From 1983 through 1985 (?) the tempeh sold by Manna was made by Yakso in

the Netherlands. Sjon thinks that Manna never made its own tempeh.

1201. **Product Name:** Tempeh.
Manufacturer's Name: Midwest Soy Products, Inc.
Manufacturer's Address: 608 S. Belmont Ave., Champaign, IL 61820. Phone: 217-398-57560180.
Date of Introduction: 1982. July.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Anthony & Patricia Kao.

1202. **Product Name:** Tempeh.
Manufacturer's Name: Open Sesame Restaurant.
Manufacturer's Address: 48 Boylston St., Brookline, MA 02146. Phone: 617-277-9241.
Date of Introduction: 1982. July.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23.

1203. **Product Name:** Tempeh.
Manufacturer's Name: Panda Food Products.
Manufacturer's Address: 98-05 Atlantic Ave., Woodhaven, NY 11421. Phone: 212-441-6494.
Date of Introduction: 1982. July.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Hal Siegel. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 59.

1204. Shurtleff, William. 1982. What the Japanese can learn from the American soyfoods industry. Paper presented at Fifth Annual Soyfoods Association of North America (SANA) Conference, University of Washington, Seattle. July 8. 2 p. Unpublished manuscript–outline.
• ***Summary:*** Presented to a special meeting of Japanese attendees. Contents: Introduction. Americans' basic view of soybeans and soyfoods. Nutrition and attitudes toward animal and vegetable proteins. Tofu innovations. Tempeh. Kikkoman. Conclusion. Accompanied a slide show. Address: Co-founder and director, Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1205. Shurtleff, William. 1982. The year in review. Paper presented at Fifth Annual Soyfoods Association of North America (SANA) Conference, University of Washington, Seattle. July 8. 2 p. Unpublished manuscript–outline.
• ***Summary:*** Presented on Thursday, July 8, 9:30 to 10:15. Includes popular media coverage of soyfoods from 1975 to the present. Address: Co-founder and director, Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1206. **Product Name:** New England Tempeh Burgers (By 1984 renamed Lightlife Meatless Tempeh Burgers).
Manufacturer's Name: Tempeh Works (The).
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01302.
Date of Introduction: 1982. July.
Ingredients: Organic soy tempeh, soy sauce, spices.
Wt/Vol., Packaging, Price: 7 oz 2 x 3.5 oz burgers per package.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1983, undated. 3.5 inches square. Brown, yellow and white. Spot in Soyfoods. 1983. Winter. p. 50. "The Tempeh Burger Takeover. Nationwide at least 7 brands of prepared tempeh burgers are produced." Also 1984. Summer. p. 43. Product list. 1984. "Now you can have a tempeh burger made right here in New England." Shurtleff & Aoyagi. 1985. History of Tempeh. p. 52.

1207. **Product Name:** Tempeh.
Manufacturer's Name: Thompson Tempeh.
Manufacturer's Address: 371 Snyder Hill Rd., Ithaca, NY 14850. Phone: 607-273-2362.
Date of Introduction: 1982. July.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. Owners: Bruce & Katie Thompson.

1208. **Product Name:** Liquid Tempeh Starter.
Manufacturer's Name: Turtle Island Soy Dairy.
Manufacturer's Address: 2017 21st Ave., Forest Grove, OR 97116.
Date of Introduction: 1982. July.
New Product–Documentation: Shurtleff & Aoyagi. 1985. History of Tempeh. p. 56.

1209. **Product Name:** Tempeh.
Manufacturer's Name: Two Winds Tempeh.
Manufacturer's Address: 344 Combs Ave., Fayetteville, AR 72701.
Date of Introduction: 1982. July.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Jas Hawkins. But no phone number is listed.

1210. Whiting, M.G. 1982. Food uses of Leucaena seeds. 1. Tempeh lamtoro, preparation and toxicity. *Leucaena Research Reports* 3:100-01. July. (Taipei, Taiwan: Council for Agricultural Planning and Development). [4 ref]
• ***Summary:*** During a trip to Central Java in the fall of 1981, the author observed and photographed the process for making tempeh lamtoro in a village code-named P-M, using leucaena seeds. "It was found that *tempeh lamtoro* was available two or three times a week in local markets in and around Wonogiri and sold at a much lower price than *tempeh kedele,* made from soy-beans which are not grown in any quantity in the area. More flavorful than soybean tempe,

many persons stated a preference for the *tempeh lamotro.* Both are served in similar ways...

"It seemed important to the tempeh makers in P-M to eliminate the mucilage envelope which surrounds the seed cotyledons and separates them from the testa. Some of the mucilage is absorbed and later washed away with the heavy ash. Trampling in running water helped to separate but did not tear or break, the testa and seed. Most of the mucilage was washed away during the trampling. Most of the seed's mimosine is in the mucilage...

"Two to nine percent mimosine was found in intact seeds. However, only traces of mimosine could be found in a dozen samples of *tempeh lamtoro.* It is apparent that the mimosine is destroyed or metabolized during the washing, soaking, boiling, steaming, and finally, during the fermentation." Address: Research Affiliate, Lyon Arboretum, Univ. of Hawaii, Honolulu, HI 96822.

1211. **Product Name:** Tempeh.
Manufacturer's Name: Bali Hai Tempeh Co.
Manufacturer's Address: P.O. Box 1342, Kaneohe, Oahu, HI 96744.
Date of Introduction: 1982. August.
New Product–Documentation: Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Bonnie Fish. Company name is Bonnie Fish Tempeh Co. Address is P.O. Box 1073, Hanalei/Kauai, HI 96714. Phone: 808-826-6305.

Letter from Bonnie & Larry Fish. 1983. Soyfoods Unlimited's low prices threaten their business.

Oda. 1983. Hawaii Herald. Oct. 7. p. 6. "Hawaii's Tempeh Pioneers."

Letter from Kiku Murata of Japan, who was at the University of Hawaii, Honolulu, from Feb. to April 1984. During her stay there she made a speech on tempeh to a seminar, and also visited the tempeh farm–Bali Hai Tempeh, Inc. (P.O. Box 342, Kaneohe, Hawaii 96744).

Talk with Roger Krehl of Paradise Fruit–Maui. 1990. July 4. He is thinking of starting a tempeh company and has talked with Bonnie Fish recently. She lives on Makawao, Maui.

1212. Brown, Judy A. 1982. Soyfoods are catching on. The soyfoods industry has shown astonishing growth. Who created the boom and why? *Whole Life Times* No. 20. p. 34-36. July/Aug.
• ***Summary:*** Contents: Introduction. Idealism guides many soycrafters. Soybean goldmine. Tofu. Tempeh. Miso. Soymilk. Soy inhibitions. Wave of the future. Photos show: William Shurtleff and Akiko Aoyagi. Richard Leviton. Michael Cohen.

1213. *Diet & Exercise.*1982. Spectacular soy food... tempeh. Summer. p. 62-63, 74, 76.
• ***Summary:*** "What is it? A cheap, tasty protein that's good for your figure–and your budget." An introduction to tempeh with nine recipes.

A large photo shows Valerie Robertson of Soyfoods Unlimited, makers of fine tempeh.

1214. **Product Name:** Tempeh, Tofu Tart (Tofu Pudding) [Chofu with Carob, Vanillafu with Vanilla, Lemonfu with Lemon, and Bananafu with Banana], Cottage Tofu.
Manufacturer's Name: Star Soyfoods.
Manufacturer's Address: Route 2, Box 337, Sandpoint, ID 83864. Phone: 208-265-4720.
Date of Introduction: 1982. August.
Ingredients: Tofu Tart: Crust: Vegan graham crackers, soy margarine. Soy Whip: Soy oil, soy milk, honey, vanilla. Fillings: Tofu, honey, vanilla for Vanillafu; plus lemon juice, soy oil and lemon rind for Lemonfu; carob powder and soy milk for Chofu; bananas, soy oil and lemon juice for Bananafu.
Wt/Vol., Packaging, Price: Tempeh: 8 oz. perforated poly bag sealed in a printed outer bag. Tart and Cottage Tofu: 2-4 oz small clear plastic cup with snap-on lid.
How Stored: Refrigerated.
New Product–Documentation: Order from Penny Billiter of Rt. 2, Box 337, Sandpoint, Idaho. 1981. Oct. 23. She orders 100 "What is Tempeh" pamphlets. On Dec. 8 she writes: "I have found your books very helpful and full of information. Thanks."

Form filled out by Penny A. Billiter. ca. 1981. Label with a smiling orange star is enclosed. "I am making tempeh, mock happy chicken, and baked tofu for the three health food outlets here in Sandpoint. I am only using 3-4 lb dry beans/week." Second form states the company started officially

on 3 August 1982. Makes Tempeh and Tofu Tarts. Label. 1982, undated. 3.5 by 4 inches. Blue and orange on white. Label. 1983. 2 by 2 inches. Self adhesive. Blue on white with orange smiling star. Soyfoods Center Computerized Mailing List. 1982. July 23. Owner: Penny Billiter.

Talk with Penny Billiter Miller. 1993. Feb. 23. She still lives in Sandpoint and is still interested in soyfoods. She called the tarts "puddings" and she made several flavors: carob, vanilla, and banana. Sometimes she omitted the graham-cracker crust and just sold the product as a pudding. The Cottage Tofu, introduced at about the same time as the tempeh and tarts, was on the market for only a short time; she did it through the local food co-op. She still has records.

1215. Weiner, Steve. 1982. Cashing in on 'natural foods.' *Eugene Register-Guard* (*Oregon*). Sept. 19. p. 1E, 2E.
• ***Summary:*** A large color photo shows Surata Soyfoods tofu and tempeh, plus Nancy's Honey Yogurt. Sue Kesey, co-owner of the Springfield Creamery (founded 22 years ago), is president of the fledgling Lane County Natural Foods Association, a 20-member group that wants everyone to eat natural foods. Gil Johnson is a spokesman for the Association. Callix Miller is Surata's marketing manager.

1216. Ohta, Teruo. 1982. Tenpe wa kôtanpaku shokuhin [Tempeh is a high-protein food]. *Zenkoku Shokuhin Shinbun* (*National Food News*) No. 433. Sept. 21. [Jap]
• ***Summary:*** The oil in tempeh becomes rancid more slowly than most oils. Tempeh starter culture is sold at supermarkets in Indonesia. The author is planning to use electrical engineering (*denshi kôgaku*) to help make tempeh starter culture. Address: Nosuisho Shokuryo Sogo Kenkyujo, Oyo Biseibutsu Bucho: National Food Research Inst. (Shokuhin Sogo Kenkyujo), Kannon-dai 2-1-2, Yatabe-machi, Tsukuba-gun, Ibaraki-ken 305, Japan.

1217. Fitzpatrick, Jean Grasso. 1982. Separate and equal. *New York Times.* Sept. 26. p. SM96, 121.
• ***Summary:*** What happens in households where vegetarians and meat eaters regularly have meals together? Living with a vegetarian has its pluses and minuses. If you are a gourmet, remember that they tend to be upwardly mobile–trying to eat like the people they aspire to be. Vegetarians tend to be downwardly mobile. Who makes the meals, and how? Can they respect one another? One way is to make one base, say from vegetables, then add chicken to one half and tofu to the other.

Two recipes are given: Tempeh / lamb kebabs. Chinese broccoli with chicken or tofu. "Each of these recipes serves two–one vegetarian and one meat eater. To cook for a group, multiply the meat or the soy food (depending on who's in the majority) and add accordingly to the remaining ingredients."

1218. Welters, Sjon. 1982. Re: Tempeh in the Netherlands: ENTI, Van Dappern, Jakso, and estimated total production. Letter to William Shurtleff at Soyfoods Center, Sept. 27. 2 p. Typed, with signature on letterhead. [Eng]
• ***Summary:*** History and production information. Address: Manna Natuurlijke Levensmiddelen, Meeuwenlaan 70, 1021 JK Amsterdam-N, Netherlands.

1219. **Product Name:** Tempeh Brothers Super Tempeh (With Soybeans & Brown Rice & Millet & Barley & Sunflower Seeds & Sea Vegetables & Herbs).
Manufacturer's Name: Appropriate Foods, Inc.
Manufacturer's Address: 137 New Hyde Park Rd., Franklin Square, Long Island, NY 11010.
Date of Introduction: 1982. September.
Ingredients: Organic soybeans, brown rice, millet, barley, sunflower seeds, water, sea vegetables, herbs, spices, Rhizopus culture.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1982. Sept. 1. 4.5 by 5.5 inches. Red and blue on white. "To serve: Simply slice & fry, steam in broth, broil, bake, or barbecue." Interview with Robert Werz. 1987. Sept. 9. This product was introduced on 1 Sept. 1982.

1220. **Product Name:** Tempeh Brothers Soy-Rice-Sesame Tempeh.
Manufacturer's Name: Appropriate Foods, Inc.
Manufacturer's Address: 137 New Hyde Park Rd., Franklin Square, Long Island, NY 11010.
Date of Introduction: 1982. September.
Ingredients: Organic soybeans, brown rice, sesame seeds, water, Rhizopus culture.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1982, undated. 4.5 by 5.5 inches. Black on yellow. "To serve: Simply slice & fry, steam in broth, broil, bake, or barbecue." Label. 1982. Sept. 1. 5 by 6 inches. Red and blue on white. Sea Cliff, New York. Interview with Robert Werz. 1987. Sept. 9.

1221. Kronenberg, Hananya. 1982. How to make and maintain tempeh stock and starter cultures on a commercial scale. Soy Systems, 714 N. Aurora, Ithaca, NY 14850. 158 p. Sept. Illust. No index. 28 cm. [12 ref]
• ***Summary:*** Contains most of the information necessary to set up a laboratory and make tempeh starter for a commercial tempeh plant or a commercial tempeh starter business. Detailed and practical.

Contents: Part I (p. 1-19, typewritten). Consultation and non-disclosure agreement (9 Aug. 1982). Schedule for lab. Rice starter production method (for 30 bottles, 210 batches). Viable spore count (VSC) starter test: Cultural potency. Standard plate count with actidione SPC/ACT

starter test: Cultural purity–Bacterial contamination. Silica gelplate inoculation method. Starter mini test #1 using plates. Starter mini test #2 using PDA. Starter mini test #3 using SMA/ACT. Phosphate buffer preparation. SMA/Actidione preparation. Tween 80 preparation. Procedure for making antifungal inhibitory media.

Part II (p. 20-42, neatly handwritten). Culture maintenance. Starter culture quality control. Sanitation monitoring. Starter culture production. Media preparation. Bacillus contamination. Net weight. Addresses.

Part III (p. 43-107). Photocopies of related publications, as from laboratory manuals, quality control books, PhD theses, popular magazines, etc.

Part IV (p. 108-158, handwritten). Programs, notes, checklists, schedules, etc., including: Supplies from stock culture preparation of Rhizopus (quantity, supplier, cost). Pure crystals silica gel–Baker Co. Schedule of tests and checks. Quality Control Program for Soyfoods Unlimited (Starter Culture Program: Establish stock culture system, tempeh starter production, quality control checks on starter. Product quality control: Bacteriological monitoring, physical, sensory. Plant sanitation. Quality control record keeping). Schedule. Standard plate count and coliform count for products. Viable spore count calculation method. Air quality testing. Plant equipment surface contamination. SPC-SMA. Psychrophilic test. Shelf life. Bacillus test. Aseptic techniques. Address: Ithaca, New York.

1222. Leviton, Richard. 1982. In a small bright building: Cottage soy industries on Vancouver Island. Colrain, Massachusetts. 15 p. Sept. Unpublished typescript.
• ***Summary:*** Discusses Sooke Soyfoods (Wayne Jolley), Thistledown Soyfoods, Shin Mei Do Miso, and Metta Tofu. Note: This article was commissioned by *East West Journal* but never paid for or published. For a good summary, see: *Soyfoods.* 1983. Winter. p. 36-37. "Cottage soy industries thrive on Vancouver Island."

Concerning Shin Mei Do on Denman Island: Lulu Yoshihara recalls: In 1976 we picked up *The Book of Miso* at Uwjimaya department store in Seattle [Washington]. It didn't look like it would be all that hard [to make miso] or take that much time or technology. Plus miso wasn't perishable and didn't need to be marketed right away. Ray [Lipovsky] was already here doing tofu and that gave us the idea we could do a little home soy business on the island and make a living. So I went to Japan in 1977 to find a miso teacher. We've been together since 1971. Address: Colrain, Massachusetts 01340.

1223. Shurtleff, William; Aoyagi, Akiko. comps. 1982. Soyfoods labels, posters & other graphics. Lafayette, California: Soyfoods Center. 185 p. Sept. Illust. No index. 28 cm. 2nd ed. 1984. 6 vols. 685 p. total.
• ***Summary:*** Contents: 1. Tofu. 2. Other tofu types. 3. Secondary tofu products. 4. Tempeh. 5. Secondary tempeh products. 6. Soymilk. 7. Soymilk products. 8. Soy sauce, shoyu & tamari. 9. Miso. 10. Soynuts. 11. Other soyfoods. 12. Letterheads & business cards. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1224. Spencer, Colin. 1982. Food... and don't rely on sympathetic waiters. *Guardian* (*England*). Oct. 1. p. 10.
• ***Summary:*** Today's column is about vegetarianism. "The Vegetarian Society has recently come up with a new symbol, a green V for restaurants, pubs, eating houses and snack bars to display."

Vegetarian Restaurants in England, compiled by Leslie Nelson (published by Penguin) is a useful guide.

"The Seven Sheaves in the East West Centre [macrobiotic] (188 Old Street, London, EC1) is another remarkable restaurant, where I ate my first bowl of tempeh–a fermented tofu [sic] high in protein. It tasted of field mushroom, white truffle and–dare I say it?–grouse."

Note: Tempeh, which is a cake of fermented soybeans, is completely different from tofu, which is not fermented. And fermented tofu is much different from regular nonfermented tofu.

1225. Appropriate Foods, Inc. 1982. Eat Appropriately! [Catalog and price list]. P.O. Box 57, Sea Cliff, NY 11579.
• ***Summary:*** The following lines are carried and distributed: Tempeh Brothers, No Cow (Soymilk), Nasoya, The Bridge (Amazake, Seitan, Tofu Salad), Grainaissance (mochi), Island Sprouts (alfalfa), Sunshine Soyfoods (soysage), Sister Shorter (tofu spinach pie).

Note: This is the earliest document seen (Sept. 2011) that mentions Tempeh Brothers or Appropriate Foods. Address: Sea Cliff, New York.

1226. **Product Name:** Tempeh.
Manufacturer's Name: Delicious Tempeh.
Manufacturer's Address: 250 W.S. College St., P.O. Box 6, Yellow Springs, OH 45387-0006. Phone: 513-767-9309.
Date of Introduction: 1982. October.
New Product–Documentation: Form filled out by Corinne and Daniel L. Pelzl. They opened on 28 June 1982 but first sold to stores Oct. 4. "We are up to about 25 lb/week [of soybeans] in 3 batches a week, and growing."

1227. **Product Name:** Tempeh.
Manufacturer's Name: Home Town Tempeh. Div. of Springfield Community Foods.
Manufacturer's Address: 300 N. Waverly, Springfield, MO 65802. Phone: 417-866-1337.
Date of Introduction: 1982. October.
New Product–Documentation: Letter from Jim Hawkins. 1982. Oct. 12. Nice letterhead. "Home Town Tempeh is one of several businesses operating under one roof as Springfield Community Foods. We make soybean tempeh and will make

other kinds as the market develops, such as tempeh salad."

1228. Kanasugi, Goro. 1982. Yokubatta negai [A greedy wish]. *Daizu Geppo* (*Soybean Monthly News*). Oct. p. 8-9. [Jap]
• ***Summary:*** The author, vice-president of the Japanese Natto Association, would like to see tempeh become popular throughout Japan. Address: Zenkoku Natto Kyodo Kumiai Rengokai, Fuku Kaicho.

1229. Leviton, Richard. 1982. The Perriers of soy foods: With large initial capital investments and national marketing plans, these companies are positioned for rapid growth. *In Business*. Sept/Oct. p. 53-56.
• ***Summary:*** Discusses three soyfoods companies: Legume, Soyfoods Unlimited, and American Miso Co. "While most companies in the industry operate on local or regional levels at best, these three progressive firms uphold nationwide market goals, have tied up large amounts of capital, and nurture vigorous plans to capture the American mainstream market. Legume, located in Caldwell, New Jersey, and run by Gary and Chandri Barat, and Robert Shapiro, "distributes an impressive line of tastefully packaged, prepared convenience soyfoods in 40 states. Legume practically invented the product category, which includes tofu pizza, lasagna, ravioli, egg-plant Parmesan, tofu-vegetable pot pies, muffins, cakes, and tofu cheese-cakes. Currently the company, with weekly sales of $8,000, contracts out all its food production, thereby allowing its lean staff of three to concentrate on sales and marketing. The Barats expect 1982 sales to top $1 million with three employees, and $3 million by 1983 with only five workers." A good history of Legume begins: "Gary and Chandri Barat first caught wind of the swelling enthusiasm for soy products in July, 1979 at the Second Soycrafters Conference in Amherst, Massachusetts. They gathered over 500 pages of industry documentation and while uncertain of a specific product line, they were convinced that soyfoods, particularly prepared convenience offerings, were to be *the growth* area of the general food industry. Yet in their search for venture capital, holding only their prospectus as bait, they experienced difficulty... 'Let's taste the product,' potential investors demanded.

"The Barats lacked a track record in the food industry,... But today, investment money firmly in hand, Gary reflects: 'When raising money, make it a learning experience.' Ask a lot of questions. Find out why people say no, listen carefully, study their answers, then make adjustments to address their concerns. Then ask again. Never take the rejections personally. Developing a business plan is an ongoing venture; it never stops and never ends. In the summer of 1980 the Barats took their fledgling concept to the streets of New York City, where they served their new line of prepared tofu products to a series of street fairs. "They served over 10,00 meals of tempeh chili, tofu chocolate mousse, and tofu cutlets, and studied faces carefully for reactions. Buoyed by the positive response," they added tofu muffins, then vegetarian quiche to their line. The "R&D Taste Testing" at the street fairs eventually secured them $50,000 in capital and $100,00 in loans. They still managed to hang on to 51% ownership in their new company. They did careful market research using the influential SAMI (Standard Area Marketing Index) data, read reports, and interviewed industry leaders. They began to promote frozen tofu entrees but the profit margins were too slim. Their latest 1982 plan "calls for introducing six or eight boxed, frozen tofu entrees for national distribution."

Valerie, John and Gary Robertson launched Soyfoods Unlimited in San Leandro, California in Feb. 1981. They focus on making and marketing selling. A big break came when New England Soy Dairy in Massachusetts bid to distribute 2,700 lb/month of their tempeh burgers. Once a week Valerie delivers the cases of frozen tempeh to the San Francisco airport.

John and Jan Belleme started the American Miso Co. in Aug. 1981 in Rutherfordton, North Carolina, after a $300,000 investment in plant and equipment. They hope to produce 500,000 lb/year of miso. They did an 8-month apprenticeship in Japan with a master misomaker.

Photos (by Richard Leviton) show: (1) Valerie Robertson of Soyfoods Unlimited with a tray of freshly-made tempeh. (2) John, Valerie, and Gary Robertson; the two men are wearing masks. (3) John Belleme of American Miso Co. empties hot, steaming soybeans. Address: Colrain, Massachusetts.

1230. Soyfoods Unlimited. 1982. All the sizzle... None of the steak (Ad). *Vegetarian Times.* Oct.
• ***Summary:*** A full-page ad for tempeh burgers. "Mmmm... go ahead, bite into this thick and juicy 'All American' Tempeh Burger from Soyfoods Unlimited. It's a real taste sensation that is wholesome and full of hearty flavor."

1231. Furth-Kuby, Wolfgang. 1982. Re: New developments with tofu and soyfoods in Europe. Letter to William Shurtleff at Soyfoods Center, Nov. 4. 2 p. Typed, with signature on letterhead. [Eng]
• ***Summary:*** "The term 'Tofurei' was invented by Gabriele Furth-Kuby. We thought it would be nice to have a similar name as 'Backerei' for bakery, 'Metzgerei' for butchery, etc. Consequently a miso shop would be called 'Misorei' or a soy foods shop 'Sojarei' or a Tempeh shop 'Tempehrei.'

To date, the German edition of *The Book of Tofu* has sold 2,203 copies and *The Book of Miso* 3,040 copies. There are two new books about soyfoods out in German. One is *Kochen mit Tofu* (originally published by Autumn Press), the other *Soja Total* the new Farm cookbook. Sojaquelle has a full-page ad in each of them. Advertising our Tofu-kit we will get the addresses of people interested in soyfoods and

then they will also buy our soybooks.

Wolfgang will see Herrn Wolf in Vienna [Austria] "within the next two weeks and then will get copies of the two soybooks [that Shurtleff requested]. As soon as I have them I will send them to you."

In December the German TV will broadcast a six-minute film about Tofu. Gabriele's brother has done the film and we expect a breakthrough with it."

Note: Sojaquelle became inactive in 1986.

Letter from Bernd Drosihn of Viana. 1995. April 19. Wolfgang Furth-Kuby's new address is: Nelkenstrasse 11, 83125 Eggstätt, Germany. Phone: 08056 240. Fax: 836. "Wolfgang is now working as a consultant mostly for natural food stores and seems to be a little bit disappointed by the soyfoods business. He wants to get in contact with you again." Address: President Sojaquelle and Ahorn Verlag, Weidgarten 2, D-8091 Soyen, West Germany. Phone: 08071-4220.

1232. Nelissen, Tomas. 1982. Re: Jakso and soyfoods in the Netherlands. Letter to William Shurtleff at Soyfoods Center, Nov. 9. 2 p. Typed, with signature on letterhead.
• ***Summary:*** "Maybe you still remember me from the time we were in Japan; once we met at Kichijoji station, next to Mitaka station. You tasted my genmai [brown rice] miso at a coffee-bar (next door).

"At this moment I am living in Holland with my wife Yvonne and two children. We set up a farm called Jakso. The whole idea is about becoming self-sufficient from the 30 hectares of land (including 6 hectares of fruit trees), a sourdough bakery, a soyfoods workshop, a futon workshop and educational activities.

"For the three workshops we "cut" the big barn into two halves and made a third floor. We built a very nice wood-burning bakery which produces all kinds of bread, cookies and savories. The soyfoods workshop makes tempeh and tofu, as well as seitan. Year-round we produce an average of about 1,500 pieces of tempeh a week at 210 grams each, about 50 kg of tofu a day and a little less than 100 kg of seitan.

"We distribute our products all over Holland... in a 100 km circle around the farm. Our future products will be miso, shoyu, amasake and mushrooms. These are the products we studied in Japan for about 4 years...

"There are 12 people working on the farm (plus 7 children)... The meals are on a macrobiotic base." Address: Director, Jakso, St. Natuurlijke Land- en Tuinbouw, Voorne 13, 6624 KL Heerewarden, Netherlands. Phone: 08877-2189.

1233. Cadwallader, Sharon. 1982. Vegetarian soy tempeh. *San Francisco Chronicle.* Nov. 10. p. 43. Sunday.
• ***Summary:*** Includes an introduction to tempeh, a favorable review of *The Book of Tempeh,* by Shurtleff and Aoyagi, and two recipes: Deep-fried tempeh, vegetable and curry patties. Tempeh enchilada pie.

1234. Joyce, Michael. 1982. Re: Tempeh in Australia. Letter to William Shurtleff at Soyfoods Center, Nov. 17. 4 p. Handwritten.
• ***Summary:*** "Greetings from Australia. My wife, Julie Anne, and family had the pleasure of meeting your friends Cyril and Elly Cain earlier this year. They have shared so many wise, fruitful and wonderful experiences with us and they have set up Australia's first tempeh shop.

"In their sharing with us the knowledge of tempeh and the wide and varied range of the soya bean, we have begun to appreciate the work you and Akiko have done over the past decade.

"Could you please send details of the INTSOY program in India to Dr. Ernest Koomapalli, c/o Pastor V.A. Thampy, Changanacherry 2, Kerala, South India. These people are feeding 450 children and 50 adults and I know the knowledge of soya bean will be a blessing to them.

"We are helping Cyril and Elly with the tempeh shop and hope to continue making fine tempeh from what they have set up when they return to the U.S. in 1983. Cyril will leave all his books." Address: P.O. Box 45, Woonbye 4559, QLD, Australia.

1235. Cohen, Michele. 1982. Local bean makes good: A look at Wildwood Natural Foods. *T&T Natural News* (*San Rafael, California*). Oct/Nov.
• ***Summary:*** When the author visited Wildwood, "Marin's local tofu-making factory in Fairfax, she was given a guided tour by Paul Orbuch, one of the company's four owners. The place was "a flurry of impressively organized activity in an area of less than 1,000 square feet. Paul explained that each morning at 5 A.M. 8 workers arrive and begin the day's preparation of sandwiches, which have become standard favorites of many. The selection includes a brown rice and tofu sandwich, Tofunofish, Avotofu, Tofu-Steak and a Supreme-Bean Tempeh Burger. The Deli line offers hummus, potato salad, tofu-dill salad, tobouli [sic, tabouli, tabbouleh] and tofu-vegetable salad."

"Bill Bramblett, another partner who popped into the office added that the clear structure, right personnel and smooth system are what keep those soybeans cooking."

The author then describes how "20 pounds of organic Midwestern soybeans are alchemically transformed into 40 pounds of tender tofu... The capacity of Wildwood's facilities allows them to manufacture a maximum of 330-340 pounds of tofu per day."

Photos show: Eleven Wildwood employees, around a table with their products. Tom Meyer stirring tofu curds in a large stainless steel barrel. Soybeans soaking and a press.

Note: *T&T Natural News* is published by a two-chain food store in San Rafael, California. The T&T stands for Throckmorton and Thunderstrand.

1236. Djurtoft, Robert. 1982. Technical report [Production of cowpea tempeh in Osegere, Nigeria]. Unpublished typed manuscript. 10 p. Nov. Unpublished manuscript.
• ***Summary:*** Describes the method of producing cowpea tempeh, tempeh recipes, and tempeh inoculum. Prof. Omolulu and Dele Omotola, Dep. of Nutrition, were actively involved. Address: Dep. of Biochemistry and Nutrition, Technical Univ. of Denmark, Building 224, DK-2800 Lyngby, Denmark.

1237. Kushi, Michio. 1982. Cancer and heart disease: The macrobiotic approach to degenerative disorders. Tokyo: Japan Publications, Inc. 224 p. Nov. Illust. Index. 26 cm. [50* ref]
• ***Summary:*** Contents: Foreword, by Michio Kushi. Foreword by Edward Esko. 1. The macrobiotic approach, by Michio Kushi. 2. Cancer and diet. 3. Diet and heart disease. 4. Macrobiotics, preventive medicine, and society. 5. Case histories. Appendixes: Food policy recommendations for the United States, by Michio Kushi. East West Foundation–Diet and health related activities, 1972-1982. Bibliography.

Many of the subchapters in this book are written by physicians. For example, William P. Castelli, M.D., contributed a 5-page original article titled "Lessons of the Framingham Heart Study." There are also articles by Robert S. Mendelsohn, M.D., Keith Block, M.D., and Christiane Northrup, M.D. Miso, tempeh, natto, tofu, and soy sauce are all discussed as foods that can be used to help in the prevention and cure of these two major diseases. Address: Brookline, Massachusetts.

1238. Leviton, Richard. 1982. Soyfoods come of age. *Vegetarian Times.* Nov. p. 28-29, 31. [1 ref]
• ***Summary:*** "Soybean based foods made with simple technology are gradually replacing meat in America diets. Originally developed in the Far East, foods like miso, tofu, and tempeh are becoming Westernized as manufacturers add convenient packaging, modern marketing and pizzazz to their soyfoods. Discusses: New tofu marketing techniques, the impact of *The Book of Tofu* by Shurtleff & Aoyagi and other tofu cookbooks, secondary soy products (prepared, convenient soyfoods), Legume, Quong Hop, Garden of Eatin', Edward & Sons, the soy deli, interest in tofu by large American food companies (Del Monte and Kraft).

Includes "A Guide to Soyfoods" the briefly defines miso, soy sauce, texturized soy protein, tofu, and tempeh. Address: 100 Heath Rd., Colrain, Massachusetts 01340. Phone: 413-624-5591.

1239. *Manna Bulletin* (*Amsterdam, Netherlands*).1982. Fermentatieprodukten essentiële aanvulling op plantaardige dieet [Fermented products, an essential supplement to a vegetarian diet]. 4(3):9-11. Autumn. [Dut]
• ***Summary:*** Mentions tamari soy sauce (*Tamari-sojasaus,* fermented for 2 years), miso (*Miso-sojapasta,* fermented for 2 years), tempeh, and natto.

1240. Noble Bean Deli. 1982. November. New soyfoods restaurant or deli. 18320 Euclid Ave., Cleveland, OH 44112.
• ***Summary:*** Jeff Narten. 1987. History of North Coast Tempeh and its Products. 4 p. Dec. 7. This deli was founded on 12 Nov. 1982. In 1987 it moved to 2246 Lee Rd., Cleveland Heights.

Note: This is the second earliest soy-related company seen (June 1998) that has the term "Noble Bean" in the company name. Address: Cleveland, Ohio.

1241. Shurtleff, William; Aoyagi, Akiko. 1982. History of Soya Production and Research Association (SPRA) (Document part). In: William Shurtleff and A. Aoyagi. 1982. History of Soya in the Indian Subcontinent. 36 p. See p. 24-26, 30-31. Unpublished manuscript. [1 ref]
• ***Summary:*** "SPRA was founded by Robert W. Nave, an American who was born and raised in India and worked there as a missionary since the late 1950s. His interest in improving the well-being and economic status of low-income people in India led him in the mid-1960s to establish the Nave Technical Institute (NTI), a Methodist missionary foundation and school at Shahjahanpur, Uttar Pradesh. In 1968 Nave and co-worker Peter Chowfin visited Dick Matsuura, director of the soy program at Pantnagar. Matsuura encouraged them to consider a church-sponsored program for producing soyfoods–since no private businesses were willing to take the risk and the work was clearly of real importance. In 1970 Nave founded a nonprofit, charitable organization called NTI Soya Products. Joe Wenger and his Wenger Manufacturing Company, old friends of Nave's parents, donated a Wenger X-25 extrusion cooker to the new organization to help in setting up a pilot project in India making textured soy protein foods. Soon additional funding was obtained from the USAID, G.B. Pant University, Bread for the World of West Germany, the Methodist Church, and Nave Technical Institute. Nave started building a factory at Bareilly, an industrial center 50 miles northwest of Shahjahanpur, in March 1971. Key people helping to start the new company were Prof. A.I. Nelson, Surjan Singh, Dick Matsuura, and Eldon Rice.

"In early 1972, in order to raise additional funds and to cement ties with Pant University, Nave sold 20% of the stock in NTI Soya Products to the university; NTI owned the rest. At that point the company was renamed Soya Production and Research Association (SPRA) and converted to a profit making organization, but with all the profits to be used for socially beneficial activities. In July 1972 SPRA produced its first large run, 40 tons of corn-soy blend to be used in an AID feeding program in Madras. Defatted soybean meal was especially made for SPRA by the Prag Ice and Oil Mills in

Aligarh.

"In the fall of 1972 SPRA started to make its first commercial product, an extruded/textured soy flour (TVP). Recipes were developed and the product was market at a low price in inexpensive packaging for the poor. But they wouldn't take it even when it was given to them. So SPRA took a new approach, marketing the product for the rich to reach the poor. The company chose a catchy name (Nutri Nugget), developed a fancy box written entirely in English for snob appeal, and introduced the product only in the finest stores, with demonstrations at colleges and for upper income women's groups. After much hard work, the product caught on. Its success was assured when Sikhs started using it at their wedding dinners to satisfy both vegetarian and nonvegetarian guests. Soon all TVP came to be referred to by the public as Nutri Nugget (or Soy Nugget or Nugget). During the first year SPRA sold about 10 tonnes of Nutri Nugget. In 1973 they added their next product, Protesnac, a soy-rice spiced snack, a fortified analog of the puffed rice which was popular, especially in Bengal, on festive occasions. By 1974 the company had introduced Protein Plus (a corn-soy weaning food), Nutri Ahar (a whole soy flour-wheat weaning food), Paustic Ahar (a sweetened ready-to-eat corn-soy blend), and an extrusion cooked whole (full-fat) soy flour (Singh 1978). By 1974 840 tonnes a year of these products were being produced, with about half being sold through the retail trade.

"In 1974 SPRA, in cooperation with G.B. Pant University, introduced a soybean extension program in the plains of Rohilkhand Division of Uttar Pradesh, an area on the plains near Bareilly where soybeans had not been grown economically before. SPRA hoped to develop a closer, more reliable source of soybeans. Using a grant from the Central Agency of West Germany, SPRA worked with hundreds of farmers, providing certified seeds, fungicide, *Rhizobium* inoculum, and careful supervision, plus a guarantee to buy all soybeans produced at a predetermined price. R.N. Trikha of Pant University was head of the program, which conducted hundreds of demonstrations and established demonstration plots (40% of which had yields over 2,000 kg/ha or 29.6 bu/acre), published a *Soybean Technical Newsletter* and other extension literature, had an advisory service, and conducted many training sessions, soybean field days, and crop yield competitions. As a result of all this important work, local yields and production increased markedly (Trikha and Nave 1979). This extension program was still active as of 1982...

"SPRA expanded considerably during the late 1970s and early 1980s. In about 1977 a larger extrusion cooker, a Wenger X-155, replaced the original X-25. But as the products, especially the basic Nutri Nugget (plain TVP), grew in popularity, competitors sprang up on all sides, in most cases imitating almost exactly SPRA's product and marketing techniques. By 1981 SPRA had 50% of the Indian TVP market, but there was competition from four other companies. Still SPRA was able to sell all it could produce and was planning to double production. In May 1981 Nave established a new nonprofit corporation named Compatible Technology, Inc., which was registered and located in Minnesota. Though legally unrelated to SPRA, its funding was raised by Nave and its purpose was to transfer ideas and technology to India. Projects in 1981 included development of: low-cost packaging techniques for whole soy flour, 5-to-10 horsepower low-cost extrusion cookers, small soy oil extraction plants, a soy-based cookie for feeding programs (a soy-fortified flour would be sold to local bakers and institutions, which would bake the cookies for fresh local consumption), tempeh, and a soyfoods training center. In 1981 SPRA made and sold roughly 2,000 tonnes of Nutri Nuggets (TVP) plus 120 tonnes of Protein Plus for net sales of $2.5 million. SPRA has done pioneering work with soyfoods and soybeans in India, being the first company to interlink soyfoods research, product development, processing, and marketing with soybean crop extension."

1242. *Soyanews* (*Sri Lanka*).1982. The day tofu came to Jaffna. 5(3):4-5. Nov.

• ***Summary:*** "Over 250 representatives from the Jaffna Multi-Purpose Co-operative Societies Women's Guilds attended the lecture / demonstrations in soyafood preparations conducted last September by Miss Ellen Jayawardene, Chief Instructress of the Soyafoods Research Centre's Home Level Training Program. The lecture / demonstrations were spread over five days. It was the first time such an intensive training program was held in Jaffna."

Three large photos show lively scenes women making soyafoods. A fourth photo shows a sales transaction following a demonstration at the Veerasingham Hall, Jaffna. Soya flour and dried tempeh were greatly in demand. Tempeh, either fresh or dried, can serve as a substitute for the ever popular *karawadu* [karawala] (dried fish).

1243. Leviton, Richard. 1982. Re: Summary of soyfoods research trips in the Midwest and Canada (Oct. 14-28) and West Coast (Nov. 21-30). Letter to William Shurtleff at Soyfoods Center, Dec. 6. 2 p. Typed, with signature on letterhead.

• ***Summary:*** The letter begins: "As you requested, the notes on my 'historic' tour, hysterically unprofitable, but at least fun." Traveling 4,700 miles, Leviton gave programs about tofu, tempeh, and other soyfoods sponsored by various companies, and was on TV and newspaper interviews. Companies visited in the Midwest and Canada: Rising Sun (Columbus, Ohio), Prairie Soyl, Community Foods Tofu/Tempeh Shop, Light Foods, Michiana Soyfoods, Zakhi Soyfoods, Bountiful Bean, Higher Ground Tempeh, Steve Fiering (disappointing business meeting), Soyateria, Victor Foods (Toronto, Ontario, Canada), La Soyarie (Ottawa), Unisoya (Quebec).

West Coast and British Columbia: Wildwood Natural Foods, Brightsong Light Foods, Dayspring Soyacraft, Sooke Soyfoods, Metta Tofu, Sin-Mei-Do, Thistledown, Lifestream, Surata.

Leviton is thinking about relocating in California or working with Soyfoods Center on writing books. Address: 100 Heath Rd., Colrain, Massachusetts 01340. Phone: 413-624-5591.

1244. Kronenberg, Hananya. 1982. Re: Research on meitauza fermentation. Letter to William Shurtleff at Soyfoods Center, Dec. 7. 1 p. Typed, with signature on letterhead. [1 ref]
• ***Summary:*** He is still working on his Master's degree at Cornell University, on the subject of meitauza fermentation. He is making progress and hopes to present some of his findings at the IFT convention this June.

The letterhead is black ink on beige paper. In the upper left is a logo of one circle inside another. In the inner circle are three soybean leaves with three pods above them on a black background. Between the inner and outer circles are six sporeheads, each on a stalk. Address: Soy Systems, 714 N. Aurora, Ithaca, New York 14850.

1245. Kim, Kil Hwan. 1982. Kohng, dubu wa kohng nah mul eh kwah hak [The science of soybeans, tofu and soy sprouts]. Seoul, South Korea: Korean Science Foundation. 211 p. Dec. Illust. Index. 21 cm. [200+ ref. Kor]
• ***Summary:*** Contents: I. Soybeans. Introduction. World soybean production: Areas of production, quantities produced, amount produced in Korea, amount imported to Korea, chemical composition of all soybeans. How to use soybeans: Foods and processed soybean foods (sauces, tempeh, natto), industrial uses. Nutritional composition of soybeans: Common components, protein and amino acids (protein, essential amino acids, necessary protein intake, necessary amino intake, chemical score, biological value of soybean protein, the need to heat soy protein, the use of soy protein as a protein supplement), soybean oil (components of soybean oil, oil assimilation / absorption), other nutritional components (carbohydrates, vitamins, minerals), references.

II. Tofu. Introduction. Kinds of tofu and production: Soybean curd (production in factories, production at home, instant tofu, kinugoshi tofu, grilled tofu, frozen tofu, how to freeze and dry tofu). Movement of nutritional values during tofu processing: Movement of common nutrients, movement of amino acids. Nutritional components of tofu: Tofu protein, tofu protein as a protein supplement, digestion of tofu, calories in tofu, fat and cholesterol, minerals and vitamins, toxins, *hwe bun* in tofu. Tofu and group meals: School meals in Japan, in America, in Korea. Tofu factories and associations involved with tofu: Member list of food associations in Korea, regular member and extra member list of tofu packaging associations in Japan, directory of tofu shops and factories in North America, in Europe, in other countries, list of companies selling tofu coagulants, list of tofu restaurants in Japan. References.

III. Soy sprouts. Introduction. Production of soy sprouts: Soybean varieties, selecting and washing the soybeans, soaking, watering the sprouts, machines for cultivating soy sprouts, maintenance. Nutritional composition of soy sprouts: Common nutrients, increase of vitamin C during growth, changes in vitamin C during heating, changes in riboflavin during heating. Glossary.

Soybeans arrived in Korea in about 200 B.C. (p. 11). Contains many useful tables. Address: Korea.

1246. *Soyanews* (*Sri Lanka*).1982. Dried tempeh on sale. 5(4):1. Dec.
• ***Summary:*** "A new soya product–Dried Tempeh is being marketed in the Kandy District. The tempeh is produced by Unisoy, Hindagala, Peradeniya, as a cottage industry. Currently 15 kilos of dry soyabeans are being processed daily to make the tempeh."

Photos show: (1) The front of a package of Soya Karawala. In a large circle: "Protein 51%." (2) "One of the tempeh workers (a lady) proudly displays their first packaged product."

1247. **Product Name:** Soya Karawala.
Manufacturer's Name: Unisoy.
Manufacturer's Address: Hindagala, Peradeniya, Sri Lanka.
Date of Introduction: 1982. December.
How Stored: Shelf stable, 6-12 month shelf life.
New Product–Documentation: *Soyanews* (Sri Lanka). 1982. Dec. p. 1. "Dried tempeh on sale." "A new soya product–Dried Tempeh is being marketed in the Kandy District. The tempeh is produced by Unisoy, Hindagala, Peradeniya, as a cottage industry.

Note: This is the earliest known commercial tempeh made in Sri Lanka.

1248. **Product Name:** Tempeh.
Manufacturer's Name: Amity Soy Products.
Manufacturer's Address: Box 995, Amityville, NY 11701.
Date of Introduction: 1982.
New Product–Documentation: Label. 1982, undated. 4.5 by 5.5 inches. Black on green.

1249. Balai Penelitian dan Pengembangan Industri Surabaya (Office of Industrial Research and Development in Surabaya). 1982. Pemgaruh berbagai pembungkus terhadap pertumbuhan jamur pada tempe kedelai [Effects of various wrappers on the growth of fungi in soy tempeh]. Surabaya: BPPIS. [Ind]*
Address: Surabaya, Indonesia.

1250. Bo, Thi-an. 1982. Hishio to shôyu no engen to sono seisan gijutsu ni tsuite. I. [On the origins of chiang and shoyu, and their production technology. I.]. *Nippon Jozo Kyokai Zasshi* (*J. of the Society of Brewing, Japan*) 77(6):365-71. [9 ref. Jap; eng]
• ***Summary:*** This is one of the most interesting and carefully researched articles seen up to this time on this subject. The author (Ho Keian in Japanese), is a Chinese graduate of Iwate University in Japan. He sent this article to the university alumni association on the university's 80th anniversary. Shoyu has become a world-class seasoning. Even in Moscow they have built plants to produce soy sauce and chiang (miso).

The earliest chiang was made with meat, fish, and shellfish; later, as agriculture advanced, beans and grains were used. The two main types of chiang are (I) those made using flesh as a main ingredient and (II) those made solely from plants. The flesh chiangs can be further subdivided: IA. Those made from animal and bird flesh. IA1. Made without bones (mentioned in the Shih Ching [Classic of Food], the Chou Li [Rituals of the Chou Dynasty, 3rd century B.C.], the Li Chi [Book of Rites, 2nd to 3rd century B.C.], and the I Li); IA2., Made with a large amount of liquid (mentioned in the Chou Li and Li Chi); IA3. Made with flesh and bones (mentioned in the Chou Li, I Li, and Ch'i-min Yao-shu [Essential techniques for the peasantry of Ch'i, written by Chia Ssu-hsieh in A.D. 535]); IB. Made with fish or shellfish, including IB1. Fish chiang (mentioned in the Chou Li, Ch'i-min Yao-shu), and IB2. Fish intestine chiang (mentioned in the Ch'i-min Yao-shu). The non-flesh or vegetable chiangs (II) can be divided into: IIA. Those made with beans including IIA1. Chiang (mentioned in the Chou Li (3rd century B.C.), Lun Yu [Analects of Confucius, after 479 B.C.], Shih Chi [The Historical Record by Ssu-ma Ch'ien, ca. 90 B.C.], and Chi Chiu P'ien [48 to 33 B.C.]). IIA2. Bean (Soybean) chiang (tou-chiang, mentioned in the Ch'i-min Yao-shu). IIA3. Small (Red/Azuki) bean chiang (mentioned in the Nung Sang I Shih Chi Yao [+1314]). IIB. Chiang made from other vegetable materials including: IIB1. Wheat chiang (mentioned in the Shih Ching); IIB2. Wheat flour chiang (mentioned in the Pen-ts'ao Kang-mu [Compendium of Materia Medica, by Li Shih-chen, A.D. 1578-97] and the Chü Chia Pi Yung Shih Lei Ch'uan Chi [+1301]); IIB3. Coconut chiang (Mentioned in the Ch'i-min Yao-shu); IIB4. Barley chiang (mentioned in the Pen-ts'ao Kang-mu); and IIB5. Mustard chiang (mentioned in the Li Chi and Chih Ching).

It is interesting to note that the earliest meat and fish chiang was made with koji, typically millet koji. Koji is also used today to make some of the fish sauce called Shottsuru in Akita prefecture in Japan. Shottsuru has a 3,000 year history.

The use of the terms "hai" (meat chiang) and "chiang" in the Chou Li imply that some chiang was made from ingredients other than meat. An illustration from the Han dynasty shows a hole in the bottom of a chiang pot for drawing off soy sauce. The *Ssu Min Yüeh Ling* by Ts'ui Shih from the Later Han (25-220 A.D.) uses the term "ch'ang chiang" to refer to refined/filtered soy sauce. The *Ch'i-min Yao-shu* also uses two terms for refined chiang that seem to be referring to types of soy sauce. Thus it seems relatively sure that chiang has a history of about 3,000 years from the Chou dynasty (1122-256 B.C.) and soy sauce has a history of over 2,000 years since the Ch'in (221-206 B.C.) or Han (206 B.C.–A.D. 220). In the literature of the T'ang dynasty it is not rare to use soy sauce for medicinal purposes.

Soy sauce came from chiang, which was made from soybeans and wheat flour or wheat; it is still widely produced today. But from shih (soy nuggets) came tamari and kuan-tou soy sauce (kuan-tou is a region in Fukien/Fujian in southeast China). Only soybeans were used to make these types of soy sauce. The first tou-shih (soy nuggets) was made from soybeans only, with *Aspergillus oryzae* mold. If salt was added, the product was called hsien tou-shih; if none was added, it was called tan tou-shih. Later they started to use *Mucor* (as in Szechuan tou-shih) or *Rhizopus* species. Today most tou-shih is made with Aspergillus. This is the ancestor of tamari shoyu and kuan-tou soy sauce. Address: Iwate Daigaku Nôgaku-bu, Sogaku 80 shunen no gosukuji ni kaete; Present address, China.

1251. **Product Name:** Tempeh Balance Burger/Cutlet (With Soybeans & Brown Rice & Sesame Seeds).
Manufacturer's Name: Cricklewood Soyfoods.
Manufacturer's Address: Route 1, Mertztown, PA 19539.
Date of Introduction: 1982.
Ingredients: Incl. soybeans, brown rice, spices, oil.
New Product–Documentation: Ad in CRC Reports. 1982, and 1987. Fall. p. 15. 7 oz. Frozen. Talk with Karl Krummenoehl. 1988. Jan. 4. He considers this the best tempeh burger on the market, and their product with greatest potential. It is sauteed in cold pressed oil.

1252. Djurtoft, R. 1982. Cowpeas (*Vigna unguiculata*) used for making tempe for human consumption. *J. of Plant Foods* 4:75-76. [15 ref]*
Address: Dep. of Biochemistry and Nutrition, Technical Univ. of Denmark, Building 224, DK-2800 Lyngby, Denmark.

1253. **Product Name:** Organic Tempeh.
Manufacturer's Name: Full of Beans Soyfoods.
Manufacturer's Address: Castle Precincts, Castle Ditch Lane, Lewes, East Sussex, BN7 1XH, England.
Date of Introduction: 1982.
New Product–Documentation: Soya Bluebook. 1987. p. 95. Form filled out by John & Sarah Gosling. 2001. June 11. Company name: Full of Beans. Address: The Old Bottling Store, Castle Ditch Lane, Lewes, East Sussex, BN7 1YT,

England. Phone: 01273-47267. They have been making tempeh since 1982.

1254. **Product Name:** Tempeh.
Manufacturer's Name: Kanai Tofu Factory.
Manufacturer's Address: 515 Ward Ave., Honolulu, Oahu, HI 96814.
Date of Introduction: 1982.
New Product–Documentation: Hawaii Directory of Manufacturers. 1981-82. p. 11.

1255. Lie Goan Hong. 1982. Peranan makanan fermentasi tradisional dalam usaha memperbaiki gizi masyarakat [The role of traditional fermented foods in efforts to improve community nutrition]. *Kesehatan Masyarakat* (*Community Health*) 11(27):10-14. [Ind]*

1256. **Product Name:** [Tempeh].
Manufacturer's Name: Luiz Simas and Bobbi Joels Tempeh.
Manufacturer's Address: Estrada do Tambá, 175, apt. 401, 22.450 Rio de Janeiro (RJ), Brazil.
Date of Introduction: 1982.
New Product–Documentation: Letter from Luiz Simas and Bobbi Joels. 1986. Jan. 7. "When we returned to Brazil from the USA in Nov. 1981, we decided to hold a series of classes on natural foods processing, including a class on making tempeh at home. (Tempeh was completely unknown around here at that time.) We also began to make tempeh for our own consumption, but ended up setting up a small shop in our apartment. Because of the limited space, our tempeh production never went beyond 50 pounds per month, in spite of the large demand. So after a year or so, as we had originally planned, we handed the business over to a couple of friends who, unfortunately, for many reasons, were not able to continue tempeh production."

1257. Mahmud, Mien K.; Affandi, Erwin. 1982. Pengujian aktifitas antibakterial pada tempe terhadap bakteri penyebab diare [Tests of the antibacterial activity of tempeh against bacteria causing diarrhea]. Bogor: Pusat Penelitian dan Pengembangan Gizi. 12 p. Research report. [Ind]* Address: Nutrition Research and Development Center, Bogor, Indonesia.

1258. Mangkuwidjojo, Soesanto; et al. 1982. Pengaruh tempe dalam ransum makanan terhadap kadar kholesterol dalam serum darah tikus [The effect of tempeh in food rations on the blood cholesterol level in mice]. Yogyakarta: Fakultas Kedokteran Hewan (Veterinary College), Universitas Gadjah Mada. 14 p. Research report. [Ind] Address: Yogyakarta, Indonesia.

1259. **Product Name:** Noble Bean Tempeh Pot Pie (With Garbanzo Gravy).
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: 18320 Euclid Ave., Cleveland, OH 44112.
Date of Introduction: 1982.
Ingredients: Filling: Tempeh, mixed vegetables, garbanzo flour, brewer's yeast, vegetable broth, seasonings with grain bread crumbs, sherry. Crust: Wheat flour, vegetable shortening, whey, water.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Frozen.
New Product–Documentation: Label. 1982. 4.25 inch diameter. Green, blue, yellow and red on white. Logo of Jack and the Beanstalk. "No cholesterol. Remove all plastic and bake at 450* for 15 minutes." Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7.

Note: This is the earliest commercial soy product seen (June 1998) that has the term "Noble Bean" in the product name.

1260. **Product Name:** Noble Bean Breaded Tempeh Fingers with Garbanzo Beans.
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: 18320 Euclid Ave., Cleveland, OH 44112.
Date of Introduction: 1982.
Ingredients: Precooked tempeh (organic soybeans, water, Rhizopus culture), seasoned whole grain bread crumbs, arrowroot. Gravy: garbanzo beans, brewer's yeast, vegetable broth, seasonings.
Wt/Vol., Packaging, Price: 9 oz.
How Stored: Frozen.
New Product–Documentation: Label. 1982. 4.25 inch diameter. Yellow, green, blue, and red on white. Logo of Jack and the Beanstalk. "Gravy: Add packet to 4 tbs. butter, stir, then add water and 2 tbs. sherry. Simmer 10 minutes. No cholesterol." Interview with Jeff Narten. 1987. Oct. 9.

1261. **Product Name:** Noble Bean Tempeh Soysage (Using Tempeh in Place of the Typical Okara).
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: 18320 Euclid Ave., Cleveland, OH 44112.
Date of Introduction: 1982.
Ingredients: Tempeh with wheat flour, soymilk, oil, tamari, garlic, barley malt, mustard, seasonings.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1982. 4.25 inch diameter. Blue, green, yellow and red on white. Logo of Jack and the Beanstalk. "No cholesterol." Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7.

1262. **Product Name:** Noble Bean Tempeh.
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: 18320 Euclid Ave., Cleveland, OH 44112.
Date of Introduction: 1982.
Ingredients: Organically grown soybeans, water, vinegar, Rhizopus culture.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated or frozen.
Nutrition: Per 4 oz.: Fat 6.5 gm, protein 24 gm, carbohydrates 4.5 gm, calories 170, calcium 73.5 mg, phosphorus 0.5 gm, iron 2.7 mg, sodium 28.3 mg, potassium 0.88 mg, niacin 2.2 mg, thiamin 1.9 mg, vitamin B-12 8.5 mcg, vitamin A 8.21 I.U., riboflavin 0.75 mg.
New Product–Documentation: Label. 1982. 4.5 by 6 inches, self-adhesive, front and back. Colorful green, red, yellow, and blue on white, with logo of Jack and the Beanstalk. "All Natural. Rich in Protein. No Cholesterol. Highest Known Vegetable Source of B-12. Low in Calories and Sodium." Four recipes with cartoons on back. Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7. Plus new current label.

1263. **Product Name:** Noble Bean Soy-Grain Tempeh.
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: 18320 Euclid Ave., Cleveland, OH 44112.
Date of Introduction: 1982.
Ingredients: Organically grown soybeans, water, millet, brown rice, vinegar, Rhizopus culture.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1982. 4.5 by 6 inches, self-adhesive, front and back. Colorful green, red, yellow, and blue on white, with logo of Jack and the Beanstalk. "All Natural. Rich in Protein. No Cholesterol. Highest Known Vegetable Source of B-12. Low in Calories and Sodium." Four recipes with cartoons on back. Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7. Plus new current label.

1264. **Product Name:** One World Foods Tempeh: Cultured Soya Beans.
Manufacturer's Name: One World Natural Foods.
Manufacturer's Address: 188 Old St., London EC1V 9BP, England. Phone: 01-490 0749.
Date of Introduction: 1982.
Ingredients: Soya beans, vinegar, Rhizopus oligosporus, rice flour.
Wt/Vol., Packaging, Price: 8 oz poly bag.
How Stored: Frozen.
New Product–Documentation: Label for 1984 product sent by Anthony Marrese. 1992. March 28. "One World Foods Tempeh." 4 inches square. Glossy paper. Dark blue and white on light blue.

Simon Bailey. 1988. Natural Choice. Aug. 15. "Soya-Based Products." A photo shows the Label. "Now Organic." CSP form filled out by Simon Bailey. 1988. Sept. 28. The contact here is Josef Simpson. This company was formerly Community Health Foundation.

Interview with Joe Simpson, the owner, conducted by Anthony Marrese. 1992. March 28. The company was founded in 1984 and that year started commercial production of tempeh. The location has not changed. The East West Center in London is a large building of 5 floors with several rooms per floor. One World Foods has 2 rooms, each approximately 30 ft. by 30 ft. One room is for tempeh production and the other is for the office and secondary processing. In 1982 at the same address Joe started producing tempeh for the Clearspring Restaurant, at the East West Center, London. As the amount of tempeh used by the increased, one World Foods was founded in 1984. Joe was one of the first to introduce organic tempeh in London and to promote its use. In 1987 the shop expanded from one room to two at the same address. Success has been based on a quality product with good customer service, quality packaging and labeling, plus personal dedication by Joe. The company's first product was named Canadian Organic Soya Tempeh, launched in 1984 and still on the market in 8 oz poly bags. In 1985 the company launched Tempeh Sandwiches, plainly wrapped with no individual labels. One World Foods presently makes 600 x 8 oz packages of tempeh per week. The sandwiches were discontinued in 1989 due to Joe's lack of interest in doing more secondary production and distribution. Joe (the full owner) and one helper are the only two employees. Sales growth has been slow and steady, about the same as the 2-3 other tempeh producers in London. One World Foods also produces some other non-soya products such as sesame-peanut bars, and seitan. Anthony closes by noting that Joe is a very dedicated person, willing to share all he has and knows if it will help others.

New label for "Organic Tempeh Soya: Traditionally Cultured Soy Beans" sent by Anthony Marrese. 1992. March 28. 4 inches square. Brown, green, and red on yellow. Illustration of a wok filled with vegetables and tempeh. "Frozen. Simple to prepare. Low in saturated fats. High protein. Salt free.

Leaflet (8½ by 11 inches). 1992. "Nourishing delicious tempeh: The organic soyafood." Green, red, blue, and brown on beige. Illustration shows a wok filled with vegetables.

Leaflet. 1992. Tempeh: The cultured soyfood. Dark blue and light blue on white.

1265. Purnomowati, -; Sulistyani, -. 1982. Cendawan yang terdapat pada tempe gembus di daerah Purbalingga [Fungi that are found on okara tempeh in the regions of Purbalingga, Klampok, and Banjarnegara (Indonesia)]. Purwokerto: Fakultas Biologi Universitas Jenderal Sudirman. 14 p.

Research report. [Ind]*
Address: Purwokerto, Indonesia.

1266. Real Food Tofu Cafe (The). 1982. Brightsong–Menu. 8473 East Rd., Redwood Valley, CA 95470.
• ***Summary:*** The circular logo shows a soybean plant. The hand-written menu begins: "Vegetarian whole foods, specializing in delights from the humble soybean. Free tastes and recipes too. Low-cal, high protein, cholesterol-free, grease-less complete foods! Air conditioned. Smoke free. Tuesday-Friday 12:00–4:00.

Sandwiches $2.00: Tofunofish, baked-spice tofu, missing egg salad, happy-chicken salad, hummous, tofummus, stuffed mochi, not dogs. Desserts: Creamies, cheesecake, cookies, fruit bars, Ice Bean, banana split, frozen joy. Burgers $2.50: Tempeh, tofu, soysage. Drinks: Pure-fruit smoothies, fresh carrot juice, soy shake, apple juice, mineral water, Rush sodas, spirulina smoothies, soymilk, herb tea. Plus! Daily specials. To-go orders Fresh Brightsong tofu and other packaged soyfoods for your convenience. Address: Redwood Valley, California. Phone: (707) 485-7050.

1267. **Product Name:** Soy & Five Grain Tempeh (Soy & Wheat & Millet & Barley & Oats & Brown Rice).
Manufacturer's Name: Soyfoods Unlimited, Inc.
Manufacturer's Address: 14670 Doolittle Dr., San Leandro, CA 94577.
Date of Introduction: 1982.
Ingredients: Soybeans, wheat, millet, barley, oats, brown rice, water, tempeh culture (Rhizopus oligosporus).
Wt/Vol., Packaging, Price: 8 oz (227 gm) perforated clear poly bag packed in an outer printed poly bag.
How Stored: Frozen or refrigerated.
Nutrition: Per 4 oz.: Calories 188, protein 16 gm, carbohydrates 17 gm, fat 6 gm, vitamin B-12 1.6 mcg.
New Product–Documentation: Label. 1982, undated. 5 by 6.5 inches. Brown and yellow on clear plastic. "Foods for Health. Recipes for Breakfast Tempeh and Tempeh & Vegetables Stir Fry." Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center.

1268. **Product Name:** Tempeh Cutlet / Burger (A Rectangular Burger. Vacuum Packed. By 1986 renamed Tempeh Cutlet).
Manufacturer's Name: Soyfoods Unlimited, Inc.
Manufacturer's Address: 14670 Doolittle Dr., San Leandro, CA 94577.
Date of Introduction: 1982.
Ingredients: Tempeh (made with soybeans organically grown in accordance with section 26569.11 of the California Health and Safety Code and brown rice), natural soy sauce, herbs, spices.
Wt/Vol., Packaging, Price: 7 oz (189 gm). Vacuum packed in poly pouch.
How Stored: Frozen or refrigerated.
Nutrition: Per 3 oz.: Calories 190, protein 9 gm, carbohydrates 6 gm, fat 3 gm, sodium 466 mg.
New Product–Documentation: See next page. Label. 1982, undated. 2.75 by 3.75 inches. Blue and red on white with rainbow border. "Not fried. No oil." Leaflet (on cardstock). 8½ by 11 inches. 2 color. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center. Tempeh. Tempeh Cutlet/ Burger: A cultured soy product. High in protein. No cholesterol. Good meat substitute.

1269. Well Bean Deli (The). 1982. Menu. Santa Cruz, California. 1 p.
• ***Summary:*** Hot sandwiches: Tofu burger. Tofu Santa Cruz. Tempeh burger. TLT. Falafel burger. Mochi burrito. Bean taco.

Cold sandwiches: Missing egg sandwich. Tempeh salad sandwich. Sushi rolls.

Soups with Ak Mak crackers: Miso. Cream of mushroom (changed daily).

Spreads: Tossed. Tofu salad. Tempeh salad. Salad of the day.

Special entree: Tofu quiche. Tofu eggplant parmesan (changed daily).

From the deli: Tempeh salad. Missing egg salad. Tempeh chips. Garlic onion dip. Tahini dip. Burger mix. Soy yogurt. Fresh fruit salad.

Desserts: Carob mint pie. Tofu cheesecake. Fresh fruit salad.

Drinks: Carobanana shake. Shake-a-leg hi protein drink. Strawbanana shake. Soymilk–plain, carob. Herb teas (assorted). Fruit smoothie–apple plus choice of orange plus two fruits.

Note: This deli was previously located at 349 Soquel Avenue, Santa Cruz. Address: 594 Redwood Dr., Santa Cruz, California 95060. Phone: (408) 427-2586.

1270. **Product Name:** Santa Cruz Tempeh. Soy-Rice: Tempeh of the Sea with Nori Seaweed (Vacuum Packed).
Manufacturer's Name: Western Soy Complements.
Manufacturer's Address: 1560 Mansfield Ave., Suite D, Santa Cruz, CA 95062. Phone: 408-479-05968.
Date of Introduction: 1982.
Wt/Vol., Packaging, Price: 8 oz vacuum packed. Retails for $1.59 (8/88 Berkeley, CA).
How Stored: Frozen.
New Product–Documentation: Products with Labels purchased in Berkeley, California. 1988. Aug. 30. 2.75 by 5 inches. Black, white and brown. "A cultured soyfood. Preparation: Use as a protein-rich staple food: slice, fry, bake, or steam. Season to taste. Occasional black or grey spots are part of the tempeh culture and not indicative of spoilage.

Note that this company is at the same address as

Secondary Tempeh Products - Poster

1982

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Soyfoods Unlimited

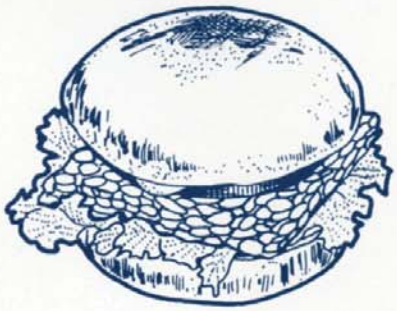
No Oil

TEMPEH CUTLET / BURGER

Good Meat Substitute

High in Protein No Cholesterol

Ready to Eat or Brown and Serve



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Wildwood Natural Foods of Santa Cruz.

1271. **Product Name:** Yaupon Tempeh.
Manufacturer's Name: Yaupon Soyfoods.
Manufacturer's Address: 226 East Austin St., Elgin, TX 78621. Phone: 512-285-3810.
Date of Introduction: 1982.
Ingredients: Organically grown soybeans, water, apple cider vinegar, rhizopus culture.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated.
New Product–Documentation: Letter/Order for The Book of Tempeh (professional edition) from Chico Wagner of Yaupon Soyfoods, 404 S. Main, Elgin, Texas. 1979. Aug. 31.

Label. 1982, undated. 2.5 by 3.5 inches. Black and green on yellow. 8 oz. Talk with Chico Wagner. 1989. June 21. This product was launched in 1982 or 1983. The company is now at 226 East. Austin St., Elgin, Texas. Phone: 512-285-3810. The label has not changed.

1272. Aykroyd, Wallace R.; Doughty, Joyce. 1982. Legumes in human nutrition. Rome, Italy: FAO. viii + 152 p. Illust. 28 cm. The original edition was 1964. *
• ***Summary:*** Contents: Preface. Introduction. History of legumes. Production and consumption. Composition and nutritive value. Methods of processing and cooking. Effects of processing on nutritive value. Toxic substances. Legume proteins. Observations on the value of legumes in human feeding. The place of legumes in human diets. Appendixes. References. Address: 1. Dep. of Human Nutrition, London School of Hygiene and Tropical Medicine; Former Director, Nutrition Div., FAO, Rome, Italy.

1273. Benninghaus, Thomas. 1982. Tempeh, ein fermentiertes Produkt aus Sojabohnen: Antioxidative Eigenschaften und Isoflavone [Tempeh, a fermented product from soybeans: Antioxidative properties and isoflavones]. Thesis, Bonn University, Germany. 127 p. [Ger]*
Address: Bonn, Germany.

1274. Blair Island. 1982. Menu. Eugene, Oegon. 1 p. both sides. 24 x 11 cm. Black on yellow.
• ***Summary:*** This soy deli serves breakfast and lunch. Soy-related products in the breakfast menu include: Tofu pocket (sauteed tofu in a pita pocket). Tofu scrambles (Blair Island style tofu, sauteed onions and cheddar cheese). Tofu breakfasts: "Blair Island style tofu is pressed, then sauteed with seven herbs, spices, and shoyu. Served with sprouts, fresh-baked toast or muffin and a side of sweet and sour tomato sauce. Regular (tofu, sprouts and sauce), or Special (tofu smothered with mushrooms and onions)." Side orders: Cup of tofu. Cashew milk.

Lunch. Tofu tia (tofu with sprouts and sauce wrapped in a corn tortilla). Tofu pocket sandwich. Tempeh tia. Tia special. Buddah burger (tofu-mushroom burger). Temptation (tempeh burger). Tempeh burrito. Bean burrito with tofu sour cream. Salads with tofu sour cream dressing. Tofu cheesecake desserts with different toppings.

Note: This company was in business in Aug. 1979, located on an island between two branches of the road. Address: 325 Blair Blvd., Eugene, Oregon 97402. Phone: 683-5117.

1275. Considine, Douglas M.; Considine, Glenn D. ed. 1982. Foods and food production encyclopedia: Soybeans and soybean processing. New York, NY: Van Nostrand Reinhold Co. 2305 p. See p. 1856-83. [46 ref]
• ***Summary:*** Several soyfoods and soy protein ingredients are mentioned including soy flour, soy protein, and tempeh. Address: 1. Editor in Chief; 2. Managing editor, USA.

1276. Coyle, L. Patrick, Jr. 1982. The world encyclopedia of food. New York, NY: Facts on File, Inc. xv + 790 p. Illust. Index. 28 cm.
• ***Summary:*** Contains basic information (sometimes interesting, often superficial, with quite a few errors) about some 4,000 foods and beverages, including worldwide staples (potatoes, soybeans, apples), local specialties, delicacies, major brand-name products (Coca-Cola) and oddities (penguin eggs, grasshoppers). With 200 line drawings, 150 black-and-white photos, and 50 color plates.

See entries for soybean (incl. black soybeans, fermented tofu, miso, soybean flour, soybean milk, soybean oil, soy sauce, tempeh; tofu, "white soybeans"), and Worcestershire sauce (which "is said to contain more than 100 ingredients, including soy sauce, vinegar, molasses, chili, anchovies, garlic, shallots, tamarinds, limes and many spices").

Also has entries for: Almond, chufa, peanut, peanut butter, peanut oil, seaweed (incl. algae, dulse, laver, rock weed / sea wrack, agar-agar, carrageen, kelp), sesame (with illustration of leaves, flower, and pods). Address: Freelance writer, Oceanside, California.

1277. CTI. 1982. What is Compatible Technology, Inc. (CTI)? (Brochure). Minneapolis, Minnesota: CTI. 10 p. 21 x 23 cm.
• ***Summary:*** Contents: Introduction. Why CTI? Program areas: Formulation of foods, process and processing equipment development, refrigerated transport of perishable foods, education and training programs, surveys and data collection, back-up support for development workers. Personnel. Organization (established in May 1981 as a charitable organization). Project procedure. Future plans. Progress to date. Projects being undertaken. Financial needs.

"The president of CTI, Robert W. Nave, was born and raised in India and worked there as a missionary for 27 years. His interest in improving the well-being and economic status of low income people led him to establish the Nave

Technical Institute, Skills for Progress (SKIP), an all-India association of private technical schools, and Soya Production and Research Association (SPRA), which produces high-energy, high-protein foods from soybeans grown in India."

CTI is making soy fortified products (such as breads and cookies) with existing village level technology, and developing a small extrusion cooker and a village batch texturizer.

Future plans include: Develop packaging techniques for cooked full-fat soy flour in inexpensive packaging materials. Provide consultation or supervision for establishing a prototype oil extraction plant for soybeans. CTI has already formulated a soybean cookie for feeding programs. SPRA, "which has pioneered production of soy based snack foods in India, is now introducing the cookie and processing techniques locally and in feeding programs. It is now working on a 5-10 horsepower extrusion cooker and tempe [tempeh] processing suitable for India." Address: Compatible Technology, Inc., 7600 Harold Ave., Minneapolis, Minnesota 55427.

1278. Hagler, Louise. 1982. Soja Total. Das vegetarische Kochbuch der Tennessee-Farm [Total soya. The vegetarian cookbook of the Tennessee-Farm]. Hamburg, West Germany: Papyrus Verlag. 200 p. Translation by Elizabeth Leihs of *The Farm Vegetarian Cookbook* (1978, English). Illust. 21 cm. [Ger]

• ***Summary:*** This interesting vegan cookbook book is loaded with creative recipes, illustrations (line drawings), and black-and-white photos. Contents: Beans. Soyameat (TVP). Italian dishes. Chili rellenos, nixatamal and masa. Nutritional yeast. Knishes. Soups. Uncle Bill's recipes. Gluten. Tempeh. Miso. Soymilk. Ice Bean (Soymilk ice cream, p. 4, 96-98). Soy yogurt. Tofu. Pureed tofu. Yuba. Soy coffee. Soynuts. Soya pulp (okara). Soy flour. Vegetables. Bread. Cereal grain recipes. Breakfast breads and pancakes. Desserts. Nutritional advice.

Note: This is the earliest German-language document seen (March 2007) that mentions soy ice cream, which it calls *Soja-Eiskrem, Eis-Bohnen,* or *Schokoladen-Bohnen-Eiskrem.* Address: Summertown, Tennessee.

1279. Hedger, J.N. 1982. Production of tempe, an Indonesian fermented food. In: S.B. Primrose and A.C. Wardlaw, eds. 1982. Sourcebook of Experiments for the Teaching of Microbiology. New York and London: Academic Press. xvii + 766 p. See p. 597-602. 25 cm. [4 ref]

• ***Summary:*** In part 8 of this book, titled "Micro-organism Meets Plant," this chapter describes how to make tempeh (using 500 gm soybeans) and tempeh starter as an educational project for college undergraduates. Address: Dep. of Botany and Microbiology, University College of Wales, Aberystwyth, Dyfed, Wales.

1280. Henderson, Bruce R. 1982. Oakland organic: A vegan primer. Albany, New York: Caboose Press. 200 p. Illust. 23 cm. [24 ref]

• ***Summary:*** This is a book about veganism which contains a few vegan recipes near the back. It focuses on the San Francisco Bay Area and urban areas, and contains extensive information about soybeans and soyfoods, much of it inspired by *Yay Soybeans,* from The Farm in Summertown, Tennessee. As follows: Miso, and Soya-Mineral Bouillon (Dr. Bronner's) (p. 19). Soy as an alternative protein source (p. 37-43). Soymilk (p. 53-56; Jethro Kloss). More soy (p. 57-61; soy pulp [okara] pudding, soysage, Garden of Eatin' Soy Jerky (illustration of package), Brightsong Missing Egg Tofu Salad (illustration), soy yogurt (fermented), soy tofu–hard, baked, or fried). Sprouting (p. 67-70; incl. soybeans). Fermented foods (p. 71-74; incl. tempeh, raw tofu). Snacks & quick foods (p. 88-96; incl. Ice Bean–soy ice cream, Ice-C-Bean). Miso and soy sauce (p. 120-21). Soy-related recipes: Baked apples with miso (p. 185-86). Tofu cheesecake (p. 188-89). Soysage (p. 193). Soy ice bean (p. 195). Note: Bruce Henderson was born in 1946. Address: Oakland, California.

1281. Herarti, Rina. 1982. Tinjauan pemanfaatan jamur sebagai sumber zat gizi [Survey on using fungi as a source of nutrients]. Thesis (Skripsi), Akademi Gizi, Jakarta. [Ind]* Address: Jakarta, Indonesia.

1282. Ismariasi, K. 1982. Aspek gizi tempe dan perubahan nitrogen terlarut pada tepung tempe [Nutritional aspects of tempeh and nitrogen solubility changes in tempeh flour]. Thesis (Skripsi), Fakultas Teknologi Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia. 39 p. [Ind]* Address: Yogyakarta, Indonesia.

1283. Ko Swan Djien. 1982. Indigenous fermented foods. *Economic Microbiology* 7:15-38. A.H. Rose, ed. Fermented Foods. [67 ref]

• ***Summary:*** Contents: 1. Introduction. 2. Foods fermented by moulds: Roles of the moulds. 3. Foods fermented by bacteria: Fermented vegetable products, fermented fish products, fermented seeds (natto, thua-nao, dagé), fermented starch-rich raw materials (fermented maize products, fermented rice products, fermented cassava), fermented plant juice.

4. Foods fermented by a mixture of moulds and yeasts: Ragi, micro-organisms, fermented starch-rich raw materials.

5. Foods firstly fermented by moulds [as in making koji], followed by a fermentation with a mixture of bacteria and yeasts (the salt-tolerant yeasts are species of *Saccharomyces* and *Torulopsis;* the bacteria are species of *Pediococcus* and *Streptococcus*): Tane koji, soy sauce, other fermented soybean products (tauco {porridge or dry consistency}, miso, hamanatto {which is soft and has a high

moisture content}, tou-shih {which has a much lower water content than hamanatto and is therefore not so soft}. These "fermented soybean products are also used as flavouring agents in cooking as well as table condiments or as a side dish").

6. Specific aspects of fermented foods: Mould species, lactic-acid bacteria, yeasts, salt. 7. Acknowledgement. References.

Concerning soy sauce (p. 30-31): "Japanese *shoyu* is made from equal amounts of soybeans and wheat." The "raw materials are inoculated with tane koji which contains spores of selected strains of *Aspergillus oryzae* and *A. soyae.* In less sophisticated soysauce factories throughout South East Asia, mould species grow spontaneously on the soybeans by natural contamination from the air and from the bamboo trays on which soybeans of former batches were incubated (Bhumiratana et al., 1980). The moulds involved are species of *Aspergillus, Rhizopus,* or *Mucor.* Some Indonesian *kecap* manufacturers inoculated the cooked soybeans with tempe [tempeh] inoculum which contains spores of *Rhizopus oligosporus."*

Tables: (1) Conferences discussing aspects of indigenous fermented foods (1977-1981, chronological). (a) Symposium / Workshop on Indigenous Fermented Foods, Nov. 21-26, 1977, Bangkok, Thailand. (b) World Conference on Vegetable Food Proteins, Oct. 29–Nov. 3, 1978, Amsterdam, The Netherlands, (c) Symposium on Fermented Foods, Nov. 22, 1978, London, England. (d) International Symposium on Oriental Fermented Foods, Dec. 10-14, 1979, Taipei, Taiwan. (e) United Nations University Workshop on Research and Development Needs in the Field of Fermented Foods, Dec. 14-15, 1979, Bogor, Indonesia. (f) VIth International Fermentation Symposium, July 20-25, 1980, London, Ontario, Canada. (g) Eighth Conference of Association for Science Cooperation in Asia (ASCA), Feb. 9-15, 1981, Medan, Indonesia.

(2) Origins of various fish sauces. (3) Origins of various fish pastes. (4) Names given in various countries to an inoculum used to manufacture food products. (5) Names given in various countries to fermented glutinous rice (*Oryza sativa glutinosa*). (6) Names given in various countries to rice wine. (7) Names given to soy sauce in different countries (*Chiang-yu* in China, *Kan jang* in Korea, *Kecap* in Indonesia, *Shoyu* in Japan). (8) Soybean foods produced by a two-stage fermentation (*Hamanatto and miso* in Japan, Soy sauce in the Orient, *Taoco* in Indonesia, *Tao-si* in the Philippines, and *Tou-shih* in China). Address: Dep. of Food Science, Agricultural Univ., Wageningen, Netherlands.

1284. Ko Swan Djien. 1982. Safety aspects of food fermentation. In: S. Saono, F.G. Winarno, and D. Karjadi, eds. 1982. Traditional Food Fermentation as Industrial Resources in ASCA Countries. xvii + 259 p. See p. 131-44. Proceedings of a technical seminar, held 9-11 Feb. 1981 at Medan, Indonesia. [44 ref]

• ***Summary:*** Discusses tempe bongkrek, and the inhibition of its toxin production. Address: Dep. of Food Science, Agricultural Univ., Wageningen, The Netherlands.

1285. Kushi, Micho; Kushi, Aveline. 1982. Macrobiotic dietary recommendations. East West Foundation, P.O. Box 850, Brookline Village, MA 02147. 48 p. 22 cm. [15 ref]

• ***Summary:*** Contents: Introduction. Standard dietary recommendations. Recommended daily proportions. Foods to reduce or avoid for better health. Way of life suggestions. Daily reflections. Suggestions for patients with cancer or other serious illnesses. Special dishes. Home remedies. Baby food suggestions. Kitchen utensils. Nutritional considerations. East West Foundation information. Glossary. Bibliography.

Compiled with the help of Edward Esko, Murray Snyder, Bill Spear and Bill Tara. Address: Brookline Village, Massachusetts. Phone: -.

1286. Lie Goan Hong. 1982. Nutritional aspects of fermented foods in Indonesia: An overview. In: S. Saono, F.G. Winarno, and D. Karjadi, eds. 1982. Traditional Food Fermentation as Industrial Resources in ASCA Countries. xvii + 259 p. See p. 115-30. Proceedings of a technical seminar, held 9-11 Feb. 1981 at Medan, Indonesia. [23 ref]

• ***Summary:*** Discusses the preparation of tempe, oncom, tauco, kecap, tempe bongkrek (and bongkrek poisoning), tempe gembus (okara tempeh), oncom ampas tahu (okara onchom), soysauce (kecap), and fermented fish products. Tempeh is a good source of vitamin B-12 and of certain antibacterial agents. Certain minor legumes should also be used in preparing these traditional foods.

Table I shows the most important traditional fermented foods in Indonesia, with the name and type of product, organism used, substrate, nature of product (sold, liquid), and area of production and consumption. Address: Nutrition Unit Diponegoro, National Inst. for Health Research and Development, Ministry of Health, Jakarta, Indonesia.

1287. Murthy, V. Sreenivasa; Natarajan, C.P. 1982. Fermented foods and their industrial prospects in India. In: S. Saono, F.G. Winarno, and D. Karjadi, eds. 1982. Traditional Food Fermentation as Industrial Resources in ASCA Countries. xvii + 259 p. See p. 19-30. Proceedings of a technical seminar, held 9-11 Feb. 1981 at Medan, Indonesia. [8 ref]

• ***Summary:*** Discusses soy idli, soy tempeh, and groundnut + soybean tempeh. "Although Tempe is not yet known in India, some investigations were carried out at the Central Food Technological Research Institute, Mysore, with a view to using indigenous raw materials." The results of this study, carried out under a PL-480 financed project, are summarized in Tables I to V. Address: Central Food Technological

Research Inst. (CFTRI), Mysore, India.

1288. Nahas, Ely; Machado, José Octávio. 1982. Estudos sobre a utilizacao de *Rhizopus oligosporus* em farelo de soja para producao de tempeh [Studies on the use of *Rhizopus oligosporus* grown on soy flour for the production of tempeh]. *Cientifica* (*Sao Paulo*) 10(2):217-23. [20 ref. Por; eng]
• ***Summary:*** Soybean meal can be used as a substrate to produce a fermented tempeh-like product, but it is necessary to add at least 30% of a carbohydrate source (such as manioc flour or corn flour), 3.5% of citric acid to decrease the pH to 4.5, and 150% by weight of distilled water. Address: Departamento de Microbiologia, Faculdade de Ciencias Agrarias e Veterinarias, UNESP–14870–Jaboticabal, Sao Paulo, Brazil.

1289. Nahas, Ely; Machado, José Octávio. 1982. Caracteristicas biologicas e bioquimicas do farelo de soja apos fermentacao por *Rhizopus oligosporus* [Biological and biochemical characteristics of soybean meal after *Rhizopus oligosporus* fermentation]. *Cientifica* (*Sao Paulo*) 10(2):225-32. [27 ref. Por; eng]
• ***Summary:*** Tempeh made from defatted soybean meal (soybean meal tempeh, or SMT) compared with regular tempeh made from whole soybeans, has a similar protein content, but contains less oil and more crude fiber, ash (minerals), and carbohydrates. The content of dispersible protein in SMT was increased 3.3 to 3.5 times, suggesting an improvement in digestibility. The protein efficiency ratio of the SMT was similar to that of soybean meal and of standard casein, but superior to that of regular tempeh. Sensory analysis showed that SMT was as well accepted as regular tempeh. Address: Departamento de Microbiologia, Faculdade de Ciencias Agrarias e Veterinarias, UNESP–14870–Jaboticabal, Sao Paulo, Brazil.

1290. Photograph of a tempeh maker selling his tempeh by the roadside in Indonesia. 1982. Undated.
• ***Summary:*** A common sight in Indonesia.

1291. Reddy, N.R.; Pierson, M.D.; Sathe, S.K.; Salunkhe, D.K. 1982. Legume-based fermented foods: Their preparation and nutritional quality. *CRC Critical Reviews in Food Science and Nutrition* 17(4):335-70. [125 ref]
• ***Summary:*** Contents: 1. Introduction. 2. Soy sauce. 3. Tempeh. 4. Meitauza. 5. Miso. 6. Natto. 7. Sufu. 8. Fermented soybean milk and other fermented legume milk products. 9. Kenima [sic, kinema]. 10. Oncom (fermented peanut press cake). 11. Waries. 12. Papadams. 13. Dhokla. 14. Khaman. 15. Idli. 16. Dawadawa. 17. Other legume-fermented foods. 18. Future of legume-based fermented foods. References. Nutritional composition is given.

Note: The source of the misinformation about "kenima"

is Batra and Millner (1976). Address: 1-2. Virginia Polytechnic Inst. and State Univ., Blacksburg, Virginia; 3. Univ. of Arizona, Tucson; 4. Mahatma Phule Agricultural Univ., Rahuri, Maharashtra State, India.

1292. Reed, Gerald. ed. 1982. Prescott & Dunn's industrial microbiology. 4th ed. Westport, Connecticut: AVI Publishing Co. xii + 884 p. Illust. Index. 23 cm.
• ***Summary:*** Chapter 12 (p. 492-538; 129 refs.), by H.L. Wang and C.W. Hesseltine, is titled "Oriental Fermented Foods." It discusses: Soy sauce, miso, tempeh, ontjom, hamanatto (known as tou-shih in China, tao-si in the Philippines, and tao-tjo in the East Indies [No! Tao-tjo is Indonesian-style miso]), sufu (also called Chinese cheese or bean cake), natto, idli, ang-kak, fermented fish products (incl. nuoc-mam), absence of mycotoxin in fermented foods, summary. Address: Vice president, Amber Labs, Milwaukee, Wisconsin.

1293. Saono, Jenny K.D.; Baba, T.; Matsuyama, A. 1982. Problems to be assessed for further development of traditional food fermentation in Indonesia. In: S. Saono, F.G. Winarno, and D. Karjadi, eds. 1982. Traditional Food Fermentation as Industrial Resources in ASCA Countries. xvii + 259 p. See p. 189-99. Proceedings of a technical seminar, held 9-11 Feb. 1981 at Medan, Indonesia. [6 ref. Eng]
• ***Summary:*** Contents: Introduction. Tape. Brem wine. Brem cake. Palm wine and vinegar. Oncom. Tauco and kecap. Tempe bongkrek (which can cause fatal food poisoning). Concluding remarks.

Unconventional substrates for tempe, oncom, and kecap include winged beans, mungbeans, cowpeas, leucaena beans, faba beans, jack beans, sesban beans, and string beans. Address: Agricultural Products Processing Pilot Plant Project, JICA-FATEMETA, IPB, Bogor, Indonesia.

1294. Saono, S.; Winarno, F.G.; Karjadi, D. eds. 1982. Traditional food fermentation as industrial resources in ASCA countries. Jakarta, Indonesia: Indonesian Institute

of Sciences (LIPI). xix + 259 p. Proceedings of a technical seminar, held 9-11 Feb. 1981 at Medan, Indonesia. No index. 28 cm.
• ***Summary:*** ASCA, the Association for Scientific Cooperation in Asia, was established in 1970. Each of the many interesting papers from this symposium that relates to soya is cited separately. Address: Indonesia.

1295. Sarwono, B. 1982. Membuat tempe dan oncom [Preparation of tempeh and onchom]. Jakarta: Penebar Swadaya. 23 p. [Ind]*
Address: Jakarta, Indonesia.

1296. Sattilaro, Anthony J.; Monte, Tom. 1982. Recalled by life. Boston, Massachusetts: Houghton Mifflin Co. x + 223 p. No index. 22cm.
• ***Summary:*** "Four years ago, Dr. Sattilaro, President of the Methodist Hospital in Philadelphia, was dying of cancer. Today, after changing his lifestyle [primarily by adopting a macrobiotic diet], prescribed by Michio Kushi, he is totally free of this disease. Before this book was published, his remarkable story appeared in *Life Magazine* and the *Saturday Evening Post,* and he has told his story on television." Address: M.D., Philadelphia.

1297. Seguin, Clare. 1982. Cooking with tempeh. Higher Ground Press, P.O. Box 3128, Madison, WI 53704. xii + 63 p. Illust. No index. 22 cm. [3 ref]
• ***Summary:*** Contents: Foreword. About Tempeh. Cooking techniques. Recipes: Breakfast. Soups, salads, and sandwiches. Hors d'oeuvres. Main dishes. Macrobiotic recipes. Address: Madison, Wisconsin.

1298. Shurtleff, William; Aoyagi, Akiko. 1982. Report on soyfoods in delis, cafés, and restaurants. Lafayette, California: Soyfoods Center. 127 p. 28 cm. [21 ref]
• ***Summary:*** Contents: 1. Introduction and overview: A. Names and addresses: Soyfoods delis, cafes, restaurants; Secondary soyfoods manufacturer-distributors; Soyfoods marketer-distributors. B. Chronology of soy delis starting in business (Farm Food Company in San Rafael, California, was first in Aug. 1976). C. North America's largest soy delis, cafes, and restaurants, with startup cost and average and maximum weekly sales.

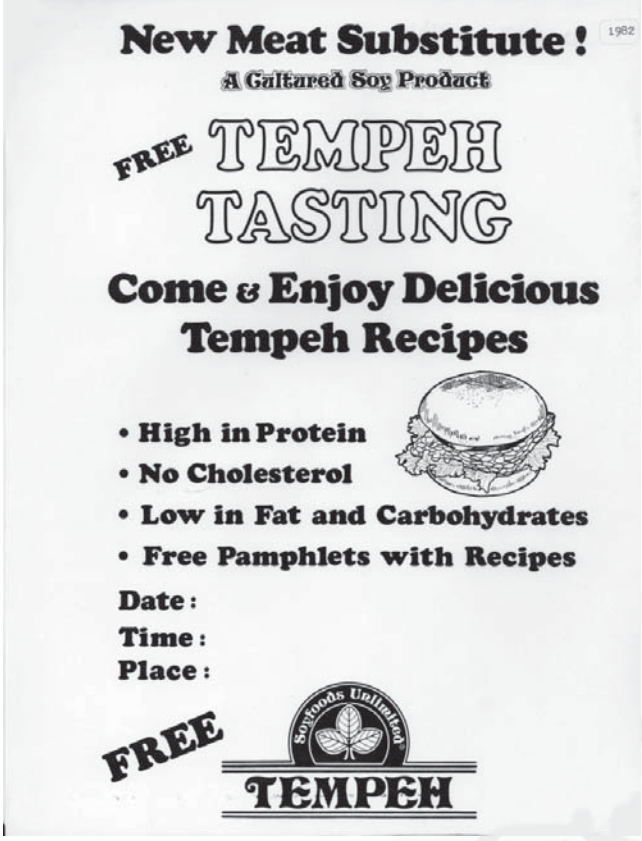
2. Names of recipes served at each soy deli and ranking of the best-selling of these recipes: Data for 18 soy delis, cafes, and restaurants. 3. Names of recipes produced by secondary soyfoods manufacturer-distributors: Data for 4 soyfoods manufacturer-distributors. 4. Names of recipes produced by soyfoods marketer-distributors: Data for 4 soyfoods marketer-distributors. 5. Individual bulk recipes for tofu and tempeh dishes: 21 bulk tofu recipes and 21 tempeh recipes. 6. Alphabetical listing of recipes given above: 250 recipe names listed alphabetically. 7. Articles published about soyfoods delis, cafes, and restaurants: 19 articles. 8. Menus, posters, and promotional materials: 15 menus, posters, and flyers. 9. Conclusion and summary. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1299. Sihombing, G. Nainggolan. 1982. Malpractice of colouring soy tempe with non-edible metanil yellow. In: S. Saono, F.G. Winarno, and D. Karjadi, eds. 1982. Traditional Food Fermentation as Industrial Resources in ASCA Countries. xvii + 259 p. See p. 227-29. Proceedings of a technical seminar, held 9-11 Feb. 1981 at Medan, Indonesia. [3 ref]
• ***Summary:*** "The Indonesians in general like to have their foods coloured. For that purpose they usually utilize natural colouring agents. At present synthetic colouring agents, due to their convenience in use and wide availability in the markets, have also found wide application. Not all of these synthetic colouring agents are suitable for colouring foods and drinks, a fact that the public in general is not aware of.

"A number of soy Tempe sold in some Jakarta markets are coloured yellow with a certain colouring agent. The reasons for this practice are not clearly known, but is probably to improve the appearance and the shelf life (as claimed by some Tempe producers) of the product. It is suspected that the colouring agent used for this purpose is one of the non-edible synthetic ones which were reported to be used for colouring snacks and drinks. To verify if this is in fact the case, the present investigation was carried out." Address: Nutrition Unit Diponegoro, National Inst. for Health Research and Development, Ministry of Health, Jakarta, Indonesia.

1300. Slamet, Dewi Sabita; Ubaidillah, -; Ganjar, Indrawati. 1982. Winged bean tauco. In: S. Saono, F.G. Winarno, and D. Karjadi, eds. 1982. Traditional Food Fermentation as Industrial Resources in ASCA Countries. xvii + 259 p. See p. 221-26. Proceedings of a technical seminar, held 9-11 Feb. 1981 at Medan, Indonesia. [7 ref]
• ***Summary:*** Tempe is also discussed. Table I. Some biochemical changes occurring in the substrate during the winged bean tempe fermentation. Table II. The total nitrogen, amino nitrogen, total acids and soluble carbohydrates of winged bean tauco prior to the addition of the ingredients (two treatments at 20% or 24% salt). Table III. The organoleptic test of winged bean tauco prepared from 1 48 hour fermented tempe, brined in 20% NaCl (salt) for 15 days. Conclusion: Winged bean tauco is acceptable for consumption. Address: 1-2. Nutrition Research and Development Centre, Dep. of Health, Bogor, Indonesia; 3. Faculty of Mathematics and Natural Sciences, Univ. of Indonesia, Jakarta, Indonesia.

1301. Soyfoods Unlimited, Inc. 1982. Free tempeh tasting: Come & enjoy delicious tempeh recipes (Leaflet). 14668 Doolittle Dr., San Leandro, CA 94577. 28 cm.



• ***Summary:*** "New meat substitute! A cultured soy product.

"High in protein. No cholesterol. Low in fat and carbohydrates. Free pamphlets with recipes. Date. Time. Place. Free." A small illustration shows a tempeh burger. Address: San Leandro, California.

1302. Steinkraus, Keith H. 1982. The indigenous fermented foods. *Nestle Research News* 1980/81. p. 23-28. [19 ref]
• ***Summary:*** Contents: Introduction. Classification of indigenous food fermentations. Modern methods of introducing meat textures into vegetable substrates. Indigenous methods for introducing meat-like textures into vegetable substrates. Fermented foods involving development of meat-like flavor. Fermented foods involving an acid fermentation. Fermented foods involving an alcoholic fermentation. Germination (malting). Production of sweet/sour alcoholic pastes from high starch substrates. Leavened bread without the use of wheat. References. Contains many interesting color photos of indigenous fermented foods, some of them soy-based. Address: Prof. of Microbiology and Food Science, Inst. of Food Science, Cornell Univ., Geneva/Ithaca, New York.

1303. Steinkraus, K.H. 1982. Fermented foods and beverages: The role of mixed cultures. In: A.T. Bull and J.H. Slater, eds. 1982. Microbial Interactions and Communities. Vol. 1. New York: Academic Press. See p. 407-42. [100+ ref]
• ***Summary:*** Contents: 1. Introduction. 2. Development of meat-like flavors through fermentation. 3. Development of meat-like textures through fermentation. 4. Foods and beverages involving an alcoholic fermentation. 5. Foods involving an acid fermentation. 6. Summary. Address: Cornell Univ., Geneva, New York.

1304. Steinkraus, Keith H. 1982. Traditional food fermentations as industrial resources. In: S. Saono, F.G. Winarno, and D. Karjadi, eds. 1982. Traditional Food Fermentation as Industrial Resources in ASCA Countries. xvii + 259 p. See p. 3-16. Proceedings of a technical seminar, held 9-11 Feb. 1981 at Medan, Indonesia. [30 ref]
• ***Summary:*** Contents: Introduction. Production of meat-like flavours from vegetable proteins. Soysauce (Japanese Shoyu) and miso fermentation. Fish/shrimp sauces and pastes. The koji principle. Meat substitutes (analogues). Indonesian tempe kedele: Traditional tempe fermentation, industrial production of tempe. A process for raising the protein content of high starch substrate. Leavened bread-like foods without the use of wheat or rye. Coconut protein as an industrial resource. Summary. Address: Prof. of Microbiology, Inst. of Food Science, Cornell Univ., Geneva, New York 14456.

1305. Tjahjadi, -. 1982. Usar, populasi mikrobia dan peranannya pada pembutan tempe [Usar (tempeh inoculum), its microbial population and role in tempeh processing]. Thesis (Skripsi), Fakultas Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia. 29 p. [Ind]*
Address: Yogyakarta, Indonesia.

1306. Turtle Island Soy Dairy. 1982. Presents a tempeh cooking class. Forest Grove, Oregon. 1 p. 28 cm.
• ***Summary:*** Dark brown ink on tan paper. A large illustration (see next page) shows a turtle, standing up, wearing a white professional chef's hat (toque), flipping a rectangular cake of tempeh with a frying pan in one "hand." "Come and learn how to cook tempeh many different ways. Where: When: Cost: (price includes 8 oz gift pack)." Address: Forest Grove, Oregon.

1307. Wang, H.L.; Hesseltine, C.W. 1982. Oriental fermented foods. In: G. Reed, ed. 1982. Prescott & Dunn's Industrial Microbiology, 4th ed. Westport, CT: AVI Publishing Co. xii + 883 p. See p. 492-538. Chap. 12. [129 ref]
• ***Summary:*** Contents: Introduction. Soy sauce. Miso. Tempeh. Ontjom. Hamanatto. Sufu. Natto. Idli. Ang-kak. Fermented fish products (esp. nuoc mam). Absence of mycotoxin in fermented foods. Summary. Address: NRRC,

Tempeh Poster

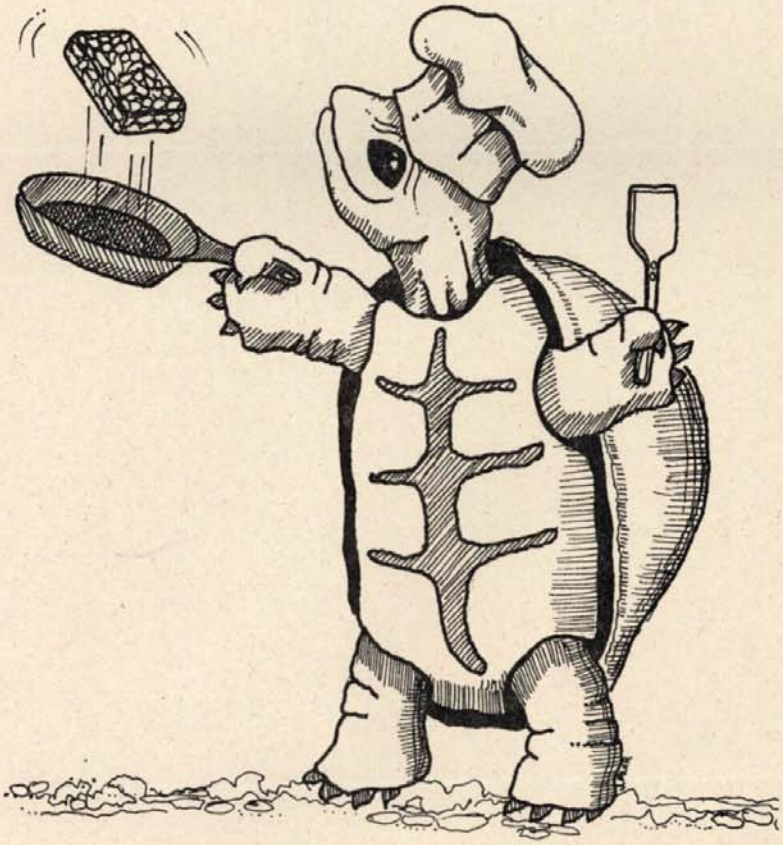
1982

TURTLE ISLAND SOY DAIRY presents:

A

TEMPEH

COOKING CLASS



*Come and learn how to cook tempeh many different ways!

Where:

When:

Cost:

(price includes 8oz. gift pack)

Peoria, Illinois.

1308. Winarno, F.G. 1982. The nutritional potential of fermented foods in Indonesia. In: S. Saono, F.G. Winarno, and D. Karjadi, eds. 1982. Traditional Food Fermentation as Industrial Resources in ASCA Countries. xvii + 259 p. See p. 31-40. Proceedings of a technical seminar, held 9-11 Feb. 1981 at Medan, Indonesia. [5 ref]
• ***Summary:*** Discusses tempe, tempe fish rice (TFR), oncom (onchom), tempe bongkrek (from coconut presscake), tempeh gembus (from okara), and tauco. Indonesian tempeh may contain 30 nanograms of vitamin B-12 per gm of tempe. If average daily consumption were 60 gm per person, tempeh would provide 60% of the daily requirement of B-12. In 1978, estimated annual tempe production in Indonesia was about 75,600 tons.

"Tauco is a very popular fermented food in Indonesia particularly for people who live in West Java. So far Tauco is utilized mainly as a seasoning and is used in vegetable soups, fish and meat, to enhance their flavour...

"A study on the development of a 'New Tauco Product' is now being conducted at the Food Technology Development Centre, Bogor, to make Tauco a mass consumption product, by experimenting with different soup recipes to meet the Indonesian taste, both in the urban and rural population." Address: Food Technology Development Centre, FATEMETA-IPB, Bogor, Indonesia.

1309. Mouish, Jo Collins. 1983. Cook uses tofu to create 'luscious' cheesecake: Cook's corner. *Press* (*Ypsilanti, Michigan*). Jan. 5. p. 1C.
• ***Summary:*** Karen Malofy, age 29, works as a cook at The Soy Plant in Ann Arbor, is married and has two daughters. The "hidden ingredient" in her recipes is tofu. Recipes are given for: Tofu cheese cake. Tofu quiche. Tempeh mock chicken salad. Missing egg salad. Tempeh with nutritional yeast gravy. Photos show: (1) Ms. Malofy. (2) A block of tofu and tofu cheesecake. Address: Living editor.

1310. Shurtleff, William. 1983. Graph of tofu and tempeh manufacturers in the West. Lafayette, California: Soyfoods Center. 1 p. Jan. Unpublished manuscript.
• ***Summary:*** This graph shows how the number of tofu manufacturers in the West grew from 56 in Oct. 1975 to 310 in Jan. 1983. The number of tofu manufacturers in the USA grew from 48 in Oct. 1975 to 182 in Jan. 1983.

The number of tempeh manufacturers in the West grew from 8 in Oct. 1975 to 78 in Jan. 1983. The number of tempeh manufacturers in the USA grew from 1 in Oct. 1975 to 56 in Jan. 1983. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549. Phone: 415-283-2991.

1311. Walnut Acres. 1983. Organic farming–natural foods [Mail order catalog and price list]. Penns Creek, Pennsylvania 17862. 40 p. Jan/Feb. Illust. Index. 28 cm. [37 ref]
• ***Summary:*** A large color photo on the cover shows a red barn in the snow, with the caption "Buy direct from the farm–500 acres of chemical free soil." In 1946 Paul and Betty Keene first fell in love with Walnut Acres. They had just completed four years of study in organic homestead-and-farm schools. Note: It is unclear when they started to do business. They also sell products made by other companies, such as Shiloh Farms, Fearn, and Westbrae. Soy related products: Miso Plus all natural dip mixes. 4-grain cereal (incl. soybeans). Hearty cereal (incl. soya). 12-grain cereal (incl. soy). Soy grits, organic. Rice pancake mix (with soya flour). Triticale pancake mix (with soya flour). 12-grain pancake mix (with soya flour). Unbleached white pancake mix with soya flour. Wheatless pancake mix with soya flour. Whole wheat and soy pancake mix with soya flour. Cornell flour, with organic soy flour. Soy flour, organic. Instant soy milk powder. Sterling special carob blend (soya carob). 12 grain flour (incl. soya flour). Soya-carob bread mix (with soya flour). Corn muffin mix (with soya flour). Apricot nut quick bread mix (with soya flour). Granola maple quick bread mix (with soya flour). Four Fearn cake mixes (with soy powder). Pro-Nuts (soy-nuts). Soybeans, yellow (25 lb, 5 lb, 3 lb, 1 lb). Tempeh starter. Whole wheat and soy spaghetti. Pea and soybean soup. Miso-Cup red vegetarian soup. Green soybeans (whole dry, canned). Tamari soy sauce (with or without wheat). Comtessa coffee substitute (with soy beans). Celestial Seasonings Breakaway Coffee Substitutes (most have roasted malted barley and barley grains, and roasted chicory root as the main ingredients). Lecithin granules (soya phosphatides). Soy bean lecithin (raw, crude, natural pint). Books. Soya-carob bread. Portrait photos show Paul Keene and Betty Keene.

Also discusses: Gluten flour. Amaranth seeds. Psyllium seed. Sesame seed (raw hulled; raw unhulled; toasted hulled). Adzuki beans. Peanut butter, sesame tahini, and other nut butters. Pita bread. Address: Penns Creek, Pennsylvania. Phone: (717) 837-0601.

1312. Leonard, Thom. 1983. Pioneering work with miso in America (Interview). *SoyaScan Notes.* Feb. 12. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** In the fall of 1974, Thom Leonard made his first batch of barley koji and barley miso using a recipe in Herman Aihara's new book titled *Soybean Diet.* The 80-pound batch of miso was aged in a soy sauce keg from Hong Kong. He then made 80-pound batches of chunky wheat miso in the fall of 1975 (he later pickled tofu in it) and of barley miso in early 1976. After moving to Fayetteville, Arkansas, he and Jim Hemminger made larger scale miso equipment and on 15 April 1977 packed their first 35-gallon cedar vat with brown-rice miso. Soon over 1,000 lb were aging in the vats. This miso was sold to and distributed by

the Ozark Cooperative Warehouse.

Thom and Richard Kluding founded the first Caucasian-run miso company in North America, Ohio Miso Co. in Monroeville, Ohio. They began production on 13 March 1979. By Jan. 1980 Ohio Miso was making several varieties of miso: brown rice, barley (one or two year), mellow brown rice, mellow red, and black soybean; output was 2,400 lb/week.

Then in the spring of 1980 Leonard and Kluding split up, largely because of interpersonal problems. In the summer of 1980 Leonard taught miso classes at the macrobiotic Spiral Inn and Moniteau Farm in Missouri. Then in late 1980 he taught 2 classes on making miso, natto, tofu, and tempeh at the Kushi Institute in Boston, Massachusetts, with 30-40 people per class. In 1981 and 1982 he taught 8 similar classes out of his home in Boston, plus four 3-day residential workshops on the same subjects. All were sold out every time. In 1983 he plans to travel Ireland to start a miso plant in County Kilkenny. Friends of his own several old buildings. The Irish government will help pay startup costs, covering 45% of the required startup capital plus 25% of the rent for the first 5 years. He hopes to be start in July 1983 and be producing miso by late 1983. He hopes to make 100,000 to 200,000 pounds of mostly barley miso, both mellow barley and 12-24 month barley miso. Thom's constitution is so yang that he can't eat much miso–which is also very yang. But this week he enjoyed miso soup twice, which is more than he has had for the past year.

Note: Thom and his wife went to Ireland but they never started a miso plant or commercial miso production there. Address: Brookline, Massachusetts.

1313. Zacharowicz, Paul. 1983. Re: Soybeans and soyfoods in Austria. Letter to William Shurtleff at Soyfoods Center, Feb. 23. 2 p. Handwritten. [Eng]
• ***Summary:*** He will try to find out about the Salzburg Faire. He discovered a relatively old Austrian book in which the Soybean, for Western standards, is rather extensively discussed. It appears that before World War II, the soybean was making inroads here. Currently he is aware of only two farmers in Austria who produce soybeans–and in only extremely limited quantities (for their pigs, of course). "There appears to be some sort of restriction on soybean production between the U.S. and Austrian governments."

Lothar Vogel is developing a specialty tempeh from dried peas. He has created contacts with farmers who have tons of peas and no idea of what to do with them. "The spectrum of soyfoods is still a future endeavor. With positive, constructive collaboration it will become a bona fide reality in the near future. Currently we are working on an information awakening of the general public regarding whole foods in general. Further, there are an increasing number of Austrian Macrobiotics who are producing tofu regularly and delivering it to whole foods stores as well as Chinese restaurants." Address: Hasnerstr. 159/18, 1160 Vienna, Austria.

1314. Ellis, J.J.; Hesseltine, C.W. 1983. Maintaining stock cultures of *Rhizopus oligosporus* for tempehmaking. *Soyfoods.* Winter. p. 29-31. [2 ref]
• ***Summary:*** "Tempeh experts Hesseltine and Ellis describe a reliable technique for making stock tempeh cultures they've been using for 30 years."

Contents: Introduction. Media for growing *Rhizopus oligosporus.* Inoculating and incubating new cultures. Contamination to watch out for (The major contaminants are mites, bacteria, yeasts, and other molds; there are simple methods to control them). Suggested remedies for contamination. Formulations (Potato dextrose agar, yeast extract–malt extract–peptone–glucose agar {YM}, etc.).

A photo shows a package of Tempeh Brothers tempeh plus two half cakes, and slices of tempeh. Address: NRRC, Peoria, Illinois.

1315. **Product Name:** Tempeh.
Manufacturer's Name: Michael Joyce Tempeh.
Manufacturer's Address: P.O. Box 45, Woonbye 4559, QLD, Australia.
Date of Introduction: 1983. February.
New Product–Documentation: Shurtleff & Aoyagi. 1983. Soyfoods Industry & Market. Michael and Julie Anne Joyce.

1316. **Product Name:** Tempeh Lite (Okara & Brown Rice Tempeh).
Manufacturer's Name: Pacific Tempeh.
Manufacturer's Address: 1508 62nd St., Emeryville, CA 94608.
Date of Introduction: 1983. February.
Ingredients: Soy puree [Okara], brown rice, water, tempeh culture.
How Stored: Refrigerated.
Nutrition: Per 4 oz.: Calories 84.
New Product–Documentation: Label. 1983. "New. 71% less fat. Only 84 calories per 4 oz. serving." Spot in *New Age.* 1983. June. p. 63. "Pacific Tempeh sells an unusual Tempeh Lite, which has half the calories of standard whole-soy tempeh and 71% less fat." Talk with Travis Burgeson of Pacific Tempeh. 1983. April. This product was introduced in Feb. 1983. It contains 25% by weight of brown rice and is more expensive to make than soy tempeh. He received a super response to the product at the Natural Foods Expo at Anaheim, where he served it sliced and deep-fried, dipped in shoyu seasoned with garlic, coriander and lemon juice.

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 52. America's first commercial product of this type. Okara tempeh was the product concept that got Travis Burgeson interested in tempeh.

1317. Shurtleff, William; Aoyagi, Akiko. 1983. The soyfoods industry and market: Directory and databook 1983. 3rd ed. Lafayette, California: Soyfoods Center. 112 p. Feb. No 28 cm. [191 ref]
• ***Summary:*** As of May 1982, America's four largest tempeh makers (in lb/week) are Pacific Tempeh (5,000, California, started 1980), Tempeh Works (4,250, Massachusetts, started 1979), Soyfoods Unlimited (3,000, California, started 1981), White Wave (1,900, Colorado, started 1979). About 17,455 lb/week of tempeh are sold by 15 companies in the USA.

Reviewed by Walter J. Wolf in *Cereal Foods World* (Oct. 1983). Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1318. **Product Name:** Santa Fe 4-Grain Tempeh (Made with Okara).
Manufacturer's Name: Southwest Soy Foods.
Manufacturer's Address: 2889 Trades West Rd., Santa Fe, NM 87501. Phone: 505-471-8979.
Date of Introduction: 1983. February.
Ingredients: Okara soybean pulp, bulgur [wheat], rolled oats, sunflower seeds, vinegar, tempeh culture.
Wt/Vol., Packaging, Price: 8 oz package.
How Stored: Frozen or refrigerated.
New Product–Documentation: Soyfoods Monthly. 1983. Feb.; Shurtleff & Aoyagi. 1985. History of Tempeh. p. 56-57. Talk with Richard Jennings of Southwest Soyfoods. 1990. Aug. 2. This tempeh was made by taking hot okara right off the press, mixing it immediately with the bulgur, which caused partial hydration and cooking of the bulgur, and reduced the moisture content of the okara to a level that allowed it to ferment well while being made into tempeh. After Richard bought Southwest Soyfoods from Kathryn O. Bennett, he moved it from 121 E. Santa Fe Ave., Santa Fe, New Mexico 87501 to its present location shown above. He has not moved the company since then.

Label brought by Richard Jennings. 1990. Sept. 20. 3 by 4.5 inches. Red on yellow. "All natural ingredients"

1319. *Soyfoods.*1983. Soyfoods mini-boom underway in Europe. Winter. p. 8-9.
• ***Summary:*** "'This year we became aware that the kind of developments that took place in the U.S. in 1977-78 are now taking place in Europe with the sudden increase in the number of soyfoods companies,' reports Bill Shurtleff of The Soyfoods Center. 'Historically speaking, this will probably be the most important event for the soyfoods industry in 1982. Europe is coming on strong and it's a tradition of soyfoods that goes back 130 years that is now being revived.'

"Most of the impetus for soyfoods in Europe apparently stems from the vigor of the macrobiotic community. Per Fruergaard started Tofu Denmark in Valby and has encountered legal problems regarding the use of nigari. In Paris, France, Bernard Storup purchased a Takai tofu system; Ab and Paulien Schaft are setting up a small plant in Baillestavy to make miso, shoyu, natto, and koji; in Ivry, Jean Luc Alonso's macrobiotic center, Traditions du Grain, prepares for tempeh production.

"In the British Isles, Paul Jones' Tofu Shop in London, England, has been active since 1981 while Community Health Foundation, also in London, promotes homescale tofu, tempeh, and misomaking. In Dublin, Ireland, Jane O'Brien gives tofu cooking classes, has published a tofu cookbook and is considering commercial production.

"The macrobiotic movement is strong in Belgium where de Brandnetel, a large Antwerp-based distributor of natural foods, operates a tofu shop in the rear of their retail store. Jonathan Company in Ekeren makes 3000 pounds of tofu weekly, along with seitan, mochi, soups, canned foods, and soymilk. Seven Arrows in Leuven is another small tofu shop in operation.

"In the Netherlands Manna was the first company to introduce soyfoods to the public and is now an important promoter. Manna's John Welters (who provided much of this information) lectures on homescale soy processing and reports interest and sales are rising as are the number of magazine articles on soyfoods. Manna itself markets tofu spreads and distributes a joint equipment price list with Takai Company of Japan. Witte Wonder in The Hague makes tofu, as does De Morgenstond in Bakkeveen, while Peter Dekker's Jakso produces tempeh. In Portugal, Unimave promotes soy as part of the macrobiotic diet and makes small amounts of tofu and soymilk; Jose Parracho in Setubal is starting a self-sufficient center involving tofu and tempeh production.

"In Soyen, West Germany, Wolfgang Furth-Kuby, who published *Das Tofu Buch* (by William Shurtleff) in German, is interested in tofu production at his Sojaquelle. Tofu producers are Swame [sic, Swami] Anand Svadesha in Furth-im-Wald, Thomas Kasas [sic, Karas] who installed a tofu system last summer at his Bittersuess [later Soyastern] in Cologne, and Alexander Nabben in Munich.

"In Sweden Tim Ohlund and Ted Nordquist have been operating Aros Sojaprodukter since early 1981 in Örsundsbro using a Takai pressure cooker system and vacuum packaging. In Rimini, Italy, Gilberto Bianchini makes tofu at Community Foods. And Switzerland is the home of four soy companies including Restaurant Sesam in Bern, an active macrobiotic center with homescale tofu and seitan production; Marty Halsey makes tofu in Nyon; Hans Opplinger produces tofu in Chan; and Verena Krieger operates Sojalade in Luzern (Lucerne).

"Sojalade, whose tofu output at mid-summer 1982 was 1000 pounds weekly, is a company launched mainly on the results of an article Ms. Krieger published ('Yesterday Steak, Tomorrow Tofu') in a Swiss Sunday magazine. Krieger then established her shop to meet the expected tofu demand stirred up by her article. Swiss national television ran a 30 minute feature on soybeans this year in which Krieger made

a brief demonstration of 5 tofu dishes. 'Since then tofu has been a favorite child of the media,' she says, adding that tofu appeared in the pages of *Blick,* a mass market newspaper."

Photos show: (1) European representatives at the international Soyfoods Come West conference in Seattle, Washington: Gilberto Bianchini, Marina Casazza (Italy); Joanna White (Switzerland); Kym Olsen (England); Wolfgang Furth-Kuby (W. Germany); Tim Ohlund (Sweden); Roger Kayes (England). (2) Ted Nordquist and Tim Ohlund of Aros Sojaprodukter, Sweden's first tofu company.

1320. *Soyfoods.*1983. Cottage soy industries thrive on Vancouver Island. Winter. p. 36-37.
• ***Summary:*** Wayne Jolley's Sooke Soyfoods, which opened in early 1981, produces 1,800 lb/week of nigari tofu. Thistledown Soyfoods, run by Jan Norris, opened in October 1981. Each week the company produces 350 lb of tofu, 150 lb of tempeh (vacuum packed), and 75 lb of soy pate from okara. At Shin Mei Do Miso, Lulu and Yoshi Yoshihara have been making miso since 1979. They now produce 10,000 lb of 3 styles of miso each year. Metta Tofu is owned by "Ray Lipovsky, who might be North America's original cottage tofumaker as he's been coagulating soymilk with sea water since 1975... Besides producing 600 pounds of nigari tofu every week, Lipovsky is hot on the trail of Frozen Buddha, his multi-flavored line of frozen soymilk ice cream, already producing 360 gallons weekly."

Also on the island in Victoria, though too large for the cottage scale, is Dayspring Soycraft Corporation, operated by Michael Hsieh. Hsieh, a trained dentist, and his brother, Steven, and their families, emigrated to British Columbia from Taiwan and decided to launch a pressure cooker tofu plant in 1982.

1321. *Soyfoods.*1983. The soy deli experience at Well Bean. Winter. p. 38-40.
• ***Summary:*** The Well Bean is a soy deli at 349 Soquel Ave., Santa Cruz, California, run by Kevin Van Slooten. It features "Natural Fast Foods." Photos show: Twelve different ads and leaflets promoting the Well Bean. Kevin, behind the counter, smiling, with the deli's menu on the wall behind him.

1322. **Product Name:** Tempehroni (Herb-seasoned Tempeh in Sausage-Like Rolls) [Hot!, or Mild].
Manufacturer's Name: Turtle Island Soy Dairy.
Manufacturer's Address: P.O. Box 218, Husum, Washington 98623.
Date of Introduction: 1983. February.
Ingredients: Hot! Organically grown soybeans, water, apple cider vinegar, marjoram, basil, oregano, thyme, savory, cayenne, garlic, onion, black pepper, Rhizopus oligosporus (tempeh starter).
Wt/Vol., Packaging, Price: 8 oz plastic wrapped cylinder.
How Stored: Frozen.
New Product–Documentation: Labels sent by Seth Tibbott of Turtle Island. 2000. Sept. 12. Tempehroni, introduced in June 1981, now has a spicy cousin. And the label for regular/mild Tempehroni has been changed. Each label (red on white) has a thermometer on the right side; it measures the "Tempehture." For the hot, the red mercury rises to the top, labeled "Hot." A cartoon figure standing to the right of the thermometer, with a body like a soybean pod and wearing a sombrero, makes a gesture with one hand to indicate "just right." For the mild, the red mercury rises only halfway up–to the mild mark. A different cartoon figure, with a body of similar shape and wearing a chef's hat (toque) is tossing a pizza into the air over his head. The Turtle Island logo appears large in the upper left corner of each label.

Talk with Seth Tibbott, founder and owner of Turtle Island. 2000. Oct. 10. These two products were introduced in about Feb. 1983, shortly after the company moved to Husum.

1323. Fritschner, Sarah. 1983. Soybeans with pizazz. Tempeh: The fermented cousin of tofu. *Washington Post.* March 2. p. E1, E3. Wednesday.
• ***Summary:*** Eileen Judge, age 27, makes tempeh at Kingdom Foods in a warehouse on Morse St. (Washington, DC 20002), and distributes it to about 20 health food stores and co-ops in the area. Dr. Clifford Hesseltine of the USDA in Peoria is enthusiastic about tempeh, which he has studied for 20 years. He says that whenever they make a batch of tempeh, "it gets eaten up right away." Eileen believes the soybean explosion is coming. Recipes are given for Barbecued strips, Tempeh Pate, and Tempeh stir-fry. Two photos show Eileen with her tempeh.

1324. Tepper, Robert. 1983. Farm Foods and Ice Bean (Interview). *SoyaScan Notes.* March 2. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Farm Foods presently has 37 distributors nationwide for Ice Bean. More than 10 of those are in California. The "soy powder" in the product is spray dried soymilk. Ice Bean is made at an ice cream plant in Memphis. People from Farm Foods make it there 2 days a week with the help of a plant technician. In 1982 sales of Ice Bean were almost $500,000. There are now 1,200 people living on The Farm, and almost half are children. Farm Foods started as a name under which The Farm sold its surplus produce to local food stores in Tennessee. Farm Foods in now mostly Ice Bean plus some tempeh starter sales. Ice Bean's future is to expand into supermarkets. Address: Summertown, Tennessee.

1325. Joyce, Michael; Joyce, Julie. 1983. Re: Growing soybeans in Australia. Tempeh and tofu down under. Letter to William Shurtleff at Soyfoods Center, March 5. 4 p. Handwritten.
• ***Summary:*** "In Queensland, Australia, soybean still are

grown mainly inland, away from the coast. But in coastal regions the wet season occurs when the bean is mature (March-April).

"The beans are sown the first week in December. Inland the yield averages 1.25 tonnes (metric tons) per acre while on coastal regions, if weather permits, yields can be up to 2.25 tonnes per acre. The Department of Primary Industries is presently encouraging sugar cane farmers to intercrop soybeans as a nitrogen fixer, while contracting at $217.00 per tonne this year to the United Grasiers Association.

"Most of the production is high oil content, small beans. I believe we have a similar climate to Florida and I would be interested in high protein soybeans grown in that region for tempeh and soyfoods production. Names of varieties would be a big help. The varieties grown for oil here are Wills, Leslie, and G522 and their heritage can be traced to the Florida region.

"Most soybeans are now grown by a method called "No tillage direct drill," which is by no means organic. It requires aerial spraying with Round-Up, a systemic herbicide, then direct drilling sowing (same as planting sugar cane) one week later.

"We are fortunate to have an organic farmer, supplier, of three generations, farming 200 acres for the culinary trade. He grades and cleans and supplies to us only his biggest beans which we find suitable for tempeh and tofu.

"Cyril and Elly Cain have indeed pioneered tempeh in Australia. They have now set up a small, low-tech shop in Maroochydore, Queensland, and are proud parents of a 7 week old beautiful girl named Jessimin. They are soon to return to the U.S. and Julie and I will be taking over the tempeh shop and moving production to our farm at Cooloolabin, which is west of Yandina and Eumundi at 1,000 feet. We feel it will be more suitable for tempeh in the mountains where we will be more subject to a tropical climate than on the coastal regions only 10 miles away.

"We hope to develop these small beginnings into a "pilot plant" which may spread knowledge of soyfoods to both residents and non-residents of Australia. As our vision unfolds we shall keep you informed of all aspects of progress and the greater good prevailing in this important work. Cyril and Elly will always be remembered as the producers of Australia's first and finest commercial soy tempeh. Their tempeh is known throughout the East Coast to be unsurpassed for flavour and shelf life. Always sold fresh, not frozen. Delicious. We wait in hope and peace. Giving glory to God." Address: Queensland, Australia.

1326. Vogel, Lothar. 1983. Re: Anton Wolf and the history of soybean breeding in Austria. Letter to William Shurtleff at Soyfoods Center, March 13. 2 p. [Eng]
• ***Summary:*** Lothar spent 5 hours talking about soybeans with Anton Wolf at the latter's home. He learned more during that time than he had been able to learn in the previous 5 years. Wolf said that Franz Anton Brillmayer was Austria's outstanding soy expert. Wolf thinks of himself as the third generation from Brillmayer; they have done much the same work with similar results. Wolf has a collection of virtually all the old Austrian literature on soybeans. The work that Wolf and his colleagues are doing is quite amazing. He has started the SoyaRing and has 100 farmers as members, all growing soybeans under his guidance.

One big problem is that tofu is so expensive here that it is an elitist food, and soybeans cost $2.00/kg. A man in Salzburg is producing tempeh and a couple outside of Vienna is making tofu. Address: Vienna, Austria.

1327. Vogel, Lothar. 1983. Re: More on Anton Wolf and the history of soy in Austria. Letter to William Shurtleff at Soyfoods Center, March 15. 2 p. Handwritten. [Eng]
• ***Summary:*** Lothar had a fine meeting with Anton Wolf, who is sending Shurtleff the title pages of some books that are probably available in the USA. Herr Wolf also gave Lothar a copy of a cookbook titled *Wiener Soja-Küche,* by F. Brillmayer and Henriette Cornides.

But Lohar was most interested in two German-language articles from *Trend* magazine about the American soybean monopoly's fear of soybeans grown in Austria.

Lothar plans to travel to Verona, Italy, Germany, India (for a month of tapas), then Indonesia (to learn more about tempeh). Address: Vienna, Austria.

1328. Djurtoft, R.; Nielsen, J.P.; Omololu, A.; Omotola, B.D. 1983. Cowpea tempeh and its nutritional value. Paper presented at the 2nd African Nutrition Congress. 13 p. Held 27 Feb. to 3 March 1983, Ibadan, Nigeria. [8 ref. Eng]
• ***Summary:*** "The work with cowpea tempeh in Nigeria was started as an M.Sc. project carried out by B. Omotola in 1981. The work involved production of cowpea tempeh, determination of the important parameters for the production, such as presoaking time, boiling time, quality of the inoculum, etc. Besides, search for potential mycotoxins was carried out. No mycotoxins (determined as aflatoxin B-1) were found. Eighteen months ago the tempeh production was moved to Osegere village, 20 km from the University of Ibadan, and during the past months the production has been studied, and acceptability tests have been carried out.

"Cowpea tempeh was accepted. 51 out of 52 persons would like to taste it again, and 36 ranked cowpea tempeh as excellent food, 13 as fairly good, and 3 as not too good." Address: 1-2. Dep. of Biochemistry & Nutrition, Technical Univ. of Denmark, DK-2800 Lyngby, Denmark; 3-4. Dep. of Human Nutrition, Univ. of Ibadan, Nigeria.

1329. Hankin, Lester; Hanna, J. Gordon. 1983. Quality of tofu and other soy products. *Connecticut Agricultural Experiment Station, Bulletin* No. 810. 4 p. March. [8 ref]
• ***Summary:*** This cooperative study by the Connecticut

Agric. Exp. Station and the Connecticut Department of Consumer Protection analyzed the microbial and nutrient content of 17 soy products: 5 tofu products made by New England Soy Dairy (Greenfield, Massachusetts), Firm Organic Tofu, and Tofu Slices (Marinated and Broiled) made by Nasoya Foods (Leominster, MA), Soy-Moo soymilk sold by Health Valley Natural Foods (Montebello, California), Tempeh Burgers made by Soyfoods Unlimited (San Leandro, CA), Tempeh Burger made by Pacific Tempeh (Emeryville, CA), Tofu Lasagna with Sauce marketed by Legume, Inc. (Bloomfield, New Jersey), Tempeh made by Tempeh Works (Cambridge, MA), Genmai Miso distributed by Erewhon, Inc. (Cambridge, MA), Kome Miso distributed by Tree of Life (St. Augustine, Florida), and 3 tofu products made by The Bridge (Middletown, Connecticut). Ingredients of each product are given.

The study showed high levels of bacterial contamination in many of the products, much higher than for dairy products. Only 41% met the coliform bacteria standard of less than 10 per gram of product, 29% met yeast standard of less than 10/gm, 41% met the 10 mold standard of less than 10/gm, and only 12% met the standard for total aerobic bacterial count (less than 25,000/gm). In addition, soyfoods generally contained more fat than claimed.

This report had widespread repercussions for the soyfoods industry, which (in the short term) were negative. The authors had previously published studies on the microbiological quality of numerous dairy products. Address: P.O. Box 1106, New Haven, CT 06504. Phone: 203-789-7272.

1330. Krieger, Verena. 1983. Re: History of work with tofu in Japan, Illinois, and Switzerland. Letter to William Shurtleff at Soyfoods Center, March. 2 p. Typed, without signature. [1 ref. Eng]

• ***Summary:*** "The year of 1973 I spent in Japan, where I got to know tofu and learned how to make it. The following years I spent in the U.S., working at several natural foods restaurants using soyfoods as important parts of the menu. The last of these jobs was at It's Natural (Brian Schaefer), where we made our own tempeh. We were also the first (and an important) customer of Mu-Tofu of Chicago.

"In 1979 I returned to Switzerland, where I first started to sell a Tofu-Set [tofu kit, for making tofu at home], using it in private cooking classes. (The publication 'So mache ich Tofu,' is the instruction booklet, accompanying the set, written by me and printed by the Ahorn-Verlag.)

"In 1980, just before going to the Soyfoods Conference in Illinois, I approached Morga, asking them if they were interested in producing tofu. They had all the right equipment and I even went there to make tofu for them once, but we could not come to terms, since they wanted to sell a sterilized tofu with long shelf life at room temperature. But such tofu was already on the market from Belgium, made by Lima. I wanted the fresh product.

"I then started to make tofu in my home kitchen for a local vegetarian restaurant. In the spring of 1981, I heard about Hans-Ruedi Oppliger, who was then also making tofu in his home kitchen for a natural foods store. I contacted him and we decided to join efforts in creating a market. But it was only after 'Yesterday Steak, Tomorrow Tofu' was published that we could start full scale production. We set up the Sojalade with 3 other people and founded a co-op. This co-op has now 9 members and both Hans-Ruedi and I are still part of it. (Hans-Ruedi does not have a shop of his own.) The Sojalade was set up in August 1981, but Restaurant Sesam in Bern and Restaurant La Moisson (both macrobiotic) had been making tofu for their own use for several months, or even years before us. Soyana started their tofu production in February 1982.

"The Sojalade is now also working on a project to help organic farmers get started with soybean cultivation... By the spring of 1983 interest in tofu production has become quite considerable. Therefore, the Sojalade has instituted a small apprenticeship program, where we train people in tofumaking for at least ten days. Since we can only take one person at a time, we already have a waiting list till June."

Update: 1990 April 9. Verena is now writing cookbooks, and has 5 in print. One on beans just been published. Her tofu cuisine is still in print. A condensed version has been taken over and distributed by Migros. She is no longer involved with Genossenschaft Tofurei, which is quite a distance from her home. She was on the board of directors but she keeps in touch and she still has some money involved. Address: Bruchmattstr. 24, CH-6003 Lucerne, Switzerland. Phone: 041-22 50 34.

1331. Milly's International Vegetarian Cuisine. 1983. March. New soyfoods restaurant or deli. 1613 Fourth St., San Rafael, CA 94901.

• ***Summary:*** Menu and article in Natural Foods Merchandiser. 1987. Oct. p. 66. Founded by Brian and Dennis Malone. Their mother is Milly. Entrees include Tempeh Rancheros, Tofu Piccata, Tempeh Dore, Tempeh Oscar, Milly's Vegetable Stirfrys. Address: San Rafael, California.

1332. *Soyanews* (*Sri Lanka*).1983. Book review: Handy guide to the soyafoods world. 5(7):6. March.

• ***Summary:*** A full page, positive review (by. S. Pathiravitana) of *Soyfoods Industry: Directory and Databook* (1982), by Shurtleff and Aoyagi. A graph of world soybean production (total and by region) is shown.

"The databook section is only one-half of this book. The other is a directory, which helps to bring people in the soyafood business together. Soyafoods is now a worldwide phenomenon to judge from the scattered places in the globe where people are quietly and patiently making tofu and

tempeh.

"From Mexico to the Philippines and from New Zealand to Canada there is a growing global soya network which the Shurtleffs have now drawn closer. The glossary of soyafoods terms, names and addresses, of business houses and soycrafters make this databook a useful addition to libraries."

1333. *Soyanews* (*Sri Lanka*).1983. Prisons expand use of soya. 5(7):7-8. March.
• ***Summary:*** "After the new machine [disintegrator / grinder] was installed in Welikada Prison last September, there has been a further saving of nearly Rs. 65,000 during a period of three months from September 1982 to December 1982."

"In addition, the work camps and open prisons have also cultivated soya this maha."

"The Department of Prisons which has shown that large savings are possible by using soya in institutional feeding has now branched into the production of other soyafoods like soya fortified bread and yogurt.

"Exhibition: Independence day celebrations held in Kandy this year featured an Agricultural and Technical Exhibition..." At the soyafoods stall, ice cream sold for Rs. 2/-, soyamilk for Rs. 1/- and 100 grams of fried tempeh was 1/-.

"In the eight days that the exhibition ran many more thousands came to know and understand the immense potential of the bean that is at present the cheapest pulse in the market" where it retails for Rs. 4.00 to 4.50 per 500 gm.

A photo shows a field of soyabeans at the open prison camp, Anuradhapura.

1334. Soyfoods Center. 1983. Professional publications and services (Leaflet). Lafayette, California. 2 p. March 26.
• ***Summary:*** This leaflet, printed with brown and black ink on glossy white paper, advertises the following: Soyfoods consulting services. Computerized soyfoods mailing list. *Using Tofu, Tempeh & Other Soyfoods in Restaurants, Delis & Cafeterias* (spiral-bound book, with excerpt of book review). *Soyfoods Labels, Posters & Other Graphics* (spiral-bound book, with excerpt of book review). Special bulk discounts on books and materials. Soyfoods document center and library (which owns 3,500 documents). Soyfoods color slide shows. Tempeh pamphlet reprint rights. Order form. Address: P.O. Box 234, Lafayette, California 94549. Phone: 415-283-3161.

1335. **Product Name:** Okara Tempeh.
Manufacturer's Name: Swan Gardens.
Manufacturer's Address: Miami, Forida.
Date of Introduction: 1983. March.
New Product–Documentation: Soyfoods Monthly. 1983. Feb.; Soyfoods. 1983. Summer. p. 43; Shurtleff & Aoyagi. 1985. History of Tempeh. p. 56-57.

1336. Heimlich, Jane. 1983. Tofu & tempeh: Meatless alternatives. *Cincinnati Enquirer.* April 6. [4 ref]
• ***Summary:*** Contains 5 tofu and 4 tempeh recipes. Address: Ohio.

1337. O'Brien, Jane. 1983. The magic of tofu and other soybean products. Wellingborough, England: Thorsons Publishers Ltd. 128 p. April. Illust. by Niall Morris and Clive Birch. Index. 20 cm. [6 ref]
• ***Summary:*** Written in large letters at the top of the cover: "The Best of Vegetarian Cooking." Contents. Foreword. Introduction (incl. tempeh, soy flour, miso, tamari). 1. Making your own tofu. 2. A word about the recipes. 3. Recipes. 4. Soymilk. 5. Other soybean products (Okara, gô, yuba, soynuts). 6. Soybeans as beans. 7. Food value of soyfoods. 8. History of the soybean. Further reading.

Jane was a soyfoods pioneer in Ireland. In the Introduction (p. 18-21) Jane explains that "I was frequently ill as a child, and on several occasions I was very near to death's door." Yet as she got older, she grew to enjoy gourmet food and gourmet cooking. The man who became her husband gave her the first book she read on natural foods. "As soon as I became aware that food contributed to the maintenance or destruction of health, I began a lifetime of experimentation. I changed from refined foods to whole foods, gave up eating red meat, studied macrobiotics, so much so that over ten years ago I went to Boston [Massachusetts] with two children under the age of four, and pregnant with a third, to study the subject, and I continued from there to develop my own system." Her husband, an actor, is now quite happy with her cooking, after "an austerity programme involving giving up meat, cutting down on and nearly eliminating dairy food, getting rid of sugar."

"I have been working on creating meals that are increasingly more healthful for over seventeen years now [since 1966], and I find it a fascinating study. It is wonderful to witness the vast improvement in my own health..." Her son Quinn is now 15 years old. Her religion is Baha'i. "In furthering my interest in natural foods, I have given cooking classes in Dublin [Ireland] for over ten years [since 1973], not steadily, but from time to time when there were people interested. In the early days of my cooking classes, I also imported the necessary foods: whole grains, beans, miso and natural soy sauce from suppliers in England as they were not available in shops here in Dublin. There was no other way of getting these foods for my family. During the cooking classes I sold much of the stock... That led to the beginning of Ireland's first natural food store which I started with my husband's patient assistance, but which we left to someone else for many reasons."

"Several years ago I began to use tofu and soyfoods and to include them in the cooking classes. Because I was so interested in learning more about them, I attended the soyfoods conference held in Illinois in 1980 and the one in

Colorado in 1981... I think that I became so excited about tofu, soymilk and soyfoods really because I had long been a lover of puddings, custard, and creamy toppings, often made with dairy foods. However, because I needed to cut down on my use of dairy foods, I had nearly eliminated all of those things from my diet. When I discovered that it was possible, not only to make tofu and soymilk successfully in my own kitchen, but to use it for very accurate substitutions of my childhood favorites which were far more healthful than the things I had eaten as a child, I was thrilled."

Note: On 9 November 1979 Mrs. Jane M. O'Brien (7 Woodside Drive, Rathfarnham, Dublin 14, Ireland), ordered books on tofu, tofu & soymilk production, miso, and tempeh from Shurtleff & Aoyagi at Soyfoods Center in California.

Talk with Jane O'Brien. 1980. July 13. She developed the many recipes in this book using soybeans that she imported from England to Ireland, starting in about 1980.

Letter from Jane O'Brien. 1983. May 28. This book was published in April 1983. "It is presently on sale in England but not yet here in Ireland." Address: 7 Woodside Dr., Rathfarnham, Dublin 14, Ireland.

1338. Rathbun, Bonnie L.; Shuler, M.L. 1983. Heat and mass transfer effects in static solid substrate fermentations: Design of fermentation chambers. *Biotechnology and Bioengineering* 25:929-38. April. [23 ref]
• ***Summary:*** "An experimental device was constructed to allow nearly simultaneous measurements to be made on temperature and gas composition at different depths in solid-substrate fermentation bed... With a tempeh fermentation (*Rhizopus oligosporus* growing on soybeans) the temperature gradient could be as steep as 3ºC/cm during active mold growth and concentration of carbon dioxide could reach 21 vol. % in the bottom layer." Address: School of Engineering, Cornell Univ., Ithaca, New York.

1339. Rosenbaum, Ron. 1983. The alternative Big Mac. *Esquire* 99(4):126. April.
• ***Summary:*** "I'm sorry, I draw the line at tempeh. I had no qualms about tasting soy burgers, tofu burgers, lentil-walnut burgers, and sunflower-seed burgers, but I simply refuse to taste a tempeh burger.

"Tempeh, if you must know, is soybeans fermented with a mold. Soyheads say that tempeh has all sorts of high-quality-protein benefits you can't get even from the highly acclaimed soybean-curd tofu. It's the hot new item on the health food scene. I don't care. All I can think of when I hear 'tempeh' is those pallid squares of tofu floating in basins of dirty water in health food stores and developing mold. Yucch. I'm all for the health benefits of natural foods, but I have some aesthetic standards.

"The idea here was to search for a health food alternative to the hamburger, something that tasted good on the sensual level and satisfied on the soulful level...

"Do the substitutes offer that kind of satisfaction? Well, forget about tofu burgers. We're looking for hamburger alternatives, not hamburger helper. Tofu burgers are so bland, so ascetic, so utterly tasteless that they may be natural as hell but they taste like polyester."

1340. *Soyanews* (*Sri Lanka*).1983. Recipes: Tempeh as a flavouring agent. 5(8):3, 8. April.
• ***Summary:*** When fresh tempeh is immersed in a brine solution (16-18%) in an uncovered glass jar and exposed to sunlight for about 3 weeks, it turns into a kind of sauce with the flavour of Jaadi (salted fish). This preparation was first suggested by Mrs. Gai Kim. It could be called "Tempeh sauce." A recipe is given.

1341. *Soyfoods Monthly* (*Colrain, Massachusetts*).1983. Soyfoods Association rejuvenated at first meeting of new board, new goals. 3(4):1. April.
• ***Summary:*** "Thirty two industry members attended a 2 hour planning session of the new Soyfoods Association in Anaheim, February 7 and appointed board of directors and officers. Michael Austin was selected the new Executive Director following Richard Leviton's resignation. Board members include: Gary Barat, Legume (President), Yvonne Lo, Vitasoy USA (Vice President), Tom Timmins, New England Soy Dairy (Vice President), Dan Burke, Pacific Soybean (Treasurer), Richard Leviton, *Soyfoods Magazine* (Secretary), Travis Burgeson, Pacific Tempeh; Michael Fountain, SanJi [San-J] Int'l.; Jim Miller, Quong Hop; Jack Mizono, Azumaya; Morris Shriftman, Tree of Life; Robert Tepper, Farm Foods; Shoan Yamauchi, Hinode Tofu Co. An initial pledge of $12,000 from 14 companies was received at this organizational meeting."

1342. Sunset international vegetarian cook book. 1983. Menlo Park, California: Lane Publishing Co. 96 p. April. Illust. 28 cm. Retitled Vegetarian Favorites in 1987.
• ***Summary:*** This book is by the editors of Sunset books and Sunset magazine; the supervising editor is Maureen Williams Zimmerman. A table titled "Choosing nutritiously" (p. 5) shows that soybeans are a good source of thiamin (B-1), niacin, vitamin B-6, folic acid, calcium, and iron. Another table titled "Protein partnerships" (p. 7) states that soybeans and soyfoods (soybean curd/tofu, soy flour, soy milk, and tempeh), like dairy products and eggs, have no limiting amino acid. Soy-related recipes include: Miso grilled mushrooms (p. 14; Japan). Golden tofu cauliflower soup (p. 34; Thailand). Greens & tofu in peanut sauce (p. 48; Thailand). Stir-fried tofu & vegetables (p. 50; Vietnam). Whole wheat & soy pasta (p. 52). Mandarin pancakes with spicy tofu filling (p. 70; China). Address: Menlo Park. Phone: 415-321-3600.

1343. Dreyer, Lawrence. 1983. Re: Work with soya in

Austria. Letter to William Shurtleff at Soyfoods Center, May 1. 3 p. Handwritten, with signature. [Eng]
• ***Summary:*** "Herr Anton Wolf was here yesterday and told me that only 100 hectares of soybeans were planted in Austria in 1982. The yield was about 2,500 kg/ha."

Dreyer's main work is as the architect of the additions they are making to their facilities in Wiener Neustadt. At present they have a small shop and restaurant. There will be a new area for producing tofu on a small scale, gluten, mochi, bread. "At present we produce a limited quantity of tofu with equipment bought in Japan... A group of people loosely related to us uses a small centrifuge to make soymilk. This group has also recently started making tempeh... I have given copies of your chapter on "History of Soya in Austria" to Anton Wolf." Address: Weg der Natur, Austria.

1344. Mallory, Margaret. 1983. Introducing tempeh. *Oakland Tribune.* May 4. p. D1-D3. Wednesday.
• ***Summary:*** This article, based on a new cookbook, *Tempeh Primer,* by Juel Andersen and Robin Clute (Creative Arts Communications, Berkeley), gives a basic introduction to tempeh, with four recipes. Andersen believes that tempeh is now where tofu was about 10 years ago. Photos show: (1) Andersen and Klute. (2) Three prepared tempeh dishes. Address: Tribune Food Editor.

1345. Stark, Bruno. 1983. Re: WSL and Haus Minerva in Switzerland. Letter to William Shurtleff at Soyfoods Center, May 4. 1 p. Typed, with signature.
• ***Summary:*** WSL, run by Bruno in Wolfhaden, Switzerland, is a society or club (*Verein*). Since 1982, among other things, every other month, they have given a course in making tofu and tofu dishes. Those attending have been very enthusiastic about it. This year they want to put on a tempeh course. Tempeh is not yet sold in Switzerland. "We hope with our work to make soyfoods better known."

Bruno also sent Soyfoods Center several brochures: One 4-page brochure is titled "*Programm* 1983." One course is titled Cooking Course (Soya cookery: Tofu & tempeh). An introductory tofu course is given 4 times during the year, as in an advanced tofu course. An introductory tempeh course is given twice.

Another brochure (black on pink), titled "Tofu Cooking Course," gives details about tofu and the course. Address: CH-9427 Wolfhaden, Switzerland. Phone: 071-91 26 75.

1346. Cohen, Michael. 1983. New developments at The Tempeh Works (Interview). *SoyaScan Notes.* May 6. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Michael's company now makes just over 5,000 lb/week of tempeh and has 13 employees. His main products, in descending order of sales, are soy tempeh, 3-grain tempeh, and tempeh burgers. Today he plans to sign the papers that will enable him to move into a 4,000 square foot building on 2 acres of land in Greenfield in September. His post office box and phone number will not change.

In 1982 his company almost went out of business. He made big capital investments to expand into trailers, adding lots of new tempeh incubation space, then suddenly 4 competitors appeared in the New York-Boston area. For 9 months in 1982 he suffered big monthly losses. But he learned new ways of managing resources and people, recovered, and again achieved a positive monthly cash flow. He now has 2 production managers, which allows him to focus on marketing and sales. He has opened many new supermarket accounts, and is conducting many in-store demonstrations serving Sloppy Joes (multi-use for pasta filling, etc.) and Tempeh Mock Chicken Salad. He is trying to get the salad into salad bars but it is more expensive than potato salad or macaroni salad. Address: Greenfield, Massachusetts.

1347. Dreyer, Lawrence. 1983. Re: Tempeh in Austria. Letter to William Shurtleff at Soyfoods Center, May 19. 1 p. Handwritten. [Eng]
• ***Summary:*** A "Dipl. Ing." is someone who has graduated from a technical university. The people making tempeh in Austria that I know of are Anton Krizmanics and Norbert Brunthaler. They have apparently founded a company called SoyVita and their address is Herrengasse 30, A-5020 Salzburg, Austria. Tel. (06222) 430985. They both speak reasonably good English. "If there is anything else with which I can help, please write." Address: Austria.

1348. *Yomiuri Shinbun* (*Yomiuri Daily News, Tokyo*).1983. Niowanai nattô [Natto that doesn't smell: Tempeh]. May 20. Evening ed. p. 14. [Jap]

1349. *Zenkoku Shokuhin Shinbun* (*National Food News*).1983. Nattô Kenkyû-kai no kappatsu na katsudô (nattô-kin tenpe) o Zennôren tsûjô sôkai [The Natto Study Group's vigorous activity (with "tempeh natto") at the Japan Natto Association's general meeting]. No. 452. May 21. [Jap] Address: Japan.

1350. Ikawa, Kazuhisa. 1983. Higashi Ajia fukugo bunka-ken. Tôfu bunka to nattô no toraianguru [East Asia's culture complex. Tofu culture and the natto triangle]. *Asahi Shinbun* (*Asahi Daily News, Tokyo*). May 28. p. 11. [Jap]

1351. Fardiaz, Dedi. 1983. Aspek pengolahan kedelai [Aspects of soybean processing]. Presented at Konsultasi Teknis Pengembangan Industri Pengolahan Jagung, Kedelai dan Ubi kayu (Technical Consultation on Industrial Development of Corn, Soybean, and Cassava Processing). Held 30-31 May 1983 at Kampus Darmaga, Bogor, Indonesia. [Ind]*

1352. Fieldman, Anita. 1983. Application: Health connection. *Whole Foods* (*Berkeley, California*). May. p. 19-21.
• ***Summary:*** The Los Angeles County Task Force on Nutrition and Behavior is located at 713 Hall of Administration, 500 W. Temple St., Los Angeles, California 90012. "The Task Force is persisting in its efforts to convert county facilities to natural foods." A photo shows Frances Lux, director, and president of California Design Collection in Marina del Rey, California. She has studied nutrition for over ten years and has designed and developed the menus for many natural foods restaurants. Lux states that a long term goal of the Task Force "is to replace hamburgers with tempeh, and Sugar Smacks with granola."

1353. Hesseltine, C.W. 1983. Food fermentation research and development. In: K.T. Achaya, ed. 1983. Proceedings of AHARA 82, First AFST (I) International Conference on Food Science and Technology. See p. 65-67. Held 23-26 May 1982 at Bangalore, India.
• ***Summary:*** Discusses the amounts of miso, shoyu, and natto produced in Japan. In Korea in 1978 an estimated 51,237 metric tons of soybean paste, 97,830 kiloliters of soy sauce, and 33,525 metric tons of gochoojang (hot pepper paste) were produced. Also discusses the amounts of tofu, tempeh, and miso made in the USA. Address: USDA, Peoria, Illinois.

1354. Leviton, Richard. 1983. Soyfoods market overview. *Whole Foods* (*Berkeley, California*). May. p. 24-25.
• ***Summary:*** Discusses twelve soyfoods trends of interest to retailers. Address: 100 Heath Rd., Colrain, Massachusetts 01340.

1355. **Product Name:** [Tofu, and Tempeh].
Foreign Name: Soja-Quark (Tofu), Soja-Brie (Tempeh).
Manufacturer's Name: SoyVita Austria.
Manufacturer's Address: Herrengasse 30, A-5020 Salzburg, Austria. Phone: (0662) 43 09 85.
Date of Introduction: 1983. May.
New Product–Documentation: Letter (typed, with signature on letterhead) from Norbert Brunthaler 1983. May 11. "In our last letter we informed you of our intention to start a soyfood company. We have set up a company named SoyVita Austria (Herrengasse 30, A-5020 Salzburg, Austria. Phone: 0662 43 09 85). We produce tofu, tempeh, and have also put up small amounts if miso. In the future we'll try to produce soysauce. For all of our products we use Austrian soybeans, ecologically grown.

Letter from Lawrence Dreyer. 1983. May 19 (which see). Note: Brunthaler's partner was apparently Anton Krizmanics. By 1984 Brunthaler was part of another company named Sojvita Produktions GmbH in Lichtenwörth, Austria. Soyfoods Center Computerized Mailing List. 1983. June 20. Owner: Norbert Brunthaler.

Talk with Guenter Ebner of Sojarei Ebner-Prosl. 1990. May 28. He says SoyVita is the second largest tofu maker in Austria, after Sojarei Ebner-Prosl.

1356. Steinkraus, Keith H.; Cullen, R.E.; Pederson, C.S.; Nellis, L.F.; Gavitt, B.K. eds. 1983. Handbook of indigenous fermented foods. New York, NY: Marcel Dekker. ix + 671 p. May. Illust. Index. 26 cm. Microbiology Series, Vol. 9. [200+ ref]
• ***Summary:*** Contents: Foreword by E.J. Da Silva. Preface. 1. Indonesian tempeh and related fermentations: Protein-rich vegetarian meat substitutes. 2. Indigenous fermented foods involving an acid fermentation: Preserving and enhancing organoleptic and nutritional qualities of fresh foods.

3. Indigenous fermented foods in which ethanol is a major product: Types and nutritional significance of primitive wines and beers and related alcoholic foods.

4. Indigenous fermented amino acid / peptide sauces and pastes with meatlike flavors (p. 433-571): Introduction.

(A) Soy sauces: Japanese shoyu: Koikuchi, usukuchi, and tamari; Chinese chiang-yu, by Tamotsu Yokotsuka (p. 437-51). Taiwanese soy sauce, by Liu (p. 451-56). Malaysian soy sauce: Kicap, by Ong, Mercian, Poesponegoro and Tanuwidja (p. 456-61). Indonesian soy sauce: Kecap, by Saono, Poesponegoro and Tanuwidja (p. 461-65). Korean soy sauce, by Chang (incl. homemade kanjang and meju, p. 465-66). Taiwanese black bean sauce: Inyu, by Jan et al. (p. 466-67). Philippine taosi, by Steinkraus (p. 467).

(B) Fermented soybean pastes: Japanese miso, by Ebine, Shurtleff and Aoyagi (p. 468-79). Indonesian tauco, by Saono et al. and Winarno (p. 479-82). Korean Doenjang and kochujang, by Chang, Shurtleff and Aoyagi (p. 482-87).

(C) Fermented fish-shrimp sauces and pastes (p. 487-526).

(D) Fish-soy sauce and fish-soy paste, by Ismail (p. 526-30).

(E) Miscellaneous Oriental fermentations. Japanese natto (itohiki natto), by Hayashi and Ota (p. 530-45). Japanese Hama-natto (hamanatto) and related products (incl. yukiwari natto, p. 545-47). Chinese red rice: Anka (Ang-kah), by Lin, Su and Wang, Sooksan and Gongsakdi, and Pichyangkura (p. 547-53). Chinese sufu, by Su and L.-P. Lin (incl. nyufu, p. 553-61). Note: Chapter 4 contains about 195 references.

5. Mushrooms: Producing single cell (microbial) protein on ligno-cellulosic or other food and agricultural wastes.

6. General papers related to indigenous fermented foods: Contributions of the western world to knowledge of indigenous fermented foods of the orient, the importance of microbial genetics in indigenous food fermentations, new uses for traditional food fermentations, mycotoxin problems in indigenous fermented foods and new methods for mycotoxin analysis.

Less widely known fermented foods include: Idli, dosa/

dosai, dhokla (with soy, 131-35), enjera (162), tef/teff (164), wot (165), hopper (173), kishra (175), lambic (179), ogi (with soy, 189-98), mahewu (203), gari (208), dahi (249-57), srikhand and lassi (256-57), laban rayeb, laban zeer, yogurt (257-59; cultured soy yogurt is mentioned on p. 616), liban, mast, mass, taw (260), tairu (with soy, 260-65), kishk or kushuk (267), Metchnikoff (266), trahanas or tarhanas (271-76), rabdi, jalebi (275), koumiss (276), kefir (277-80).

Alcoholic beverages and foods: Honey wine, mead, metheglin (305), tej (306), sugar cane wines, basi, bubod, binubudan (307), palm wine or toddy (315-28), pulque (328-37), kaffir (344), tesguino (352), bouza (357), pito (358), busaa (365) sake (373-79), yakju and takju (379), tape = tapeh (381-400), ragi (381), tapuy (400), lao-chao (402), madhu (406), brem (408), tropical vinegar (410-14), nata (414-20), tea fungus (421), nuoc-mam (516-21).

Reviewed in Scientific American (Nov. 1983, p. 37), and in Bio/Technology (1984. p. 364). Address: Inst. of Food Science, Cornell Univ., Geneva, New York.

1357. Kanasugi, Goro. 1983. Tempe no hôkoku to setsumei [Tempeh: Report and explanation]. *Zenkoku Shokuhin Shinbun* (*National Food News*) No. 453. June 1. p. 2. [Jap]
• ***Summary:*** Tempeh recipes developed and tested by Mr. Kanasugi include karinto, otsumami, subuta-style yakimeshi, curry rice, tempeh sauteed with vegetables or with pickles, gyôza, harumaki (spring rolls), croquettes, cutlets, agé balls fukumeni style, steamed bread, saka manju, egg bread, Kinzanji miso, Tekka miso, sanbaizu aenuta, jashiki-agé, mameita, Inari-zushi, norimaki, oden, fukumeni, shio mamemochi, ohagi, hijiki nikomi, salad, stew, etc.

In Japan it is very difficult to omit all of the meat from a traditional meat recipe, so Mr. Kanasugi leaves in 10-20% for flavor, and substitutes tempeh for the rest. His dream is to establish a chain of specialty tempeh restaurants in Japanese cities. He would like to ask a professional cooking teacher to develop some popular tempeh recipes suited to the needs and tastes of the people.

1358. Krasner, Jeffrey. 1983. Tempeh producers fight image problem. Area company believes in future of soybeans. *Columbia Missourian.* June 1. p. 17A.
• ***Summary:*** Imagine Foods Inc. in Jamestown, Missouri, was incorporated in Oct. 1982 and is now expanding its small tempeh shop in the homesteading community of Moniteau Farm, says David Carlson, the company president. This will increase production capacity to 5,000 lb/week from 1,000. Costs before expansion began totaled $25,000. Robert Nissenbaum is the company's vice president. Address: Missouri.

1359. Wagner, Martha. 1983. A growing galaxy of cookbooks helps Americans come to terms with tofu. *Chicago Tribune.* June 16. p. G10. [7 ref]
• ***Summary:*** "As tofu moves out of the hinterlands of America, as it begins to appear in university cafeterias, chic restaurants and gourmet food magazines, tofu cookbooks are multiplying." At least 20 titles are now available in this category. Those mentioned are: (1) *Tofu Goes West,* by Gary Landgrebe (vegetarian, reflects the common theme). (2) *The Book of Tofu,* by William Shurtleff and Akiko Aoyagi ("put tofu on the American map back in 1975, with more than 500 vegetarian recipes... and beautiful illustrations"). (3) *The Tofu Cookbook,* by Kathy Bauer and Juel Andersen. (4) *Cook with Tofu,* by Christina Clark. (5) *Tofu at Center Stage,* by Gary Landgrebe. (6) *The Great American Tofu Cookbook,* by Patricia Gaddis McGruter. (7) *The Book of Tempeh,* by Shurtleff and Aoyagi.

Concludes with three tofu recipes: Sunny tofu salad. Tofu tartar sauce. Baked marinated tofu.

1360. *Nikkei Sangyo Shinbun* (*Japan Economics and Industry News*).1983. Daizu hakkô no shizen shokuhin. Torigoe Seifun. Tokushu kin tsukai. Kusami naku [A natural fermented soyfood: Tempeh is made by Torigoe Seifun using a special microorganism to get rid of beany flavor]. June 30. p. 15. [Jap]
• ***Summary:*** Fukuoka prefecture–Torigoe Seifun announced that from the middle of July they will start to make tempeh (tenpe) on a commercial scale and sell it nationwide to institutions. In September it will be sold to retailers–natural food stores, restaurants, department food stores, and supermarkets. The company plans to make and sell 15 tonnes a month. A description is given of how the tempeh is made. In about 1975 Torigoe Seifun started to R&D on tempeh together with the department of Agriculture at Kyushu University. Mr. Heiki, president of Torigoe, thinks tempeh will become a regular part of the food life of Japan.

Note: This story was also run on the same day in other major Japanese newspapers: *Mainichi Shinbun* (p. 8). *Yomiuri Shinbun* (p. 10). *Nishi Nihon Shinbun* (p. 8). A photo of sliced tempeh ovals, cubes, and sticks appeared in the last two articles.

1361. **Product Name:** Tofu Delight Tempeh Salad [Curry, or Herb].
Manufacturer's Name: Appropriate Foods, Inc.
Manufacturer's Address: 137 New Hyde Park Rd., Franklin Square, Long Island, NY 11010.
Date of Introduction: 1983. June.
Ingredients: Organic tempeh, brown rice, miso, tamari, herbs, spices.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated.
New Product–Documentation: Catalog. 1983. June. In June 1984 changed to New York Soy Deli brand. Label. 1984. June. 1.5 by 3 inches. Black on orange. Distributed from June 1984 to June 1986.

1362. Djurtoft, Robert. 1983. Main report on cowpea tempeh project in Nigerian villages. Unpublished typed manuscript. 13 p. June. Project J.nr. 104.Dan.8/83. Unpublished manuscript. [29 ref]
• ***Summary:*** Contents: "Tempeh-Products" as food in Nigerian villages. General background. Aim of project. Tempeh. Production of Rhizopus culture for making tempeh: Sporulated Rhizopus growth on rice, Hibiscus usar method, the original Rhizopus culture. Microbiological work. Lipid studies. Vitamin analyses. Main points in collaborative work. Address: Dep. of Biochemistry and Nutrition, Technical Univ. of Denmark, Building 224, DK-2800 Lyngby, Denmark.

1363. Gullo, Karen. 1983. Soyfoods consumption hits all-time high. *Vegetarian Times.* June. p. 12. [1 ref]
• ***Summary:*** This is a review and summary of *Soyfoods Industry Directory and Databook 1983* by Shurtleff and Aoyagi. 1982 USA production and retail sales figures are given for the following foods: Tofu (27,500 tons, $50 million in 1981), tempeh (450 tons, $2 million), and miso (750 tons). Four factors contributing to the growth of soyfoods are summarized. "Low-calorie convenience soyfoods products and frozen, meatless 'heat and serve' entrees will play and important role in soyfood's entrance into the mainstream American diet... Dairy-like soymilk and soymilk shakes, yogurt and ice cream, tofu cottage cheese and tofu burgers will soon be low-cost, low-calorie alternatives to mainstream supermarket fare."

1364. Herrmann, Karl. 1983. Ueber Sojabohnen und Sojaprodukte [On soybeans and soybean products]. *Ernaehrungs-Umschau* 30(6):175-79. June. [17 ref. Ger]
• ***Summary:*** Contents: Introduction, nutritional composition, amino acids in soy sauce. Unfermented soy products: Soymilk, tofu (*sojaquark*), aburage, kori-tofu, yuba, kinako. Fermented soy products: Soy sauce, miso (*sojapaste*), tempeh, sufu, natto. Address: Instutut fuer Lebensmittelchemie, Hannover Univ., Wunstorfer Str. 14, D-3000 Hannover 91 [West Germany].

1365. Island Spring Inc. 1983. Make a living making tofu! (Ad). *Soyfoods* Summer. p. 72.
• ***Summary:*** This quarter-page black-and-white ad is for the Soycrafter's Apprenticeship Program, a professional 21-day intensive "hands-on" course in the commercial production and marketing of tempeh, tofu, soymilk, and related soyfoods. "Start your own soyfoods enterprise!... Join the soyfoods movement!." Address: P.O. Box 747, Vashon Island, Washington 98070. Phone: (206) 622-6448.

1366. Kronenberg, H.J. 1983. Engineering tempeh incubators. *Soyfoods.* Summer. p. 56-62.
• ***Summary:*** Contents: Introduction. Overview of tempeh incubators. Incubation requirements. Psychrometric principles. A sample calculation. An integrated incubation system. An illustration shows an integrated incubation room and air conditioning unit. Contains many charts, formulas, and calculations. Address: Director, Soy Systems, Cornell Univ.

1367. Mazzieri, Giovanna Fosso. 1983. Tempeh [Tempeh]. Milan, Italy: Published by the author. 7 p. June. 21 cm. [2 ref. Ita]
• ***Summary:*** This saddle-stitched booklet, which contains the earliest detailed information about tempeh and tempeh recipes available in Italian, was written and published in a limited edition by the author in June 1983. Page 3 notes that in Milan, tempeh can be ordered from the author, whose phone number is given. She can prepare it on request and can also teach others how to make it. (Note: She made it in her home kitchen, and did not have a commercial shop.) Page 4 gives a nutritional comparison of tempeh and whole soybeans. Pages 5-7 contain 14 Italian-style tempeh recipes.

Letter from Giovanna Mazzieri. 1993. Dec. 20. Two articles encouraged her to write this booklet: (1) Hélène Magarinos. 1982. *Le Tempeh: "Usine" à protéines et vitamines. En provenance d'Indonésie* [Tempeh: A protein and vitamin factory from Indonesia]. *Compas* (*Le*) (France). No. 21. p. 23-29. Spring. (2) P. Langley-Danysz. 1982. *Une technique séculaire de fermentation du soja* [An ancient technique for fermentation of soya]. *Biofutur.* March. p. 33-35. Address: Via Santa Tecla 3, 20122 Milan, Italy. Phone: 806272.

1368. **Product Name:** Tempeh.
Manufacturer's Name: Nasoya Foods. (Distributor). Made in Greenfield, Mass., by The Tempeh Works.
Manufacturer's Address: Mechanic St. Ext. (P.O. Box 841), Leominster, MA 01453.
Date of Introduction: 1983. June.
New Product–Documentation: Poster. 1983; Soyfoods. 1983. Summer. p. 52; Ad in Soyfoods. 1984. Summer. p. 3. Soya Bluebook. 1987. p. 94.

1369. **Product Name:** Tempeh Burgers.
Manufacturer's Name: Nasoya Foods (Distributor). Made in Greenfield, Mass., by The Tempeh Works.
Manufacturer's Address: Mechanic St. Ext. (P.O. Box 841), Leominster, MA 01453.
Date of Introduction: 1983. June.
Ingredients: Organic soy tempeh, natural soy sauce, herbs, spices.
Wt/Vol., Packaging, Price: 7 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1983, undated. 4 inches square. Yellow, black, blue, green. "100% natural."

Coupons. 1983. Dated.

1370. *Soyfoods.*1983. The Miami soyfoods scene [Heartsong Tofu, Sunshine Soy, Swan Foods, Swan Gardens, Unicorn Village, Oak Feed Store]. Summer. p. 38-39, 43.
• ***Summary:*** In Miami, three major tofu companies make about 25,000 pounds a week of vacuum packed tofu, prepared tofu products, and tempeh.

Brightsong Tofu: Bob and Toni Heartsong began making tofu in "1976 in a south Miami cottage style tofu shop which lasted until 1978. Making 900 pounds of hand-made tofu every week, the Heartsongs pioneered the Miami market, fully one year before the legendary and short-lived Swan Foods was opened in 1977. In January 1978 the Heartsongs moved to Redwood Valley, California, to help launch Brightsong Tofu. Meanwhile in 1977 they had written and Banyan Books had published, *The Heartsong Tofu Cookbook,* one of the first designed-for-tofu cooking guides. Bob Heartsong then worked in Hawaii for Mrs. Cheng's Soybean Products where he made 600 pounds of tofu daily."

Finally, the Heartsongs, peripatetic tofumakers, returned to Miami and in January 1982 opened Heartsong Tofu, a "1,200 square foot plant where today they produce 4,500 pounds of vacuum packed tofu each week (with an 18-day shelf life)." The company employs 6 full-time and 2 part-time workers. A list of their tofu products and equipment is given. The Grand Union supermarket chain sells $2,200/week of their tofu products.

"Sunshine Soy, owned and managed by Danny Paolucci, occupies 2,500 square feet, in suburban Coral Gables, of what once was a Borden's walk-in cooler... Paolucci opened Sunshine in June 1980, a company which today produces 4,000 pounds of tofu and various secondary products every week.

"Previously Paolucci served as production manager for Swan Foods until its closing in December 1978. [Note: Swan Foods opened in 1977.] Paolucci often measures his Sunshine Soy's sensible survival against Swan Foods exciting but disastrous history. Swan Foods was, unfortunately, a textbook example of uncontrolled growth marked by nonmanagement: no competition, distribution by the formidable Tree of Life, a wildly innovative product line, a quadrupling of sales in the first 18 months, $2,200 in weekly sales–ending in a disheartening crash. Their product line included baked, marinated, regular, and caraway tofus, soymilk (1,000 quarts weekly), tofu cashew pie, tofu dips and salads, soy yogurts, and soymilk shakes.

"Sunshine Soy, which employs four workers, has a privately labelled vacuum packed tofu (Golden Harvest brand) in most of Florida's 100 General Nutrition Centers; Tree of Life, out of St. Augustine, handles the distribution."

Swan Gardens: "Commanding the top tofu market position in Miami, Jocelyn and Richard McIntyre's Swan Gardens, which moved to south Florida in 1979 from Montana, produces 15,000 pounds each week of vacuum packed tofu. Their 10,000 square foot plant uses only 3 production workers, each working 10 hour days, 5 days weekly–a model of streamlining. In March 1982 Swan introduced their boxed tofu (see New Products, this issue) featuring their firm (16.6% protein) tofu which sells for $1.19 a pound in produce at Winn Dixie. A major Florida distributor moves an estimated 5,000 pounds of their dealer brand every week as far north as Washington, DC. Recently Swan introduced an okara tempeh with a two week refrigerated shelf life, and this product joins their Spicy Soysage and Baked Tofu, also vacuum packed. Swan Gardens tofu is pre-dated 4 weeks for the supermarkets but McIntyre claims it remains microbially sound for 6 weeks. The company is comfortably profitable."

Photos show: (1-2) Bob Heartsong, with tofu pressing in stainless steel forming boxes, and a close-up of his line of products. (3-4) Danny Paolucci and a close-up of his line of products. (5) A close-up of Swan Gardens' products.

"On the retail natural foods level, four major stores share the bulk of Miami soyfoods sales. The Unicorn Village in North Miami Beach is stocked with 25 soy products... The Unicorn itself prepares a Tofu Cottage Salad, Eggless Egg Tofu Salad, Baked Tofu, and Tofu Onion Dip in their restaurant for retail sale in their adjoining store." Also discusses: The Oak Feed Store, a macrobiotic retailer in Coconut Grove (carries 44 soy products). Sundance Natural Foods in downtown Miami (many tofu-based deli items prepared in their kitchen). Nature's Touch in Miami.

1371. *Soyfoods.*1983. Wildwood's sandwich power [Tofu sandwiches from Wildwood Natural Foods in Fairfax, California]. Summer. p. 42.
• ***Summary:*** "Wildwood Natural Foods has carved out a successful market niche in the competitive Bay Area soyfoods scene with their daily delivery of fresh tofu sandwiches and tempeh salads. The three year old company has built its reputation and sales volume on same-day freshness as all products reach the stores by 12 noon on the same day as manufacture. Wildwood's concept, backed by their in-house tofu shop, is eminently worth imitating in other similarly strong retail marketplaces.

"The Wildwood shop begins bustling with sandwich-making activity at 5 a.m. six mornings a week as about a dozen (out of a 35 member staff) workers prepare the daily quota of 800 sandwiches completing them by 10 when the truckers take them down to San Francisco, about 60 minutes drive away. With their 340 square foot steam kettle tofu shop, Wildwood, located in Fairfax, California, produces 2200 pounds of nigari tofu every week of which one half is used for sandwiches, the other half for distribution as bulk tofu under the "UFO" brand name ("us feeding ourselves"). In the busy summer months, sandwich production can easily soar to 6000 a week; surprisingly the returns on day-old

sandwiches is only 5%.

"Under the guidance of Paul Duchesne and Bill Bramblett, the company was launched in August 1980 [Note: Actually that was when Wildwood began manufacturing tofu, on 8 Aug. 1980; they had incorporated in April or May 1980]. Duchesne had been supplying Marin County with his brown rice and tofu sandwiches since 1975 [Note: Actually since late 1977] when Bramblett suggested they expand his concept, make tofu, and distribute a wider line of tofu sandwiches.

"Today in mid-1983 (with partners Bramblett, Frank Rosenmayr, and Paul Orbuch) Wildwood distributes an impressive line of sandwiches (which retail for $2.25 each) including Avo-Tofu, Brown Rice & Tofu, Mustard Brown Rice & Tofu, Curry Brown Rice and Tofu, Sushi, Tofu Steak, Supreme Bean Tempeh Burger, Hijiki Rice Pie, and Seventh Heaven Bread. They also make prepared salads, packaged in 12 ounce containers which retail for $2.25, including Curry Tofu, Tofu Vegetable, Temptation, Potato, Hummus, Tabooli, and Good Puddin', in addition to bottled plain and honey-vanilla soymilk. The salads are dated for 7 days and the sandwiches for 1 although they stay fresh for 2 days.

"To service their Bay Area accounts, Wildwood employs four drivers who ply four different routes, which often take them further north to Santa Rosa or south to Santa Cruz. The limit to fresh sandwich distribution, Paul Orbuch explains, is simply how far they can be transported after production and before 12 noon, the cut-off period as the lunch hour business is crucial to retail sandwich sales.

"Wildwood's distribution system also handles local natural foods products such as Grain Dance seitan, Evolutionary Bean's Not Cheesecakes, and Solar Tacos (with soy protein). Wildwood's line, states Orbuch, is now moving into supermarkets, their Brown rice and Tofu sandwich accounts for 30% of total sandwich sales, and their products are handled by at least two area college lunch concession stands. Wildwood has been noted for their novel pedal-powered Tofumobile which they use in the summertime to bicycle sandwiches around to stores in trendy Marin County."

1372. *Soyfoods.*1983. The soyfoods industry on display [at Natural Foods Merchandiser Expo in Anaheim, California and Whole Life Times Expo in San Francisco]. Summer. p. 7.

• ***Summary:*** Sixteen soyfoods companies exhibited at Anaheim to 7,600 paying visitors. "Six soyfoods companies shared an official Soyfoods Association booth, where they retailed their own products and provided liberal tasting samples as well. Participants included Legume Inc. (tofu pizza, tofu lasagna), Farm Foods (Ice Bean, in cones), Quong Hop (tofu burgers, tofu canolli, soymilk), Sonoma Specialty Foods (tofu salads, tofu cheesecakes), Laughing Moon (vegetable tofu turnovers), and San-Jirushi International (samples of San-J Real Tamari). The Association booth, one of 10 food catering booths at the Expo, was 'packed solid through the whole show,' reports Farm Foods' Robert Tepper."

"William Shurtleff gave a one hour speech and slide presentation on soyfoods to an enthusiastic audience."

Other interesting companies include: Pacific Tempeh, Light Foods, Essential Foods, Garden of Eatin', Living Lightly, Kibun, Westbrae Natural Foods, Edward & Sons, Cedarlane Foods, Morinaga, Worthington Foods.

Interesting products: Light Links tofu "hotdogs," Ravioli, Tofumale Tamale, Tempehroni Pizza, Chili Con Tempeh, Tempeh Enchilada.

Photos (without captions) show: (1) Danielle Lin of Laughing Moon. (2) Steve Snyder of Hinode. (3) The Morinaga booth, with Mr. Seishiro Ikegami.

1373. **Product Name:** [Torigoe Gold Tempeh (Semi-Prepared Fingers, or Patties)].
Foreign Name: Goorudo Tenpe / Gold Tempe.
Manufacturer's Name: Torigoe Seifun (Torigoe Flour Milling Co.).
Manufacturer's Address: 6-5-2 Hakozaki-Futo, Higashi-ku, Fukuoka, Kyushu 812, Japan. Phone: 092-651-3269.
Date of Introduction: 1983. June.
Ingredients: -
New Product–Documentation: Talk with and Label from Kazuhiro Takamine, from the R&D Dept. of Torigoe Flour Milling Co. Ltd. 1984. Feb. 5. This was Japan's first commercial tempeh product, launched by Torigoe in June 1983. The 'tempeh fingers' were dipped into a batter, dusted with bread crumbs, packed in a shallow tray, together with 2 packets of tartar sauce, and sold frozen. The consumer would then deep fry them to serve crisp and crunchy with the sauce. The patties were made by pressing the ground trimmings from the patties into patties, then proceeding as for the fingers.

Five-page color brochure (in Japanese) titled "Torigoe Tempe." Brought by Kazuhiro Takamine. 1984. Feb. 4. New product. Beloved in the 21st century, born from soybeans, 100% fermented natural food. Shows tempeh fingers, patties, and cubes–with recipes.

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 66-68. Soya Bluebook. 1987. p. 95.

1374. **Product Name:** Temptation (Tempeh Salad).
Manufacturer's Name: Wildwood Natural Foods.
Manufacturer's Address: 135 Bolinas Rd, Fairfax, CA 94930. Phone: 415-459-3919.
Date of Introduction: 1983. June.
New Product–Documentation: Soyfoods. 1983. Summer. p. 42-43. "Dated for 7 days shelf life."

1375. **Product Name:** Supreme-Bean Tempeh Burger.

Manufacturer's Name: Wildwood Natural Foods.
Manufacturer's Address: 135 Bolinas Rd., Fairfax, CA 94930. Phone: 415-459-3919.
Date of Introduction: 1983. June.
Ingredients: Tempeh, whole grain bread, lettuce, celery, cucumber, green pepper, onion, tofu dressing (UFO Tofu by Wildwood, safflower oil, mustard, apple cider vinegar, garlic, sea salt), tomato sauce, mustard, tamari, lemon juice, spices, sea salt.
How Stored: Refrigerated.
New Product–Documentation: Soyfoods. 1983. Summer. p. 42-43. Label sent by Wildwood on their letterhead. 1983, undated. 3 by 2 inches. Self adhesive. Black and green on white. Silhouette of woods with birds. "Fresh Daily. Ready to eat Foods, Naturally. Perishable. Keep Refrigerated."

1376. Kanasugi, Goro. 1983. Re: Thanks for meeting with the Natto Association in Japan to discuss tempeh. Letter to William Shurtleff at Soyfoods Center, July 5. 1 p. Handwritten, with signature. [Jap]
• ***Summary:*** On 2 July 1983 an interesting meeting was held at the Natto Association headquarters in Tokyo, Japan. Five leaders of the Association, Dr. Teruo Ohta and Kiyoaki Katoh from the National Food Research Institute (NFRI), William Shurtleff from Soyfoods Center, and Mrs. Yasuko Torii (author of books on natural foods and farming) met for 6 hours to discuss developments with tempeh in the USA and strategies and tactics for introducing tempeh to Japan. This is a thank-you note for attending that meeting and the dinner afterwards. Address: Shimo-cho 3-6, Omiya-shi, Saitama-ken 330, Japan. Phone: 048-644-1323.

1377. *Zenkoku Shokuhin Shinbun* (*National Food News*).1983. Tenpe nattô kenkyû keika to suishin kikaku [Progress in research on "tempeh natto" and plans to make it succeed]. No. 456. July 11. p. 6. [Jap]
• ***Summary:*** Dr. Ohta studied tempeh for 30 years under Dr. Masahiro Nakano. The Japanese Natto Association is trying to obtain a patent on the tempeh making process, and hopes to publish a tempeh cooking pamphlet. Address: Japan.

1378. *Zenkoku Shokuhin Shinbun* (*National Food News*).1983. Shisatsu Haken-in kikoku hôkoku Zennôren Tenpe kenkyû-kai [The Japan Natto Association's Tempeh research group presents its homecoming report after being sent to study tempeh]. No. 456. July 11. p. 6. [Jap]
• ***Summary:*** On 18 June 1983 the group had a regular meeting and listened to the report of the tempeh study group that has just returned from Indonesia. Mr. Ose, the chair, told the members that it is unfortunate that the mass media are doing stories on tempeh before it is firmly established in and adapted to Japanese culture. He asked members of the group to please refrain from publicizing tempeh before it is ready.

1379. *Toyo Shinpo* (*Soyfoods News*).1983. Beikoku de no daizu shokuhin no genjô. Beikoku wa ima tenpe buumu. Nihon demo chikaku ryûkô. Amerika de katsuyaku-chû no Shurtleff fusai ni kiku [The current status of soyfoods in America, where there is now a tempeh boom. Will it soon become popular in Japan? Let's ask the Shurtleffs, who are at the center of the activity in America]. July 21. p. 30-31. [Jap]
• ***Summary:*** Photos show Shurtleff and Aoyagi. Many other photos (from Soyfoods Center color slide sets) show tempeh and other soyfoods in America.

1380. Iggers, Jeremy. 1983. Soy Plant struggles to keep its '60s ideals in '80s business world. *Detroit Free Press.* July 31. p. 6G.
• ***Summary:*** About The Soy Plant in Ann Arbor, Michigan. Includes discussions with Steve Fiering, Rick Whealey, Jane Southwell, Geof Beck (production co-ordinator), Carolyn Roi (marketing co-ordinator), and Steve Fiering (one of the founders). Hours and wages have been cut–wages from $5/hour to $3.50/hour last fall because the business was losing money. Difficulties include inefficient equipment, too little capital, and lack of professional management. Federal corporate taxes went unpaid for three years before anyone noticed; it then took years to pay both the taxes and the penalty.

The company got about $20,000 in loans from members of the community. They paid interest in the form of one pound of tofu a week, but the $18,000 they eventually paid in free tofu was a huge drain on the struggling enterprise. Last may the workers decided the tofu interest payments had to stop. Letters were sent to all lenders explaining the financial difficulties and offering three choices: They could forgive the debt, take payment of the principal in tofu, or put their names on a list for eventual repayment. It was a hard choice for the company to make.

Now things are looking up. Several new products are selling well: Tempeh-filled tacos, Soysage, tempeh burgers, and spiced tofu.

1381. Fukushima, Danji. 1983. Fermented soy foods in the United States. *INTSOY Series* No. 25. p. 117-19. B.J. Irwin, J.B. Sinclair, and Wang Jin-ling, eds. Soybean Research in China and the United States (College of Agric., Univ. of Illinois at Urbana-Champaign).
• ***Summary:*** Although chemically hydrolyzed soy sauce is widely consumed, fermented soy sauce has an annual growth rate of 15%. La Choy and Chun King, the two largest producers of chemical soy sauce, are assumed to have a combined annual production of 20,000 kiloliters. Most of the fermented soy sauce is produced by Kikkoman Foods, Inc. and annual production has reached 19,000 kiloliters.

Soy sauce manufacturing consists of three main processes: koji making, brine fermentation, and refining. Major improvements in the soy sauce process are (1) high

temperature short time cooking of the soybean flakes to increase the yield, (2) use of an artificial mutant of *Aspergillus sojae* which produces twice as much proteolytic enzyme, (3) use of automatic koji making equipment, and (4) use of *Pediococcus halophilus* and *Saccharomyces rouxii,* and proper temperature control during brine fermentation. Address: Kikkoman Foods, Inc., Walworth, Wisconsin.

1382. **Product Name:** Tempeh.
Manufacturer's Name: Kingdom Foods. Later renamed The Tempeh Shop. Merged with Virginia Soyworks in April 1987.
Manufacturer's Address: 1717-A Allied Lane, Charlottesville, VA 22901. After spring 1988: Route 1, Box 193, Faber, VA 22938. Phone: 804-361-1543.
Date of Introduction: 1983. July.
New Product–Documentation: Talk with Mark Kruger. 1990. Sept. 10. Virginia Soyworks, located on his property, is now for sale. He and others are thinking of buying the company. When Robert Graham owned the company, Robert made tempeh for a while, then discontinued it.

Talk with Shag Kiefer. 1990. Sept. 11. (Phone: 804-293-9244). In about 1983 Eileen Judge moved her tempeh company, Kingdom Foods, from Washington, DC, to Charlottesville, Virginia. She thus became the first tempeh company in Virginia. Shag found her a location in Charlottesville. Many people had asked Shag to make tempeh at Virginia Soyworks, but Eileen requested that he not do so so that she could sell her tempeh in Charlottesville. She continued to run her company for several years. She and Shag shared her cooler and some distribution. She then sold the business to Anne Lawrence (Anne presently has no phone; Eileen's phone is 804-758-3189). Anne had a degree in engineering and lives out in the woods where she is clearing the land and building her own house. At one point Anne changed the company name to "The Tempeh Shop." She also added one or more new products, including a new type of tempeh salad. Ann ran the shop for several years, then when Robert Graham bought Virginia Soyworks (a tofu company) in April 1987, he also bought the tempeh company. At that point Ann stepped out but served as a consultant for a while. Graham hired a new tempeh maker. Then in the spring of 1988 both companies were moved to the same location in Faber, Virginia, about 20 miles southwest of Charlottesville. After that, Shag helped with the production of tempeh and tempeh salad, but it stopped about 6 months after the move, at about the time Shag left. It was hard to keep training people and to make so many products.

Talk with Eileen Judge, founder of Kingdom Foods. 1990. Sept. 25. She moved her tempeh company to Charlottesville, Virginia, from Washington, DC, in July 1983. She sold the business to Anne Lawrence in April 1986.

1383. **Product Name:** Tempeh Burgers.
Manufacturer's Name: Soy Plant Co-op Inc. (The).
Manufacturer's Address: 711 Airport Blvd., Ann Arbor, MI 48104. Phone: (313) 663-8638.
Date of Introduction: 1983. July.
New Product–Documentation: Iggers, Jeremy. 1983. *Detroit Free Press*. July 31. p. 6G. "Soy Plant struggles to keep its '60s ideals in '80s business world." Several new products are selling well, including tempeh burgers.

Soyplant pickup distributor price list effective April 16, 1984. Lists Tempeh Burgers, sold 3 per package or in bulk (50 singles).

1384. Kronenberg, Hananya. 1983. Re: Research and publications on meitauza fermentation. Letter to William Shurtleff at Soyfoods Center, Aug. 1. 2 p. Typed, with signature on letterhead. [1 ref]
• ***Summary:*** Unfortunately he does not have anything to send from his IFT presentation on meitauza. However, he plans to publish a scientific article in the *Journal of Food Science* sometime this year. He has not yet finished his thesis, but hopes to have ready (if all goes well) by the end of September.

He wrote an article on a tempeh incubator in *Soyfoods* magazine (issue No. 9). He and his wife enjoyed the article on yuba. He still is thinking of writing a book related to soyfoods. Address: Soy Systems, 714 N. Aurora, Ithaca, New York 14850.

1385. Robertson, Valerie. 1983. Soyfoods Unlimited is now making its own tempeh starter (Interview). *SoyaScan Notes.* Aug. 2. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Soyfoods Unlimited used to spend $250/week on tempeh starter from GEM Cultures. Hananya J. Kronenberg helped them to set up their own lab at a cost of about $5,000 including his consulting fee of $1,700. Now it takes two people 6-8 hours each, once a month, to makes a month's supply of tempeh starter. They have had no problems with the starter and it was not difficult to set up the lab. Kronenberg set up Panda Foods in New York with a lab before he set up that of Soyfoods Unlimited.

Travis Burgeson of Pacific Tempeh has long made his own tempeh starter inside a glass box. Valerie thinks that GEM Cultures' tempeh starter is better than that made by The Tempeh Lab / Farm Foods in Tennessee. Address: Soyfoods Unlimited, San Leandro, California.

1386. Woodcock, Chris. 1983. Tempeh Works moving to downtown location. *Recorder* (*Greenfield, Massachusetts*). Aug. 4. p. 1.
• ***Summary:*** Tempeh Works is moving into a former truck terminal at 74 Fairview St. The owner, Michael Cohen, says he hopes the firm will be in operation at the new site by mid-September 1983. The new building contains 4,000 square feet of space, more than three times the 1,200 square feet in

the existing plant on French King Highway. "Renovations on the Fairview Street building began this week... The cost of renovations to the one-story building will be $27,000 with the total cost of the relocation about $40,000, Cohen said. The firm plans to lease the building for a year and then purchase...

"During the first three years of operation, which Cohen described as 'incredible struggles' the firm lost money. But in the past year, Cohen said the company has begun to show a profit. In the first year, when there were just three employees at Tempeh Works, sales totaled $65,000, Cohen said. In the operating year that ended June 30, sales had increased to $265,000. Cohen projects $350,000 in sales in the current year. The company at present has seven full- and six part-time employees." Address: Staff reporter.

1387. *Zenkoku Shokuhin Shinbun* (*National Food News*).1983. Zennôren Ose kaichô kôki kôsô [Japan Natto Association's chief for the second half of the year, Mr. Ose, and his plan]. No. 458. Aug. 11. p. 1. [Jap]
• ***Summary:*** Mr. Ose would like to get a patent on the tempeh process which the association has developed.

1388. Torii, Yasuko. 1983. Re: New developments with tempeh and tofu in Japan. Letter to William Shurtleff at Soyfoods Center, Aug. 14. 2 p. Typed, without signature (carbon copy). [Eng]
• ***Summary:*** Tempeh: "(1) There was a seminar on soyfoods on Aug. 5. The topics were: 'Tofu and Japanese foods in the U.S.,' by Prof. Okubo. 'Does tempeh fit into the Japanese diet,' by Prof. Katsuyoshi Tsujimura of Tokyo. A party was held after the seminar to celebrate the 15th anniversary of the Soyfoods Development Association. Many businessmen showed interest in tempeh.

"(2) Mr. Kato of the Ministry of Agriculture [*Nôrinsho*] arranged for a meeting for Nihon Kogyo KK and Kyodo Press on Aug. 9. I prepared soy and okara tempeh, and Mr. Kato brought Torigoe's tempeh. According to Mr. Kato, articles on tempeh will be distributed to many local papers thru Kyodo Press. Nihon Kogyo seems to be interested in producing [tempeh] starter. A few researchers are going to visit the U.S. in September to attend a convention and they hope to visit some tempeh and tempeh starter factories in California. Is it possible to make such arrangements for them?

"(3) Mr. Sakata of Shibata Shoten [a publishing company] visited Natto Kumiai [Japan Natto Association] and attended the soyfoods seminar. A final decision concerning publication will be made in a few days.

"(4) Natto Kumiai has distributed tempeh cultures to some members to study production. A meeting is scheduled in September and I was asked to attend and talk about tempeh."

Also discusses: Publication of The Book of Kudzu in Japanese. The Book of Tofu on NHK-TV. Address: Kamitsuchidana 324, Ayase-shi, Kanagawa-ken 252, Japan. Phone: 0467-76-0811.

1389. Kanasugi, Goro. 1983. Re: Work with tempeh in Japan. Letter to William Shurtleff at Soyfoods Center, Aug. 23. 2 p. Typed, without signature. [Jap]
• ***Summary:*** Ose Noboru, head of the Natto Assoc. is very ill so work to introduce tempeh to Japan is not advancing well. In 1981 Teruo Ohta brought tempeh back from Indonesia and introduced it to the Natto Assoc. in May when he lectured about it at Hanamaki hot springs (*onsen*) in Iwate prefecture. In Sept. 1981 he presented another lecture on tempeh to the Association at Yamanashi prefecture. In May 1983 at the Ueno restaurant (*Seiyoken*) in Tokyo the Natto Assoc. decided to pursue tempeh research and popularization, including recipe testing. Ohta and Kanasugi will be advisors on the project. Mr. Ebara is in charge of tempeh cultures. In June 1983 the Natto Association sent a team of 3 men to Indonesia to study tempeh. Mr. Kanasugi, Mr. Hisao Nagayama (a natto historian), and Mr. Kikuo Chiba spent 5 days in Jakarta, Bogor, and Yogyakarta, looking at tempeh production and visiting KOPTI. The trip was successful and on their return (on June 18) they presented a report. In July the Natto Assoc. founded a research laboratory in Omiya city (Saitama prefecture) and at the end of July it started to produce tempeh spores for members of the Association only, and (perhaps) to introduce tempeh as "tempeh natto" in Japanese confections and as a meat extender. The year 1983 has been proclaimed as the "first year of tempeh in Japan" (*Tenpe Gannen*). Address: Shimo-cho 3-6, Omiya-shi, Saitama-ken 330, Japan. Phone: 048-644-1323.

1390. **Product Name:** [Tempeh].
Manufacturer's Name: Consuma B.V.
Manufacturer's Address: P.O. Box 175, Christiaan Huygensstraat 10, 2665 KX Bleiswijk, Netherlands.
Date of Introduction: 1983. August.
New Product–Documentation: Letter from Henk P.M. Rigter. 1983. Started 15 Aug. 1983. Interview in Soya Foods (ASA, Europe). 1984. Nov. p. 6. "Consuma started on 15 Aug. 1983 with the production of tempeh..."

1391. **Product Name:** [Marusan Sukoyaka (Healthy) Tempeh].
Foreign Name: Marusan Sukoyaka Tenpe.
Manufacturer's Name: Marusan-Ai Co., Ltd.
Manufacturer's Address: Aza-Arashita, 1 Jungi-cho, Okazaki city, Aichi prefecture 444-21, Japan. Phone: 0564-45-3112.
Date of Introduction: 1983. August.
Ingredients: Soybeans, culture.
Wt/Vol., Packaging, Price: 250 gm vacuum pack.
How Stored: Frozen.

New Product–Documentation: Letter from Naoki Kawai. 1984. Gives a brief history of Marusan's work with tempeh. Their first commercial tempeh product was launched in Aug. 1983, a few months after Torigoe's tempeh product. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 68-70. Soya Bluebook. 1987. p. 95.

Color leaflet. 1989, received. 5 by 7 inches. Full color. 4 panels. Front panel shows sliced tempeh, fried tempeh cutlets, and kabobs, and nori-wrapped tempeh fingers. Inside gives nutritional information. Back panel gives 6 Japanese style tempeh recipes with a color photo of each finished dish. Label received from Ebata sensei. 1989. Aug. 4.25 by 3.12 inches. Green on white. Self adhesive. "Fermented soyfood. Please store at -18ºC." Illustration of 4 soybean leaves. Note: This tempeh is quite thick, 1 to 1 1/8 inches thick.

Form filled out by Naoki Kawai. 2001. June. Marusan-Ai stopped making tempeh in 1990. Mr. Kawai still works for Marusan-Ai; the address has not changed.

1392. Oshikiri, Susumu. 1983. Okara o shuzai to suru shokuhin no seihô [Process for manufacturing a food in which okara is the main ingredient (Okara tempeh)]. *Japanese Patent Application* 155,358. Application filed 24 Aug. 1983. [Jap]*

1393. Shurtleff, William. 1983. Log of soyfoods research trip to Hong Kong, China, Singapore, and Japan: May 29 to July 10, 1983 (Unpublished report). Soyfoods Center, P.O. Box 234, Lafayette, CA 94549 USA. 117 p. Aug. Unpublished manuscript.
• ***Summary:*** Contents: Hong Kong: K.S. Lo and Vitasoy. May 29 (Sunday)–Plane from Hong Kong to Guangzhou City (Canton) in Guangdong (Kwantung) province. China: Guangzhou (May 29-30), Zhengzhou, Beijing, Harbin, Beijing #2 (Scurlock, Chen Xi-Hau, Joe Rakosky, Terrence Foley, local markets, vegetarian deli). Singapore: STS and Anders Lindner, Alan Yeo, American Soybean Association (Don Bushman, Sabrine Lee, Lars Wiederman).

Japan: Seiyu department store, Kibun, ASA Tokyo (Ms. Kojima), Kanji Tsuchiya, Japan Soymilk Assoc., Sano Rinji, Kikori, Prasad and natural foods, Goro Kanasugi and tempeh, Tsuchiya soymilk #1, Kikkoman at Noda (Yokotsuka #1, Mizunuma, Plant #6 modern, Yokotsuka #2, Goyo Gura, Noda Museum, Noda Library, Mr. Ichiyama), Morinaga, Kikkoman Tokyo, Japan Packaged Tofu Assoc., Natto statistics, Asahimatsu, Natto-tempeh meeting, Mr. Katoh, Nakano Masahiro, Mr. Iitsuka of Kikkoman, Daizu Shokuhin Kaihatsu, Tsuchiya #2, Nagayama, soynuts, oil association, kinako, Ishige, Mr. Mori and soy sprouts, Katoh, Arai-san, Kodansha, Nagayama and kinako, Dr. Nakano #2, Arai shoyu, Tsuchiya #3, Tenmi. Address: Lafayette, California.

1394. Shurtleff, William; Aoyagi, Akiko. 1983. The book of tofu. 2nd ed. Berkeley, California: Ten Speed Press. 336 p. Illust. by Akiko Aoyagi Shurtleff. Index. Aug. 28 cm. [321 ref]
• ***Summary:*** Three parts of this new edition have been extensively revised and updated: (1) "Tofu Makers in the West" (p. 313-16) has been updated and now includes 310 tofu producers in the Western world (with the name, address, phone number, and contact person for each company), arranged by state or foreign country. This is the only tofu book containing such a directory.

(2) The "Bibliography" (p. 319-324) has been a greatly expanded and updated. It now contains 321 publications on tofu, including all known scientific and nutritional journal articles, the 33 books about tofu written in North America since publication of the first edition of *The Book of Tofu* in 1975, and other key articles and books about tofu from East Asia and Europe, the earliest from Europe dating back to 1613!

(3) An updated listing of "People and Institutions Connected with Tofu" in the U.S. and around the world, including researchers, major tofu manufacturers in Japan, trade associations, publications, equipment dealers, and tofu apprenticeship programs.

The "Glossary" (p. 325-27) has been condensed to make space for the expanded bibliography and back matter. There is a new page about the Soyfoods Center (p. 333). The page "About the Authors" (autobiographical) has been expanded, and the photograph has been updated. "Sending Tofu to the Four Directions" (p. 335) and the inside rear cover have both been updated. Still contains 500 vegetarian recipes–both western and eastern style.

Note: A news release of 17 Aug. 1983 states: "The Book of Tofu, which introduced the Western world to tofu and inspired the founding of more than 200 tofu shops and soy dairies in North America, has sold 340,000 copies to date, making it the world's best-seller on this popular new 'protein source of the future.'" Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1395. Leviton, Richard. 1983. Report on soyfoods research trip across America, September 1983. Colrain, Massachusetts. 8 p. Unpublished typescript.
• ***Summary:*** Visited or discusses: Grainaissance (makes amazake and mochi), Brightsong (Dik / Richard Rose), Sonoma Specialty Foods (California), Northern Soy (Rochester, New York), Southwest Soyfoods (Richard Jennings), White Wave (Steve Demos, Boulder, Colorado), Quong Hop & Co. (South San Francisco, California), Modern Fare (Loveland, Ohio), Soyfoods Unlimited (Valerie, Gary and John Robertson, San Leandro, California). Soyfoods Center (Lafayette, California), Soyfoods of America (Doug Fiske and Ken Lee, Los Angeles), Real Foods (Polk St., San Francisco), Tumaros (Los Angeles), Unicorn (Terry Dalton, Florida), Japantown and Rainbow

Grocery (San Francisco), Berkeley Natural Grocer and Berkeley Co-op (Bob Gerner, California), Hinode Tofu Co., Edensoy, Farm Foods, New England Soy Dairy, and Nasoya (Leominster, Massachusetts). Legume (Gary & Chandri Barat, New York City), Lotos / Lotus Cafe (Greg Weaver, Rochester, New York), NRRC (Hesseltine and Wang),

Out of business: Michiana Soyfoods, St. Ignatius shop, Sunshine Soy, Heartsong, probably Joy of Soy and a Korean shop in Salt Lake City, Utah.

Concerning soymilk: 10. In Oak Park, Illinois, a natural foods retailer says Edensoy outsells San-J by two to one. (Note: San-J imports "To-Neu Natural Soy Beverage" made in Japan by Kibun). Teenagers buy the carob Edensoy along with popcorn in the store, and use it as a soft drink. But most retailers say the Eden package [stand-up foil retort pouch] as a disaster; it is impossible to open without scissors, then if you squeeze, it spills out. San-J [in a Tetra Brik carton] is convenient but the taste is poor and the front graphics are confusing–too many words and images. According to Shurtleff, both are inferior products compared to Japan's best.

22. Concerning Edensoy at the NNFA show in Denver, Colorado: Mike Potter says "it went over great." He sold two container loads right away. People liked the package and the taste. About 4,000 people sampled it and were "generally amazed." The results were as good as they could want; it generated interest and excitement. Now they are setting up the distribution system. Address: 100 Heath Rd., Colrain, Massachusetts 01340. Phone: 413-624-5591.

1396. Leviton, Richard. 1983. Soyfoods in the heartland: A colorful program on tofu and tempeh, by Richard Leviton (Poster). Colrain, Massachusetts. 1 p. Undated (Sept/Dec). 11 x 17 inches.

• ***Summary:*** This poster, printed with black ink on off-white paper, was used to advertise a series of programs that Richard Leviton gave in the Midwest in the fall of 1983. The text states: "Editor / publisher *Soyfoods* magazine, Executive Director Soyfoods Association of North America, & widely published author on soyfoods.

"At the program you will... Learn how to make tofu and tempeh at home.

"Learn how to set up your own kitchen soy deli–from tofu cheesecake to tempeh burgers.

"Enjoy a color slide show: over 200 stimulating images.

"Meet soyfoods, today's No. 1 versatile, low cost protein.

"Discover nutrition and convenience in soyfoods–fast foods to gourmet.

"Sample delicious tofu or tempeh recipes."

Near the bottom are blank spaces to fill in the date, time, admission fee, place, and sponsored by.

Color photos show: Portrait of Richard Leviton with impish grin. A tempeh burger with all the trimmings. Address: 100 Heath Rd., Colrain, Massachusetts 01340.

1397. McDougall, John A.; McDougall, Mary A. 1983. The McDougall plan. New Century Publishers Inc., 220 Old New Brunswick Rd., Piscataway, NJ 08854. 340 p. Foreword by Nathan Pritikin (8/83). General index and recipe index. 24 cm. [804* ref]

• ***Summary:*** This carefully researched and documented book and cookbook argues convincingly in favor of a vegan diet that uses no animal products, that is low in fats, calories, and sodium, and rich in complex carbohydrates. Pages 89-90 give the percentage of calories from fats in various foods under 3 categories: low-fat vegetable foods (incl. oatmeal 16% of calories from fat, apple 9%, broccoli 9%), high-fat vegetable foods (incl. avocadoes 88% of calories from fat, almonds 82%, peanut butter 77%, sunflower seeds 76%, tofu 53%, soybeans 40%, wheat germ 27%, tempeh 25%), and animal foods (bacon 94%, t-bone steak 82%, frankfurters 80%, cheddar cheese 73%, egg 65%, tuna in oil 64%, milk [whole 3.5% fat] 49%, ice cream 49%, milk low-fat 31%, chicken [light-skinned] 18%, tuna in water 6%, buttermilk 3%, skim milk 2%).

Note: The author, however, argues repeatedly against the use of tofu and tempeh based on the "percentage of calories from fat" concept. His figures are correct but we and many nutritionists feel the basic concept, originally popularized by Nathan Pritikin, overlooks two key points: (1) the percentage of water in the food, and (2) the average serving size.

Page 198, in a section on rich [high fat] plant foods, states that tofu, tempeh, soybeans, textured vegetable protein (TVP), and miso contain excessive fat and most are high in calories. "The rich plant foods may account for a small portion of your daily food (less than 10 percent of your calories per day) but only after you have attained the level of health you are striving for. In general, these foods are more harmful than health-supporting. Never eat these foods if you have problems with your health that remain unsolved. If you begin using this group of foods and find that you are also gaining weight or getting back some of your old ailments, then stop eating these foods immediately."

Appendix I, p. 322-28 contains a table listing the percentage of calories from protein, fat, and carbohydrates in many foods. It also gives the calorie concentration (in calories per gram) for each food; foods with a low concentration aid in weight-loss programs. Tofu has only 0.72 calories per gram, and soy sprouts only 0.46; both are low. No soyfoods are used in the many recipes in this book.

Note: According to a colleague, John McDougall suffered a stroke at age 19, which led to much of his current interest in diet and health. He is not a Seventh-day Adventist. Address: 1. M.D. Both: Near Kailua Bay, Oahu, Hawaii.

1398. **Product Name:** [Soya Tempeh].
Foreign Name: Soja Tempeh.

Manufacturer's Name: Paul Stuart Zacharowicz. Renamed Vollwert und Wertvoll by June 1984. Later renamed Natuerliche Lebensmittel. Named "Von Anfang an Natur, Paul Stuart's" by Dec. 1992.
Manufacturer's Address: Staudgasse 70, A-1180 Vienna, Austria. Phone: 0222/48 50 03.
Date of Introduction: 1983. September.
Ingredients: Sojabohnen aus oesterr. Umstellungsbetrieb: biologischer Landbau, Edelpilz, Wasser.
How Stored: Refrigerated or frozen.
New Product–Documentation: Letter from Paul Stuart Zacharowicz. 1983. Sept. 28. "After much hardship, tempeh is now available in limited quantities at health food stores in Vienna. I currently produce about 50 kg/week and enjoy it immensely. It is sold fresh, wrapped in wax paper and keeps fresh up to 5 days. Our work is done completely unofficially. The costs of government food inspections is exorbitant."

Letter from Paul Stuart Zacharowicz. 1984. June 22. "Currently I produce about 75 kg of tempeh per week; 30 kg is sold refrigerated in plastic bags and 75 kg is cut into 60-gm pieces (each 7 by 8 cm), dipped in seasoned batter, and fried ready to eat. Our predominant market is natural food stores with a few restaurants. Vienna University has also had our tempeh on the menu. Our company is called Vollwert and Wertvoll, Paul Stuart Zacharowicz & Co. OHG, Neustiftg 27, 1070 Vienna."

Letters from Norbert Brunthaler of Sojvita. 1988. Jan. 4 and Feb. 2. Label. 1987. 5.5 x 4 inches. Black, gold, and green on white card stock. "Natur. A cultured fresh soybean product to fry, bake, steam, smoke, or grill. Keep refrigerated; can also be frozen. Contains 100% vegetable protein and is the richest vegetable source of vitamin B-12. Free of cholesterol, low in calories, easy to digest, tastes excellent. Tempeh is suited for all types of preparations, both the traditional and the new light cuisine. Dark spots on the surface of the tempeh are a natural sign of ripening. They can be rinsed off under cold water."

Letter from Paul Stuart Zacharowicz. The company started unofficially in Sept. 1983, officially in Sept. 1984. It was originally named Paul Stuart Zacharowicz, Tempeh, Hasnerstr. 159/18, 1160 Vienna, Austria.

Letter from Paul Stuart Zacharowicz. 1992. Dec. 22. "The name of my company is now 'Von Anfang an Natur, Paul Stuart's.' We produce tempeh and tempeh products as well as vegetarian burgers, spreads, and nut butters. I would like to upgrade my tempeh selection with products that are meat and meat product like." The company address is still Staudgasse 70, A-1180 Vienna.

1399. Steinkraus, Keith H. 1983. Lactic fermentation in the production of foods from vegetables, cereals and legumes. *Antonie van Leeuwenhoek* 49(3):337-48. Sept. [52* ref. Eng]
• ***Summary:*** Includes a discussion of tempeh. Address: Inst. of Food Science, Cornell Univ., Geneva/Ithaca, New York 14456.

1400. Nakano, Masahiro. 1983. Re: Introducing tempeh to Japan. Letter to William Shurtleff at Soyfoods Center, Oct. 1–in reply to inquiry. 2 p. Handwritten. [Jap]
• ***Summary:*** One of Japan's greatest living microbiologists, Dr. Nakano and co-workers introduced tempeh to Japan. They were the first to make it on a small (noncommercial) scale and serve it to others. But they were never interested in popularizing it–then or now. He was a scholar and research microbiologist for a nonprofit organization. He is now retired. "When I was in the Japanese Army in Java, although I was fortunate in having a chance to see and hear things in my field of interest, I did not do actual research. I have a subconscious desire to avoid developing the things I learned there."

The Taiwan Governor-General's Research Institute (*Taiwan Sotokufu Kenkyujo*) was founded in 1909. Dr. Ryoji Nakazawa, the great microbiologist, worked at that lab from 1907 until 1940, when he returned to Japan; he died in 1975 at age 96. For more on tempeh, see Dr. Nakazawa's *Taikan Kinen Ronbun-shu,* his collected papers compiled and published when he retired. Dr. Nakano started to work at this Taiwan lab in 1934. Address: Dr., Kugayama 1-2-7, Suginami-ku, Tokyo 168, Japan. Phone: 03-334-6911.

1401. Oda, Lorraine. 1983. Bonnie & Larry Fish: Hawaii's tempeh pioneers. *Hawaii Herald.* Oct. 7. p. 6. Friday.
• ***Summary:*** Bonnie and Larry started the Bali Hai tempeh factory in Kanehoe, Oahu, where they moved from Kauai in July 1982. Bonnie, a native of California, learned about tempeh production in 1976 at a seminar by Noboru Muramoto. "Although the Fishes are moving back to Kauai, they plan to keep their factory in Kaneohe going. In fact, they are in the process of incorporating and are looking for investors." Three photos show Bonnie and Larry Fish, their tempeh shop, and their two children. Address: Honolulu.

1402. Chong Liek Kah. 1983. Solid substrate fermentation in Malaysia. In: Proceedings of the Third ASEAN Workshop on Solid Substrate Fermentation. See p. 93-99. Held 3-9 Oct. 1983 at Cebu City, Philippines. [Eng]*
• ***Summary:*** Includes a discussion of tempeh.

1403. **Product Name:** Farm Soy Dairy Tempeh.
Manufacturer's Name: Farm Soy Dairy.
Manufacturer's Address: 156 Drakes Lane (P.O. Box 96), Summertown, TN 38483. Phone: 615-964-2529.
Date of Introduction: 1983. October.
Wt/Vol., Packaging, Price: 8 oz bags (each 7 by 9 inches).
New Product–Documentation: Talk with Michael Lee, owner. 1988. Oct. 12. They make about 400 lb/month of tempeh.

1404. Hesseltine, C.W. 1983. The future of fermented foods. *Nutrition Reviews* 41(10):293-301. Oct. [20 ref]
• ***Summary:*** Contents: Advantages of food fermentation, factors having an adverse effect on the use of fermented foods, nutritional and economic data on some fermented foods, future changes in fermented foods, factors that may lead to growth in the use of fermented foods (scientific interest in fermented foods, prevention of food poisoning, fermentation and increased shelf life, improvement of the physical properties of the product, interest in natural products of plant origin, modification of the substrate, interest in more healthy food, necessity of increased consumption of plant materials as population increases, cultural and religious grounds, and migration of people since World War II). Summary. Contains considerable information on fermented soyfoods. Address: NRRC, Peoria, Illinois.

1405. Jutono, -; Wedhastri, Sri. 1983. The potency of usar as inoculum for tempe fermentation from various substrates and admixtures. In: Proceedings of the Third ASEAN Workshop on Solid Substrate Fermentation. See p. 157-72. Held 3-9 Oct. 1983 at Cebu City, Philippines. *
Address: Faculty of Agriculture, Gadjah Mada Univ., Yogyakarta, Indonesia.

1406. Jutono, -. 1983. Solid substrate fermentation in Indonesia. In: Proceedings of the Third ASEAN Workshop on Solid Substrate Fermentation. See p. 81-92. Held 3-9 Oct. 1983 at Cebu City, Philippines.
Address: Faculty of Agriculture, Gadjah Mada Univ., Yogyakarta, Indonesia.

1407. Leviton, Richard. 1983. The market boom for soyfoods in the United States. Paper presented before the Euvepro General Assembly, Parma, Italy. Oct. 11. 13 p. Unpublished typescript on Soyfoods magazine letterhead..
• ***Summary:*** An excellent overview of the subject, presented with color slides. Contents: Introduction. The U.S. soyfoods industry and market. Eight reasons for the soyfoods boom in America. New U.S. soyfoods products. Ten trends in the soyfoods market. The European soyfoods boom (what it is and 4 steps to expand it). Conclusions. Address: 100 Heath Rd., Colrain, Massachusetts 01340. Phone: 413-624-5591.

1408. Leviton, Richard. 1983. The soy deli case. *Whole Foods* (*Berkeley, California*). Oct. p. 27-28.
• ***Summary:*** "The Hinode Tofu Company of Los Angeles recently propelled the industry years by running a series of full page, full color ads for their branded tofu in regional editions of *Good Housekeeping, Weight Watchers, Runner's World, Bon Appetit,* and the Los Angeles *Times* (circulation: one million). Their ad included a 15¢ discount coupon (eight million were printed in total). Edward & Sons has been advertising its Miso-Cup instant soups and Miso+Plus Chive and Jalapeno dry miso dips in national trade and consumer publications. And Farm Foods, with their expanding line of Ice Bean soy ice creams (hard packed and soft-serve) recently launched a cooperative advertising and discount program in cooperation with retailers..."

The Real Food Store on Polk Street in San Francisco has introduced what is probably the first distinctly labeled soy case. It consists of a self-standing reach-in cooler filled with about 34 different soyfood products, from bulk and packaged tofu to soymilk and tempeh burgers.

"At press time, Bread & Circus, a leading natural foods retailer in Boston, was planning a week-long soy promotion in cooperation with a half dozen Bay State producers... Elsewhere, Tree of Life, Florida's $35 million distributor and manufacturer, designated August as Soyfoods Month and ran promotions in their 60-page monthly newsletter sent to their 2,000 accounts. Soyfoods were presented as that month's 'Super Specials' with 'deep pocket discount' for retailers, reports Morris Shriftman, vice president." Address: Colrain, Massachusetts.

1409. Leviton, Richard. 1983. Soyfoods in your kitchen: The variety is infinite! *Your Good Health: Review & Digest* 1(6):16-18. Oct.
• ***Summary:*** An introduction to tofu and tofu products, tofu main dishes, tofu desserts, tempeh, miso, soysage, "green soybean pods in plastic bags," soynuts, natto, hamanatto, and yuba.

Gives recipe names and ideas for each soyfood type, but no actual recipes. Concludes with the thought: "If you remember this diversity of applications of tofu and tempeh... never again will you comment, 'Tofu is nice but it's just a bland white block.'" Address: Colrain, Massachusetts 01340.

1410. **Product Name:** Mountain Mist Tempeh.
Manufacturer's Name: Mighty Bean Soyfoods.
Manufacturer's Address: M.S. 1117, Cooloolabin, via Yandia, QLD 4561, Australia. Phone: 071-46-7342.
Date of Introduction: 1983. October.
New Product–Documentation: Letter from Michael Joyce. 1984. Oct. 25. "I believe Cyril and Elly Cain made the first commercial tempeh in Australia, commencing in July 1982, as Beancoast Soyfoods, Maroochydore, QLD. Julie and I started working with them in October 1982 and we bought the company in May 1983. In October 1983 we changed the name to Mighty Bean Soyfoods and moved from Maroochydore to Cooloolabin via Yandia, Sunshine Coast, Queensland 4558. We make 100-300 kg/week."

Label. 1984, undated. 3.5 by 4 inches. Orange on yellow. "Product of Sunshine Coast, Australia."

1411. Okada, Noriyuki; Hadioetomo, Ratna Siri; Nikkuni, S.; Katoh, K.; Ohta, T. 1983. Vitamin B-12 content of fermented

foods in the tropics. *Shokuhin Sogo Kenkyujo Kenkyu Hokoku* (*Report of the National Food Research Institute*) No. 43. p. 126-29. Oct. [7 ref. Eng]
• ***Summary:*** Vegetarian foods containing significant amounts of vitamin B-12 per 100 gm according to a biological assay method using *Lactobacillus leichmanii* were: tempeh (Indonesia) 4.6 mcg (micrograms), natto fermented soybeans (actually thua-nao, Thailand) 1.5 mcg, and fermented tofu (Singapore, also called Sufu) 1.1 mcg. Flesh-based foods with a high B-12 content included Ka-pi shrimp paste (Thailand) 5.3 mcg, kung-jom fermented shrimp (Thailand) 2.5 mcg, fish sauce, 3 month fermentation (Thailand) 2.4, and fish sauce (Thailand) 1.3 mcg, and fish sauce (Japan) 1.0 mcg.

Of these foods transported from tropical countries, tempeh was especially interesting because it is made of soybeans and had the highest B-12 content of any food measured. However not all tempeh samples contained such large amounts. "For example, a fresh sample of tempeh which was transported from Indonesia as rapidly as possible contained a very low amount, 0.7 mcg/100 gm, and tempehs prepared in the laboratory by using the tempeh-making fungus, *Rhizopus oligosporus,* contained only 0.02 to 0.06 mcg/100 gm. However the low vitamin B-12 content in tempeh which was transported from Indonesia increased to a value of 8 mcg/100 gm when the sample was incubated at 30ºC, unlike in the tempeh prepared in the laboratory. It is probable that microorganisms accompanied with tempeh-making fungus were associated with the production of vitamin B-12 in Indonesian tempeh. Further studies will be required to identify the microorganisms capable of producing vitamin B-12, and useful for the fermentation food industry." Address: 1,3-5. National Food Research Inst. (Shokuhin Sogo Kenkyujo), Kannon-dai 2-1-2, Yatabe-machi, Tsukuba-gun, Ibaraki-ken 305, Japan; 2. Bagian Mikrobiologi, Departemen Botani, Fakultas Pertanian, Institut Pertanian Bogor, Jl. Raya Pajajaran, Bogor, Indonesia.

1412. Soy Systems. 1983. Soy Systems: An integrated consulting service designed for soyfoods producers (Brochure). Ithaca, New York. 4 p.
• ***Summary:*** This consulting firm was "created exclusively for the emerging soyfoods industry. Hananyah Kronenberg, Director, holds an M.S. degree in Food Science from Cornell University and has published numerous articles in 'Soyfoods' magazine on tempeh and related topics." The company's services include: Starter culture production systems. Quality control laboratories. Quality assurance programs. Sanitation and Good Manufacturing Practices. Plant design and startup. Okara utilization. Tempeh production. Hananyah developed the system whereby Soyfoods Unlimited was able to make and maintain its own tempeh starter cultures. Other clients include Surata Soyfoods and 21st Century Foods. Address: P.O. Box 488, Ithaca, New York 14851. Phone: (607) 272-2708 Ext. 10.

1413. *Soyanews* (*Sri Lanka*).1983. Recipes: Sri Lankan dishes with tempeh. 6(2):3. Oct.
• ***Summary:*** "At present fresh tempeh is available only at the Soya Foods Research Centre, Gannoruwa. Those who wish to make their own tempeh should write to the Manager... and ask for the culture and instructions to use it.

Four recipes are given: Tempeh ambul thital. Tempeh polos curry. Tempeh tempered. Super sweet and sour tempeh.

1414. *Soyanews* (*Sri Lanka*).1983. Tempeh comes to hotels [restaurants]. 6(2):7. Oct.
• ***Summary:*** "Two popular restaurants in Kandy, Bake House and Green Cafe, invited the Soya Foods Research Centre in Gannoruwa to give demonstrations in preparing tempeh last month. The Chief instructress of the Home level soya program, Miss Ellen Jayawardene, showed a number of ways in which both dried and fresh tempeh could be prepared for the table.

Two photos show Ellen demonstrating tempeh. Note: Hotels are not mentioned in this article.

1415. Tanuwidjaja, Lindayati; Roestamsjah, -. 1983. Studies on the effect of pressing in tempeh fermentation. Presented at the Third ASEAN Workshop on Solid Substrate Fermentation. Held 3-9 Oct. 1983 at Cebu City, Philippines. *
Address: Bandung, Indonesia.

1416. Wang, Yinchun; Sugiyama, Hiroshi. 1983. Extraction of botulinum toxin with urea-buffer. *J. of Food Protection* 46(10):861-63. Oct. [10 ref]
• ***Summary:*** Discusses the effect of *Clostridium botulinum* on wieners (all meat), tofu, and tempeh. Address: Univ. of Wisconsin, Madison, Wisconsin.

1417. Erewhon Mail Order. 1983. Erewhon. Natural foods mail order catalog. Brookline, Massachusetts. 16 p. Nov. 1. Catalog and price list.
• ***Summary:*** This is a new mail order catalog, whose prices are effective from 1 Nov. 1983. On the front cover is a woodblock print of two wooden barrels, a wooden tub, two sacks of corn, a sheaf of wheat, several ears of corn, and a scythe. Erewhon is located at 26 Washington St. in Brookline Village–also the home of Erewhon Mail Order. There are retail stores at 342 Newbury St. in Boston and 1731 Massachusetts Ave. in Cambridge. Products grown organically, without chemicals, are marked with the code "OG."

Contents: Whole grains & cereals (incl. Erewhon granolas). Flours. Pastas. Beans (incl. azuki beans, black soybeans from Japan, yellow soybeans from Minnesota). Seeds, nuts & dried fruit (incl. alfalfa seeds, sesame seeds,

and tamari roasted nuts and seeds). Sea vegetables. Misos and tamari soy sauces. Japanese macrobiotic specialty products. Condiments, vinegars & sauces. Sea salts. Erewhon vegetable oils. Baking & home products (incl. koji rice for making amasake and miso, nigari for making tofu, tempeh starter). Sweeteners (Yinni rice syrup, barley malt, maple syrup, clover honey, wildflower honey {unfiltered}). Erewhon nut butters (Almond, cashew, peanut, sesame, sunflower). Fruit spreads. Snack foods. Sweets. Perishables (incl. bread, mochi, produce, amazake, tempeh). Beverages. Supplements. Natural cosmetics & body care. Cookware & appliances. Books & publications. Ordering & shipping information. Zone & shipping charts. Address: 236 Washington Street, Brookline, Massachusetts 02146. Phone: 1-800-222-802 or (617) 738-45168.

1418. Shurtleff, William; Aoyagi, Akiko. 1983. George Ohsawa and the macrobiotic movement: History of work with soyfoods. Soyfoods Center, P.O. Box 234, Lafayette, CA 94549. 46 p. Nov. 10. 28 cm. Unpublished typescript. [92* ref]
• ***Summary:*** A comprehensive history of the subject. Contents: Introduction: Acknowledgement of Ron Kotzsch. The roots of macrobiotics: *Yellow Emperor's Classic of Internal Medicine,* Shinto classics, Ekiken Kaibara (1630-1714), Nanboku Mizuno (late 1700's–early 1800's), Sagen Ishizuka (1850-1910), Manabu Nishibata. The life of George Ohsawa (1893-1966): To Paris 1929-36, return to Japan and World War II, Internationalism 1946-53, ran school Centre Ignoramus, "world journey" 1953 to India, Africa, then Paris, started Muso Shokuhin (macrobiotic food company) in Osaka, Japan, in 1959, work in Europe 1956-66, earliest reference seen to soy (miso) in 1956, first visit to New York City Dec. 1959, post-visit institutions, second visit 1960, first American macrobiotic summer camp on Long Island, exodus to Chico, California, Aug. 1961 to escape feared nuclear war, establishment of Chico-San, move of Michio and Aveline Kushi to Boston in 1963, *Zen Cookery* 1963, *Zen Macrobiotics* second edition 1965, growth of the movement, Beth Ann Simon's death blamed on macrobiotics in 1965, response of U.S. Food and Drug Administration is to close N.Y. Ohsawa Foundation, Ohsawa's general macrobiotic teaching, view of Western civilization as one in crisis, with fundamental biological change required to improve it, death in 1966 in Tokyo at age 72 of cardiac failure, seen as sage by his followers, seen as inconsistent crackpot by his critics, work carried on by wife Lima and by his students. Development of macrobiotics in Boston: Kushi's lectures and classes from 1965, early food sales from house, Erewhon's start in 1966 and subsequent growth, establishment of organic suppliers in the U.S., first imports from Japan 1968, 1970 natural foods boom, National Food Distributors Association, *East West Journal,* Autumn Press founded in Japan by macrobiotic student from Boston, Boston institutes, centers, and foundations from 1972 on, increasing popularity of soyfoods (tofu, tempeh, and miso) in Boston, Erewhon from 1973 to bankruptcy in 1981 and sale to Ronald Rossetti in 1982. Development of macrobiotics in New York City: Void after departure of Aihara group and Kushis, establishment of Infinity Foods in mid-1960's, Michel Abehsera's restaurants, cookbooks, and tour. Development of macrobiotics in California: Influence of Chico-San on natural foods movement to 1970, Lundberg rice 1968-69, Yamazaki miso and shoyu 1970, 1972 fire in Chico-San warehouse, educational activities and institutions, growth of Chico-San, Noboru Muramoto. Nutritional views of macrobiotic diets: General critical attitude from 1965 to 1977, not countered by macrobiotic leaders, scientific studies pro and con, specific critique of the diet, turnaround in attitude since 1977 (*Dietary Goals* published by U.S. Senate's McGovern Committee), Dr. Mendelsohn, Nathan Pritikin, cancer cures and Anthony Sattilaro (1980). Macrobiotics in Europe and Latin America: First European company Lima N.V., other distributors, centers, publications, tours, active in South America since 1954. A major contribution: Type of overall influence on soyfoods, number of followers in 1981. Address: Lafayette, California. Phone: 415-283-2991.

1419. Soyfoods Center. 1983. Catalog: Publications & materials by William Shurtleff & Akiko Aoyagi [mail order]. P.O. Box 234, Lafayette, CA 94549. 20 panels. Nov. 18.
• ***Summary:*** This catalog, folded like a road map, is printed with reddish brown and light blue ink on white paper. Address: Lafayette, California. Phone: 415-283-3161.

1420. Bates, Cynthia. 1983. Re: Thanks for new editions of *The Book of Tofu* and *The Book of Miso.* Letter to William Shurtleff at Soyfoods Center, Nov. 25. 2 p. Handwritten, with signature on letterhead.
• ***Summary:*** Cynthia would like to make some miso this winter in some big wooden barrels, but they are moving the tempeh shop, so they'll have to wait and see. Address: 156 Drakes Lane, Summertown, Tennessee 38483. Phone: (615) 964-3584.

1421. *SoyaScan Notes.* 1983. Recent changes on The Farm in Tennessee: The Changeover (Overview). Nov. 29. Compiled by William Shurtleff of Soyfoods Center.
• ***Summary:*** This overview was compiled after talks with several long-time members of The Farm in Tennessee. Many people have left The Farm. The population has dropped to about 700 from a peak of about 1,300 several years ago. Some feel that "the boat is sinking." The farm is now in a period of transition called "the Changeover." The reasons for this change in basic economic structure are quite complicated, but a major reason is the large population of people who did not have a paying job. Formerly everything on The Farm was collectively owned (there was no private

property), and all income went into a common pool to pay the community's expenses. At the end of the changeover, each community member will be required to pay their own way, including monthly dues voted by the members for debt reduction plus ongoing community services: roads, water, fuel, taxes, bookkeeping, etc. However, the land and all other non-business community assets will continue to be held in common.

There are two types of work on The Farm: (1) "Service jobs" such as working on the Farm as a teacher, in the Soy Dairy, as a mechanic, etc. at a job which provides valuable services to Farm members but does not generate any income. (2) Money-making jobs, mostly off The Farm, and especially in construction–a construction crew of 40-50 skilled men brought in the majority of The Farm's income. The basic problem is that although everyone works every day, not enough people are making money. Summertown, in Lewis County, is in one of the poorer, rural parts of Tennessee, and there are not many paying jobs available in Summertown or the surrounding area.

The Farm worked very hard to create its own companies (such as Farm Foods and The Book Publishing Co.) that would employ members and earn money to support the community, but it took time for these companies to become profitable and, since they were collectively owned, they could not attract investors. When the changeover started, people working in community-owned businesses were given those businesses. For example, those working in the soy dairy when the changeover started, now owned it. They could sell the soyfoods they made both to community members and off The Farm; they shared the profits from their enterprise, and each used that income to buy whatever they needed.

Many Farm members agree that a basic part of the problem was The Farm's great generosity. They generously allowed almost everybody who came to the gate to join the Farm. Stephen went on tours in buses to talk about vital issues of the day; The Band went with him and neither ever charged people to hear them. The community generously helped those in need around the world, in part through Plenty a relief organization created on The Farm in 1974, and with much volunteer labor.

Over the years The Farm had to borrow money to pay its bills–just like most American families and businesses. The amount borrowed was not unreasonable given the size of the community, however these loans and the interest on them eventually became so large that they were the main catalyst for the changeover. A large percentage of the early dues went toward debt reduction, enabling The Farm to pay off its total debt of $1.2 million in a little more than three years.

Many of those who left were the ones making money; some of them got tired of supporting the others.

The big change from a collective to a cooperative took place in mid-October 1983. Many people who had given all their money and personal possessions to The Farm and imagined living their entire lives there felt considerable bitterness and anguish; they often left with nothing but good memories and had begin to hunt for a job. People are now employed at and paid by The Book Publishing Co., Farm Foods, Solar Electronics, and Satellite Dishes. Things that used to be given away for free on The Farm (such as soyfoods made at the Soy Dairy) are now bought and sold. People can start their own business on The Farm. Its the "real world" now. The Farm still has big debts and could even dissolve. Big medical bills hurt The Farm. Plenty is totally independent of The Farm financially, and has grown much bigger. The Farm Soy Dairy has trained several hundred people from Third World countries over the years.

Plenty Canada is in Lanark, Ontario. They have a little basement tofu and tempeh shop, and want to make it a soyfoods training center.

1422. Jackson, Vicki. 1983. Squirrels vegetarian cook book. William Brooks Queensland, 921 Kingsford Smith Drive, Eagle Farm, Brisbane 4007, Queensland, Australia. 143 p. Illust. by Vicki Jackson. Index. Nov. 29 cm. 2nd ed. 1984.
• ***Summary:*** This hand-lettered cookbook was written for Squirrels Vegetarian Restaurant, Corner Melbourne & Edmonstone Streets, South Brisbane. The owners, Bronwyn Moses and Diana Mitchell, plan to open Squirrels on the Park, a second restaurant at 685 South Dowling St., Moore Park, Sydney, by Sept. 1984.

Soy-related recipes include: Chinese tofu soup (p. 12). Broccoli-pasta salad (with Soyaroni pasta, p. 30). Soyaroni marinaria [marinara?] (p. 52). Saucy soy stew (with cooked soybeans, p. 67). Tofu & peppercorn strudel (p. 79). About tofu (p. 86). Tofu satays with peanut sauce (p. 87). Battered tofu in sweet & sour sauce (p. 88). Tofu & peanut sauce (p. 89). Tofu & veggie curry (p. 90). Tofu & mushroom on spinach pasta (p. 91). Tofu & spinach loaf (p. 92). Tofu Chinese style (p. 93).

About tempeh, by Julie & Michael Joyce (p. 94; "Little did we know in early 1982, when we first ate tempeh made by Cyril & Ellie Cain of Eumundi, Sunshine Coast, that we were soon to become tempeh makers." They supply Squirrels with the tempeh they make). Tempeh chips (p. 96). Tempeh & tomato bake (p. 97). Tempeh sweet & sour (p. 98). Tempeh Indonesian style (p. 99). Tempeh Chinese style (p. 100). Tofu dessert (p. 125). Pages 141-42 describe tamari, tempeh, tofu, and miso. Address: Brisbane, Queensland, Australia.

1423. Kanasugi, Goro. 1983. Tempe o Nihon de tsukuru [Making tempeh in Japan]. *Shin Eiyo* (*New Nutrition*) No. 168. Nov. [Jap]
• ***Summary:*** The Natto Association had a meeting where members brought 100 tempeh dishes. A cooking teacher was there and she made 5-6 tempeh from tempeh made by

Mr. Kanasugi; they were very popular. The members made their tempeh as follows: First the Association obtained tempeh starter from Indonesia and propagated it in a room at Mr. Kanasugi's plant. They distributed the starter to the members, who then made tempeh and used the tempeh to make dishes. Mr. Kanasugi owns a restaurant name Mame-no-ko ("child of the soybean"), where he serves tempeh in place of meat. For example, diced tempeh is served with vegetables, or made into tempura or karinto. He also makes *okoshi,* a crunchy millet (*awa*) based confection containing 20% tempeh. Ground tempeh is mixed into a ground beef cutlet. The guests like tempeh served in these ways. The Natto Assoc. is thinking of publishing a book on tempeh. A photo shows Kanasugi and various tempeh dishes. Address: Zenkoku Natto Kyodo Kumiai Rengo-kai, Fuku Kaicho.

1424. Leviton, Richard. 1983. Brief history of Sojalade (*Die Genossenschaftstofurei*) and Verena Krieger's work with soyfoods in Switzerland (Document part). In: R. Leviton. 1983. Report of Trip to Europe with American Soybean Assoc. 82 p. See p. 17-19. Unpublished manuscript.
• ***Summary:*** Based on talks with Verena Krieger. Sojalade in Ottenbach was renamed Genossenschaftstofurei in 1982. It is an 8-member cooperative that makes 400-500 kg/week of tofu and services the Zurich-Lucerne market. The company started in Aug. 1981 in a small laundry room in Zurich then moved downstairs to a butcher shop with a tile floor on the ground floor of a 300 year old home. Elsewhere in the building is a co-op cafe. They use a BMI Mini Mite disintegrator, double steam jacketed kettles, an Erme Verpackungen vacuum packer (2 chamber, 1 lid), and a ratchet press.

Zurich is the best and biggest market in Switzerland. The country's population is only 6 million. They even sell some tofu by mail-order. Their tofu is sold in some dairy stores (Molkerei/Laiterie), specialty produce stores, 10-12 Japanese or Chinese restaurants, 4 vegetarian restaurants, and health food outlets. The Reform Houses are a chain of 500 outlets in Switzerland stemming, at least in spirit, from the days of Dr. Bircher-Benner and his natural nutrition reform ideas. Tofu is strong in Switzerland because of this established health foods tradition and the country's general affluence. Sojalade works with local farmers to grow organic ("biological") soybeans, without herbicides. In 1982 some 2 tons of soybeans were produced biologically and another 4 tons by conventional means. Maple Arrow and Giesso (from Germany) are the best suited varieties. Fiskeby gave low yields.

Soyana sells its tofu throughout Switzerland, while Marty Halsey services Geneva. Hans Opplinger in Cham is not a company. An English guy, Jean Spearing, is starting a shop named Tofurei Pfannenstiel in Maennedorf. In Bern, the macrobiotic group, Infinity, will start making tempeh and seitan mainly for use in their restaurant. [Note: This later became Berner Tofurei.] In Thusis, someone makes 5 kg/week of tofu. Susan Gerber is converting a dairy into a tofu shop. [Note: It never was finished.] A friend of Verena's, Gauthier Loeffler, sells 200 tofu burgers one day a week in the Zurich open market.

Letters from Verena Krieger. 1990. July 5 and Aug. 10. In 1989 this company's name was changed from Genossenschaftstofurei to Tofurei Genossenschaft Engel, because the former name was not acceptable to Swiss trade regulations. The present manager is Peter Martmer. Mr. Hans Opplinger never owned a company making soyfoods in Switzerland, but he is still a member of Tofurei Genossenschaft Engel in Ottenbach. The company has never sold soymilk (despite a listing in Soya Bluebook, 1984, p. 63). Address: Colrain, Massachusetts.

1425. Mahmud, Mien K. 1983. Tempe: makanan tradisional yang menakjubkan [Tempeh: The astonishing traditional food]. Paper presented at Kursus Penyegar Ilmu Gizi dan Kongress Persagi VI (Refresher Course on Nutrition and 6th Persagi Congress). 8 p. Held 17-19 Nov. 1983 at Jakarta, Indonesia. [Ind]*

1426. **Product Name:** [SunSeed Tempeh].
Foreign Name: San Shiido Tenpe.
Manufacturer's Name: Marukin Shokuhin Kogyo (Marukin Foods).
Manufacturer's Address: 380 Yoyasu-machi, Kumamoto-shi 860, Kyushu, Japan.
Date of Introduction: 1983. November.
New Product–Documentation: Label. 1983, undated. 5.5 by 11 inches. Red, white, blue, and orange. Nihon Keizai Shinbun. 1983. Dec. 1. Nebaranai natto.

Leaflet sent by Moto-o Kira. 1984. June. Marukin no tenpe. San Sheedo. Leaflet sent by Moto-o Kira. 1984. June. Kyushu Daizu Shokuhin Kogyo Kumiai (Kyushu Soyfoods Industry Association).

Shurtleff & Aoyagi. 1985. History of Tempeh. p. 73-74.

1427. *Sunset* (*Menlo Park, California*).1983. Indonesian tofu? It is versatile, cheese-like *tempeh.* 171:256, 258. Nov.
• ***Summary:*** Following an introduction to and description of tempeh are recipes for Tempeh with peanut sauce, Tempeh wafers, and Tempeh and mushroom pâté, submitted by Travis Burgeson of Berkeley, California [owner of Pacific Tempeh]. Photos show: (1) Tempeh being cubed next to a tempeh package–from Pacific Tempeh. (2) Sauteed vegetables with tempeh served with seasoned bell pepper on lemon.

1428. *Nihon Shokuryo Shinbun* (*Japan Food News*).1983. Nebaranai nattô. Marukin Shokuhin Sangyo SunSeed. Shôhin-ka ni seikô [The natto that isn't sticky–SunSeed Tempeh from Marukin Foods. They succeeded in commercializing it]. Dec. 1. [Jap]

• ***Summary:*** A photo shows a packet of Marukin SunSeed Tempeh.

1429. Breuls, René F. 1983. Re: Tempeh production by a natto manufacturer in Japan. Letter to Cynthia Bates at Farm Foods, Summertown, Tennessee, Dec. 19. 1 p. Typed, with signature on letterhead.
• ***Summary:*** "The natto producer which we have been supporting and provided with samples so far has produced the best Tempeh in Japan. They have interested the Natto Association to backup their efforts. Dr. Ohta, the advisor to the Natto Association, is receiving small [tempeh] samples from the U.S.A. which he gives to our people to continue their experiments. We do not know from where in the U.S.A. he receives them.

"Our natto producer is now getting a number of natto producers together to start a joint venture tempeh factory. Because of contamination hazards the producers cannot use their own natto factories although the equipment is not so much different.

"In Southern Japan some marketing trials are made to see consumer reactions to this new soy product. It is expected that next year the Tempeh will be launched in Japan with all the necessary advertising and promotion.

"We will supply the spore powder when it will be required in commercial quantities. Please find enclosed our cheque for US$70. Please send us 100 gram spore powder so our people can familiarize themselves with it." Address: Asiatic Company Ltd., C.P.O. Box 1942, Tokyo 100-91, Japan. Phone: (03) 273-0773.

1430. *Ann Arbor Observer* (*Michigan*).1983. [A pair of retrenchments]. Dec. [1 ref]
• ***Summary:*** On Ann Street, just west of Fourth, The Soy Plant is discontinuing its retail operation. "The Herb and Spice and Produce co-ops, which have shared the one-time pizzeria at 211 East Ann with the Soy Plant, have taken over the sale of tofu, tempeh, and soy milk, and will continue to redeem the loans the Soy Plant is paying off in bean curd. But the Soy Plant's specialty deli items (which include soy cheesecake and tofu quiche) will now be sold through Arbor Farms instead." Address: Ann Arbor, Michigan.

1431. Tsuchiya, Kunio. 1983. Tenpe Gannen no hassoku o tataete. Daizu shokuhin no kakumeiteki yakuwari [In praise of the first year of tempeh in Japan. The revolutionary role of soyfoods]. *Daizu Geppo* (*Soybean Monthly News*). Dec. p. 24-30. [Jap]

1432. Winarno, F.G. 1983. Peranan dan prospek bioteknologi dalam penanganan pasca panen taman pangan [The role and prospects of biotechnology in handling post-harvest food crops]. Paper presented at Upacara Penerimaan Jabatan Guru Besar Bidang Ilmu Teknologi Pangan Institut Pertanian Bogor (Food Technology graduation ceremony, Institute of Agriculture, Bogor). 32 p. Held 20 Dec. 1983 at IPB in Bogor. [Ind]*

1433. **Product Name:** Homestyle Tempeh Fiesta (Tempeh & Millet & Veggie Spread or Salad).
Manufacturer's Name: 21st Century Foods Inc.
Manufacturer's Address: 30 Germania St., Jamaica Plain, MA 01230.
Date of Introduction: 1983.
Ingredients: Organic soy tempeh, marinated in tamari, herbs, and spices; cooked organic millet, finely cut carrot, celery, bell pepper, onion, parsley; corn oil, vinegar.
Wt/Vol., Packaging, Price: 12 oz plastic tray with lid.
How Stored: Refrigerated.
New Product–Documentation: Leaflet. 1983. "Tempeh with a Difference." Spot in Soyfoods. 1984. Summer. p. 44. "A Meal in Itself." Talk with Rudy Canale. 1988. Sept. 13. This is still being made but is now called simply Tempeh Fiesta. It was never renamed "Tempeh Spread."

1434. **Product Name:** Aged Tempeh.
Manufacturer's Name: 21st Century Foods.
Manufacturer's Address: 30A Germania St., Jamaica Plain, MA 02130.
Date of Introduction: 1983.
New Product–Documentation: Manufacturer's catalog. 1984. "This is a unique innovation which takes advantage of longer fermentation to produce a dark grey, marbled effect on the surface. plus a superior flavor and aroma. Preferred by tempeh connoisseurs worldwide." Talk with Rudy Canale. 1988. Sept. 13. This product was launched in about 1983.

Form filled out by Rudy Canale. 2001. June. He is still making tempeh at the same address.

1435. **Product Name:** [Tempeh].
Manufacturer's Name: Berner Tofurei.
Manufacturer's Address: Monbijoustr. 19, CH-3000 Bern, Switzerland. Phone: 33-71-3090.
Date of Introduction: 1983.
New Product–Documentation: Letter (fax) from Verena Krieger. 1990. May 31. Berner Tofurei used to be named Restaurant Sesam. The company is now located at Obere Banhofstrasse, CH-3714 Frutigen, Switzerland. Phone: 33-71-3090. The owners are R. and O. Wickart. They make 400 kg/week of tofu and 100 kg/week of tempeh.

1436. **Product Name:** Soy Tempeh Burger.
Manufacturer's Name: Creative Soyfoods Inc.
Manufacturer's Address: 526 N. Clark St., River Falls, WI 54022.
Date of Introduction: 1983.
Ingredients: Tempeh, pure vegetable oil, garlic, sea salt, spices.

Wt/Vol., Packaging, Price: 5 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1983, undated. 2.5 by 4.25 inches. Black on white. "Deep fried to a delicious golden brown. Ready to eat."

1437. **Product Name:** Tempeh Burger.
Manufacturer's Name: Cricklewood Soyfoods.
Manufacturer's Address: Route 1, Mertztown, PA 19539.
Date of Introduction: 1983.
New Product–Documentation: Ad in CRC Reports. 1987. Fall. p. 15. Talk with Karl Krummenoehl. 1988. Jan. 4. This is soy tempeh with spices marinated in soy sauce. Launched in about 1983.

1438. **Product Name:** Earth Angel Okara-Rice Tempeh.
Manufacturer's Name: Earth Angel Soyfoods.
Manufacturer's Address: 53 Stanley Ave., Mt. Waverley (E. Oakleigh), VIC 3149, Australia. Phone: 544-8020.
Date of Introduction: 1983.
Ingredients: Okara (soybean pulp), brown rice, cider vinegar, tempeh starter (Rhizopus oligosporus).
Wt/Vol., Packaging, Price: 250 gm.
New Product–Documentation: Label. 1983, undated. 3.5 by 7 inches. Black on tan. 250 gm. Illustration of two elves under soybean leaves.

1439. **Product Name:** Black Bean & Soy Tempeh.
Manufacturer's Name: Finger Lakin' Good.
Manufacturer's Address: 103 N. Aurora St., Ithaca, New York. Phone: 607-272-9177.
Date of Introduction: 1983.
How Stored: Refrigerated.
New Product–Documentation: Talk with Bob Bohdan and Joan Tregaskin. 1992. Jan. 31. They introduced Black Bean & Soy Tempeh in 1983. It was made from about equal parts of black beans (Phaseolus; frijoles, not black soybeans) and soybeans. The black beans were not dehulled, so they kept their black appearance. The tempeh was speckled in appearance.

1440. **Product Name:** Five-Grain Tempeh, Soy Rice Tempeh, and Tempeh Burgers.
Manufacturer's Name: Imagine Foods, Inc.
Manufacturer's Address: Moniteau Farm, Jamestown, MO 65046.
Date of Introduction: 1983.
New Product–Documentation: Talk with Robert Nissenbaum. 1988. Jan. 5. David Carlson and Ken Sloan were the early tempeh makers.

1441. **Product Name:** [Fried and Marinated Tempeh Burger (Round), Tempeh Cubes (¼ inch), Tempeh Spreads/Pâtés].
Foreign Name: Temmo, Fruutjes, Tarzan Tempeh Pâté.
Manufacturer's Name: Jakso. Center for Agriculture & Craftsmanship. (Also/later called Yakso Farms).
Manufacturer's Address: Voorn 13, 6624 KL Heerewaarden, Netherlands. Phone: 088-772-189.
Date of Introduction: 1983.
New Product–Documentation: Letter from Sjon Welters. 1989. July 24. "Yakso started to produce tempeh in 1982, as far as I can remember. The fried and marinated tempeh products were developed by themselves and introduced in early 1983, if I recall well. I developed their tempeh spreads in the summer of 1983 and they were introduced that fall. The sauces mentioned in the Soya Newsletter contained no tempeh." Letter from Sjon Welters. 1989. Aug. 9. Describes the three products.

1442. KOPTI. 1983. [Indonesian tofu and tempeh calendar (Poster)]. Jl. Falatehan I/6-8, Kebayoran Baru, Jakarta Selatan. 12 p. 33 x 54 cm. Color. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center. [Ind]
Address: Jakarta, Indonesia.

1443. Kronenberg, Hananya J.; Hang, Y.D. 1983. Studies on meitauza–A fermented food of China. Presented at 43rd Annual Meeting of the Inst. of Food Technologists, New Orleans. *

1444. Kuswanto, Kapti Rahayu. 1983. Pengalengan tempe kedele sebagai usaha untuk memperpanjang masa simpan [Canning of soy tempeh in an attempt to prolong its durability]. Yogyakarta: Fakultas Teknologi Pertanian Universitas Gadjah Mada. 20 p. Research report. [Ind]*
Address: Yogyakarta, Indonesia.

1445. Mahmud, Mien K.; Hermana, -. 1983. Evaluasi klinis formula makanan dengan tempe pada anak penderita diare kronis [Clinical evaluation of a formula containing tempeh on children suffering from chronic diarrhea]. Bogor: Pusat Penelitian dan Pengembangan Gizi (Nutrition Research and Development Center). Research report. [Ind]*
Address: Bogor, Indonesia.

1446. Mulyati, Yetti; Tanuwidjaja, Lindajati; Roestamsjah, -. 1983. Utilization of mixed substrate in tempeh fermentation. *Mikrobiologi di Indonesia* (*Microbiology in Indonesia*) p. 431-35. [Eng]*

1447. **Product Name:** Soy Yoghurt, Soy Nuts, Soy Mix, Tempeh, and Soy Sprouts.
Manufacturer's Name: New Age Food Enterpriser.
Manufacturer's Address: 10 Batakettara Road, Suwarapola, Piliyandala, Sri Lanka. Phone: 505228.
Date of Introduction: 1983.
New Product–Documentation: Form filled out by R.S. Udakumbura. 1989. April 17. The company began producing

soyfoods in 1983.

1448. **Product Name:** New World Tempeh Burger.
Manufacturer's Name: New World Enterprises. Renamed New World Natural Foods in 1985.
Manufacturer's Address: 226 Cypress St., Brookline, MA 02146. Phone: 617-232-5973.
Date of Introduction: 1983.
New Product–Documentation: Talk with Emily Merghart. 1989. Aug. 18. This product was introduced 6 years ago. The tempeh burger itself was made for her by 21st Century Foods. This product has been discontinued.

1449. **Product Name:** Tempeh Burger, Hi-Pro Burger (Marinated Tempeh Burger), Tempeh-Tofu Burger.
Manufacturer's Name: Soy Power (Marketer/Distributor). Made in South San Francisco by Quong Hop & Co.
Manufacturer's Address: 2811-A Ocean Park Blvd., Santa Monica, CA 90405.
Date of Introduction: 1983.
Ingredients: Hi-Pro Tempeh Burger: Soy tempeh from organically grown soy beans, shoyu, oleic safflower oil, lemon juice, natural hickory smoke, herbs and spices.
Wt/Vol., Packaging, Price: 7 oz.
How Stored: Refrigerated.
New Product–Documentation: Label. 1983. 3 inch diameter. Self adhesive. Dark brown and white on lighter brown. "100% Natural. High in Protein. No Cholesterol. Hi-Pro Tempeh Burgers may be eaten fresh from the pack or steam 6 minutes in a covered pan with 5 tablespoons water sprinkled around burger. Serve in pocket bread, garnished with your favorite burger type trimmings (tomato, alfalfa sprouts, onion, etc.)." Talk with Kevin Cross. 1988. Sept. 22. Introduced in about 1983.

1450. **Product Name:** Tempeh-Taco.
Manufacturer's Name: Soyplant Co-op Inc. (The).
Manufacturer's Address: 211 East Ann St., Ann Arbor, MI 48104. Phone: (313) 663-8638.
Date of Introduction: 1983.
Ingredients: Tempeh, tomatoes, tomato sauce, soy sauce, peanut oil, sesame oil, garlic, molasses, spices.
Wt/Vol., Packaging, Price: 12 oz.
New Product–Documentation: Label in Soy Plant scrapbook from about 1983. 3 by 2 inches. Red on white. 12 oz.

1451. **Product Name:** Tempehroni.
Manufacturer's Name: Soyplant Co-op Inc. (The).
Manufacturer's Address: 211 East Ann St., Ann Arbor, MI 48104.
Date of Introduction: 1983.
Ingredients: Tempeh, tomatoes, tomato sauce, soy sauce, peanut oil, olive oil, garlic, molasses, spices.
Wt/Vol., Packaging, Price: 12 oz.
New Product–Documentation: Label in Soy Plant scrapbook from about 1983. 3 by 2 inches. Green on white. 12 oz.

1452. **Product Name:** Okara Tempeh.
Manufacturer's Name: Summercorn Foods Inc.
Manufacturer's Address: 401 Watson, Fayetteville, AR 72701. Phone: 501-521-9338164.
Date of Introduction: 1983.
Ingredients: Okara (ground, water-extracted organic soybeans), Rhizopus oligosporus, filtered water, cider vinegar.
Wt/Vol., Packaging, Price: 18 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1987. 3.25 x 2.75 inches. Brown on tan. "Dark areas are normal and do not detract from quality or flavor." Talk with David Druding. 1988. May 18. Ken Audley, a mycologist, started this product in about 1983.

1453. **Product Name:** [Tempeh Natto (actually this is tempeh)].
Foreign Name: Tenpe Nattô.
Manufacturer's Name: Takashin Shokuhin (Takashin Foods).
Manufacturer's Address: Tachibana 1-29-2, Sumida-ku, Tokyo 131, Japan. Phone: 613-5311.
Date of Introduction: 1983.
How Stored: Refrigerated.
New Product–Documentation: Letter, Label and leaflet sent by Mr. Mitsuaki Yamanaka of Takashin. 1984. May.
Shurtleff & Aoyagi. 1985. History of Tempeh. p. 75.

1454. Tanuwidjaja, Lindajati. 1983. Pengaruh substrat terhadap daya tahan simpan inokulum tempe [Influence of the substrate on the durability of tempeh inoculum]. *Mikrobiologi di Indonesia* (*Microbiology in Indonesia*) p. 425-28. [Ind]*

1455. Timotius, K.H. 1983. Perbandingan kualitas tempe yang dibuat dari bebagai macam inokulum [Quality comparison among tempeh made from various inocula]. *Mikrobiologi di Indonesia* (*Microbiology in Indonesia*) p. 429-30. [Ind]*

1456. **Product Name:** Tempeh Starter.
Manufacturer's Name: Turtle Island Soy Dairy.
Manufacturer's Address: Box 218, Husum, WA 98623.
Date of Introduction: 1983.
New Product–Documentation: Leaflet sent by Turtle Island. 1983. "At Turtle Island we have been making our own tempeh starter for about 2 years. Our process was developed by Alexander Lyon, who has a PhD in

biochemistry and has been studying and making tempeh starter for 10 years. This process yields more starter than our previous rice method... It is now available as a frozen liquid spore preparation, in 100 gram portions sealed in plastic bags. Each bag will start 50 lbs. of cooked soybeans." Five packs cost $20.00. Customer pays shipping (15% added to order).

1457. Well Bean Deli (The). 1983. Menu. Santa Cruz, California. 1 p.
• ***Summary:*** The Well Bean Deli was located at 349 Soquel Ave., Santa Cruz, California 95062 when Richard Leviton visited there before April 1982. Address: 349 Soquel Ave., Santa Cruz, California 95062. Phone: (408) 425-4544.

1458. **Product Name:** Tempeh Burger.
Manufacturer's Name: White Wave.
Manufacturer's Address: 1990 North 57th Court, Boulder, CO 80301.
Date of Introduction: 1983.
Ingredients: Soy tempeh (made with cultured soybeans organically grown in accordance with the California Health and Safety Code, section 26569.11), soy sauce, garlic, onion, spices.
New Product–Documentation: Spot in Soyfoods. 1984. Summer. p. 43. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 54. By 1984 this was the company's best-selling tempeh product, followed by frozen soy tempeh, soy & rice tempeh, then 5-grain tempeh. In May 1988 the round Soyfoods Unlimited Meatless Burger was merged into this product, but using the Soyfoods Unlimited Label with the juicy glazed burger and the two onion rings floating above it. The full title of the new label now reads: White Wave Tempeh Burger. Marinated Soy Tempeh. All the Sizzle... None of the Steak. Ready to eat in 1 minute. Pareve.

1459. **Product Name:** 5 Grain Tempeh (With Soybeans & Millet & Wheat & Oats & Barley).
Manufacturer's Name: White Wave.
Manufacturer's Address: 1990 North 57th Court, Boulder, CO 80301.
Date of Introduction: 1983.
New Product–Documentation: Label. 1983, undated; Shurtleff & Aoyagi. 1985. History of Tempeh. p. 54. Talk with Steve Demos. 1989. Nov. 1. White Wave got the idea for this product from Soyfoods Unlimited, which introduced it in 1982. White Wave's product was probably launched in late 1982 or in 1983.

1460. Yoshida, Shuji. 1983. Kabi ga tsukuru tabemono. Indoneshia no hakkô shokuhin [Indonesian mold fermented foods]. *Kikan Minzokugaku* (*Ethnology Quarterly*) 25:98-107. [Jap]
• ***Summary:*** Contains many photos of tempeh being made commercially and served in Indonesia. Address: Kokuritsu Minzokugaku Hakubutsukan (National Ethnology Museum).

1461. Aubert, Emmanuelle. 1983. Les 9 grains d'or dans la cuisine [The nine golden grains in the cuisine. 2nd ed.]. Paris: Le Courrier du Livre. 286 p. Illust. by C. Galinet. Index. 22 cm. [Fre]
• ***Summary:*** The subtitle on the cover reads: 400 simple and savory recipes. Menus and advice on good health. Contents: Introduction. 1. The cereals (see p. 28-31 for instructions for making seitan at home from 500 gm wheat flour, plus 8 seitan recipes). 2. Breads. 3. Legumes: Cooking legumes, lentils, haricots, dry peas, chick-peas, azuki beans, soya. 4. Vegetables. 5. Soups. 6. Animal products. 7. Condiments, aromatics, and sauces (incl. tamari and miso). 8. Desserts. 9. Beverages. 10. 80 menu ideas. 11. Pregnancy and the feeding of young infants. 12. Some natural remedies. Where to buy supplies.

Soy-related recipes include: Making tofu at home (p. 87-91; illustrations and method taken without credit or permission from *The Book of Tofu* by Shurtleff & Aoyagi). Yuba. Grilled tofu (p. 91). Tofu with nuts (*noix*) and miso. Skewered tofu. Tofu salad (p. 92). Tofu with vegetables. Onions with tofu. Okara croquettes. Soymilk with fruits (p. 93). Making tempeh at home (p. 94-95). Tempeh goreng. Tempeh bachem (p. 95). Keripik tempeh (tempeh chips; p. 96). Tempeh croutons (p. 96). Pate of vegetables with tofu (p. 126). Jardinière au tofu (p. 128). Peas with tofu (p. 128). Soy sprouts made from mung beans (p. 129-30).

Pages 191-94 give basic information on the following fermented soya condiments: tamari, miso (Hacho [sic, Hatcho] miso, barley miso, rice miso). Pages 278-79 list manufacturers and handlers of various foods used in this book, and pages 280-81 give their addresses: Yellow soybeans: Celnat, Les Sept Marches, Le Seuil, Lima. Miso: Celnat, Lima, Les Sept Marches, Le Seuil, le Bol en Bois, Tenryu. Only Lima and Les Sept Marches manufacture miso in France. Tamari: Celnat, Le Seuil, Les Sept Marches, Lima, le Bol en Bois, Tenryu. Nigari: Le Bol en Bois, Tenryu. Tofu: Le Bol en Bois, Tenryu, Soy. Tempeh: Traditions du Grain, Le Bol en Bois. Tempeh culture: Semailles. Koji: Les Sept Marches, Tenryu, Le Bol en Bois. Amasaké: Traditions du Grain. Soymilk: Celnat, Lima.

A photo on the rear cover shows Aubert, a woman.

Note: This is the earliest French-language document seen that mentions amazake, which it calls "Amasaké." Address: France.

1462. Bastaman, Sjarif. 1983. Mempelajari pengaruh penambahan onggok, ampas tahu, dan parutan pepaya (*Carica papaya L.*) dalam pengolahan tempe [Study of the effect of adding onggok, okara, and shredded papaya in tempeh processing]. Thesis (Skripsi), Fakultas Teknologi Pertanian Institut Pertanian, Bogor, Indonesia. 106 p. [Ind]*

Address: Bogor, Indonesia.

1463. Business Trend Analysts, Inc. 1983. The health and natural food market. 2171 Jericho Turnpike, Commack, NY 11725. [9 ref]
• ***Summary:*** One section of this study (including pages 108-111) concerns the soyfoods market. It consists largely of statistics compiled by the Soyfoods Center and Soyfoods Association of North America. No permission was obtained from Soyfoods Center to use this information. Address: Commack, New York.

1464. Clute, Robin; Andersen, Juel. 1983. Juel Andersen's tempeh primer: A beginner's book of tempeh cookery. Berkeley, California: Creative Arts Book Co. 56 p. Illust. Index. 23 cm.
• ***Summary:*** Contents: Frontispiece. Introduction. Recipes–Salads and sandwiches. Soup and stir-fry. Stove top meals. Oven dishes. Book design and hand lettering by Sigrid Andersen. Address: California.

1465. Djurtoft, R.; Nielsen, J.P. 1983. Increase of some B vitamins, including B-12, during fermentation of tempeh, produced from cowpeas or soy beans. *J. of Plant Foods* 5(3):135-41. [15 ref]
• ***Summary:*** Tempeh samples produced from cowpeas and soy beans were analyzed for vitamin B-2 (riboflavin), B-6 (pyridoxine), B-12 (cyanocobalamin), niacin, and pantothenic acid. Vitamin contents increased significantly during fermentation both in cowpea tempeh and soybean tempeh. Special attention is given to the B-12 content during fermentation, because of its importance for people eating food primarily of vegetable origin. Address: Dep. of Biochemistry and Nutrition, Technical Univ. of Denmark, Building 224, DK-2800 Lyngby, Denmark.

1466. Flaws, Bob; Wolfe, Honora Lee. 1983. Prince Wen Hui's cook: Chinese dietary therapy. Brookline, Massachusetts: Paradigm Publications. v + 201 p. Index. 23 cm. [16 + 25 footnotes]
• ***Summary:*** The story of Prince Wen and his cook appears in Chuang-Tzu's *Inner Chapters* (trans. G.F. Feng & J. English, New York: Vintage Books, 1974, p. 55). Diet is the third of the Eight Limbs of Classical Chinese Medicine. The other 7 limbs are meditation, exercise, astrology, geomancy, massage, herbology, and acupuncture.

If a man is diagnosed as having a liver imbalance, such as "liver fire blazing upwards," he should consume food and herbs that will sedate, calm, and cool the liver and lower the Yang; foods that raise the Yang, produce internal fire, or aggravate the liver should be avoided.

Page 35 notes that foods that are energetically cool and cold include soy products (such as tofu, tempeh, soymilk). Foods that produce fluid and are damp in nature include soybean and tofu.

In the section titled "Categorization of Foods," a number of individual foods are analyzed in detail, based on characteristics described below: Aduki bean, agar (p. 143), alfalfa, almond, and amasake (fermented glutinous rice) (p. 144), black soybean (p. 148), gluten (seitan, p. 158), kudzu root powder (p. 161), seaweed (p. 179), soybean (p. 181), soybean oil (p. 181), and tofu (p. 185).

Taking tofu, then black soybeans, as examples of the format used. Tofu: Nature: Cool. Flavor: Sweet. Meridian: Lungs, large intestine, stomach. Direction: Descending. Quality: Yin and yang. Elemental quality: Earth. Treatment principles: Tonifies Qi [ch'i] and Blood, clears Heat, sedates Yang, tones Yin, harmonizes the Middle Burner, produces Fluid, lubricates Dryness, counteracts toxins. Commonly used in the treatment of conjunctivitis, chronic amoebic dysentery, diabetes, sulfur poisoning, and alcoholism. Contraindications: spermatorrhea.

Black soybean: Nature: Neutral. Flavor: Sweet. Meridian: spleen and Kidneys. Direction: Ascending. Quality: Yang. Elemental quality: Earth. Treatment principles: Tonifies Qi [ch'i] and Blood, activates the Blood, benefits Water, expels Wind, counteracts toxins. Commonly used in the treatment of edema, Wind Bi (rheumatism), jaundice, beriberi, and spasms.

The remedial recipes are divided into Chinese (p. 96-116) and American (p. 117-35) types. Soy-related recipes include: Lord Buddha's delight casserole (with tofu, p. 88-89). Clams with black bean garlic sauce (with salted black beans [soy nuggets], p. 91). Five jewel casserole (with tofu or tempeh, p. 92). Quick braised soybean sprouts (p. 104).

Amasake cheesecake with cherry topping (p. 119). Shepherd's pie with seitan (Gluten meat, p. 122). Ginger seitan beef (p. 122). Seitan veal marsala (p. 129). Aduki bean brownies (p. 133). Dairyless pumpkin pie (with soymilk or cashew milk, p. 135). Many recipes use soy sauce or tamari in their braising liquid. The cookbook also uses meat, poultry, fish, and sugar quite extensively.

1467. Ford, Richard; Andersen, J.; Andersen, S. 1983. Juel Andersen's sea green primer. A beginner's book of sea weed cookery. Creative Arts Book Co., 833 Bancroft Way, Berkeley, CA 94710. 64 p. Illust. Index. 23 cm. [13 ref]
• ***Summary:*** A Glossary (p. 9) includes miso, mochi, tahini, tamari, tempeh, tofu, suribachi. Soy-related recipes: Tempeh (p. 23, 24). Tofu (p. 25, 28, 29, 43).

Sea vegetable chapters: Agar. Arame. Dulse. Hijiki. Kombu. Nori. Wakame. Common sea greens. Address: California.

1468. Goldbeck, Nikki; Goldbeck, David. 1983. American wholefoods cuisine: Over 1300 meatless, wholesome recipes from short order to gourmet. New York, NY: New American Library. viii + 580 p. Illust. Index. 23 cm. [65* ref]

• ***Summary:*** This is the best of the Goldbeck's many good books on food. Contains many recipes for tofu (regular and frozen, p. 166-73) and tempeh (p. 173-75), and some for soynuts, whole soybeans, and soy flour. Although its subtitles says it is a meatless cookbook, pages 15-16 discuss the value of adding small amount of meats, fish, and poultry to other dishes, and page 478 contains details on storing six different types of meats, plus poultry and fish. Address: Woodstock, New York.

1469. Hermana, -. 1983. Pengaruh konsumsi bahan makanan campuran dengan kedelai atau tempe terhadap anak balita penderita kurang kalori-protein [Effect of the consumption of food mixtures containing soybeans or tempeh on children under the age of five suffering from protein malnutrition]. PhD thesis, Fakultas Pasca Sarjana, Institut Pertanian Bogor, Bogor, Indonesia. xii + 105 p. Illust. No index. 28 cm. [84 ref. Ind]
• ***Summary:*** Children suffering from protein-energy malnutrition were fed a food supplement formula consisting of 70% rice flour and 30% tempeh flour, There was a beneficial effect on the general status and for protection against gastroenteral infection. Address: Bogor, Indoensia.

1470. Herrmann, Karl. 1983. Exotische Lebensmittel. Inhaltsstoffe und Verwendung [Exotic foods. Ingredients and uses]. Berlin, Heidelberg, & New York: Springer-Verlag. x + 175 p. Illust. 21 cm. See p. 111-19. Sojabohnenprodukte. [18 ref. Ger]
• ***Summary:*** The chapter on legumes contains brief introductions to soybeans, green vegetable soybeans (*unreife Sojabohnen*), soy sprouts (*Sojabohnensprossen, Sojabohnenkeimlinge*), soymilk (*Sojamilch*), tofu (*Tofu, Sojaquark*), soy sauce (*Sojasosse, Shoyu*), miso (*Miso, Sojapaste*), tempeh (*Tempeh*), fermented tofu (*Sufu, chinesischer Sojabohnen-Käse*), and natto (*Natto, fermentierte ganze Sojabohnen*). Tables shows the nutritional composition of tofu, deep-fried tofu pouches (*Aburage*), dried-frozen tofu (*Kori-Tofu*), yuba (*Yuba*), roasted soy flour (*Kinako*), and miso, plus defatted soybean meal (*entfettetes Sojabohnenmehl;* 51% protein), and soybean concentrate (*Sojabohnen Konzentrat;* 64.9% protein). Address: West Germany.

1471. Hesseltine, C.W. 1983. Microbiology of Oriental fermented foods. *Annual Review of Microbiology* 37:575-601. [50 ref]
• ***Summary:*** Contents: Introduction. Historical account. Importance of mixed cultures. Microorganisms used.

"The Japanese Food Agency, Ministry of Agriculture, Forestry, and Fisheries (1979), gave the following figures for 1979: miso, 567,776 tons; shoyu, 1,252,431 kiloliters; and natto, 158,000 tons. In Korea, 35% of the 442,803 metric tons of soybeans produced is fermented. Indonesia uses about 75,600 tons of soybeans in making tempeh.

"There is considerable ancient writing in Chinese publications about foods made by fermentation, but the first scientific reports are only about 100 years old. From 1878 until the beginning of World War I, there was an explosion of papers and reports dealing with fermented foods and drinks... In general, studies between 1881 and 1914 were devoted to the description of the product and the local name and to the isolation and description of the microorganisms associated with the fermentation. A number of organisms new to science were described and illustrated. Additional information was given on the action of the fungus on the substrate, suggested uses of the fungus in processes that could be exploited in European technology, and a description of the substrate preparation, food use, and native methods of food preparation.

"This period of research ended abruptly with the advent of World War I, as the exchange of students and cooperation between Japan and Germany ceased. Food fermentation studies resumed in the 1950s and today considerable interest exists. This renewed interest stems from the concern with nutrition, the great enthusiasm for vegetarian and natural foods, the search for less expensive, high-protein foods, the influence of foreign students studying in the West, the need to expand export markets, the need to add products to convenience foods to add zest and flavor, and the interest in the activities of microorganisms used in fermented foods." Address: NRRC, Peoria, Illinois.

1472. Jaffrey, Madhur. 1983. Eastern vegetarian cookery. London: Jonathan Cape. xii + 531 p. Illust. by Susan Gaber. Index. 24 cm.
• ***Summary:*** This is an expanded version of *Madhur Jaffrey's World-of-the-East vegetarian cookery* (1981, New York). The author of this creative book, a woman, was born in British India on 13 Aug. 1933. She first became known as an actress in India, but later found fame as a food writer. She has lived in America for more than 20 years. She presents 21 recipes for bean curd (tofu), 7 for tempeh, and some for yuba and miso. Soy-related recipes include: Aubergine slices with white miso (Japan, p. 4-5). Green beans with soy sauce (Japan, p. 20), Cabbage with miso (Japan, p. 29). Lotus root with soy-sauce dressing (Korea / Japan / Hong Kong, p. 46-47). Yellow pumpkin cooked with soy sauce (Japan, p. 74-75). Fresh soy beans, steamed (China, p. 76, with "fresh green soy beans in their pods"). Yien Koo's Spinach with fermented bean curd (China, p. 78-79). Pecel (Vegetable salad with spicy peanut sauce, plus tofu and tempeh; Indonesia, p. 87). Tempura (with tofu; Japan, p. 89-92). Soy bean sprouts (how to grow, p. 119). Soy-bean and mung-bean sprouts seasoned with sesame oil (Korea, p. 123-24). Tempeh, Fried tempeh, Fried, pre-seasoned tempeh, Sambal goreng tempeh kering (Sweet and sour tempeh), Tempeh cooked in coconut milk (Indonesia, p. 127-30). Thai fried

rice (with red fermented tofu, p. 176).

Chapter 4 (p. 187-221), titled "Soy milk, bean curd, and wheat gluten," contains the following: Introduction to each ingredient. Soy milk (making your own at home). Making your own bean curd. Udofu (Yudofu, simmering bean curd with seasonings, Japan). Bean curd with watercress (Singapore Chinese). Bean curd with fresh coriander (Taiwan). Korean-style bean curd in a hot water bath. *Hiya-yakko* (Chilled bean curd, Japan). Bean curd with broccoli (Hong Kong). Cabbage cooked with bean curd (Japan). Bean curd with a deliciously spicy sauce (China). Carrots and beans with a bean-curd dressing (Japan). Bean curd, mushrooms, and peanuts in hoisin sauce (Chinese style). Sautéed bean curd (Korea). Tofu dengaku (Toasted bean curd with a miso topping, Japan). Fried bean-curd cubes (Most of East Asia). Soy-bean sprouts sautéed with fried bean curd (China). Fried bean curd with a sweet-and-sour sauce (China). Fried bean curd cakes with a mustard surprise (Japan). Inari-zushi ("Bags" of fried bean curd stuffed with sushi rice, Japan). Pressed bean curd with cabbage (China). Salad of pressed bean curd, mung-bean sprouts, and agar-agar (China). How to make fried and baked wheat-gluten balls. Stew of baked wheat gluten, potato, turnip, carrot, and cabbage rolls (Japan, p. 215). Fried wheat gluten with broccoli, carrot, and mushrooms (China). Fried wheat gluten and potato stew (Indian style). Shredded wheat gluten and Cabbage with fennel seeds (Indian style). Buddha's delight (A mixed Chinese stew, Hong Kong; with yuba, fried tofu, and fried wheat gluten balls).

Chawanmushi (Steamed savory custards, with tofu; Japan, p. 223-26). Omelette with bean curd (Japan, p. 230-31). Soy-sauce eggs (Thailand / China, p. 245). Paneer (Fresh cheese from cow's milk; India, p. 277-78). Hot or cold noodles with a soy-sauce dressing (China, p. 288). Noodles with a hot-and-sour bean sauce (China, p. 290). Vegetarian mee krob (Crisp noodles with pressed bean curd and eggs; Thailand, p. 296-97). Noodles with quail eggs, mushrooms, spinach, and yuba (Japan; p. 298-99). Hoppers (yeast pancakes; Sri Lanka, p. 315). Roti (Flat whole-wheat bread; India, p. 320). Delicious stock made with soy-bean sprouts (p. 340). Clear soup with mushrooms, bean curd skins [yuba], and spinach (Japan, p. 346). Clear soup with soft bean curd and Chinese leaves (p. 346). Miso soup with bean curd (Japan, p. 357). Miso soup with carrots and mushrooms (Japan, p. 358). Fried, munchable soy beans [soynuts] (China, p. 373). Potato and tempeh patties (Indonesia, p. 394). Dipping sauces (with soy sauce, p. 414-17, incl. kochu chang–Korean soy sauce). Kombu relish (with soy sauce; Japan, p. 435). Shoyu daikon (White radish pickled in soy sauce; Japan, p. 436). Ginger quick-pickled soy sauce (China, p. 436). Aomidaikon (Quick pickled small white radishes, with slightly sweet yellow miso; Japan, p. 438-39). Chinese-style jellied bean-curd sweetmeat with a peanut topping (Singapore, p. 462-63).

General information [like a glossary] (p. 481-506): See: Bean curd (regular, fried, fermented {*fu-ju, nam-ye, tao-hoo-yee,* red bean curd}, pressed {*doufu kan*}*,* pressed seasoned {*pai doufu kan*}*,* dried bean-curd skin or yuba). Beans (azuki, soy). Bean sauce (made from fermented soy beans). Chilli paste with soy bean (and garlic). Hoisin sauce. Miso. Nam yee (see Bean curd, fermented). Nigari. Soy beans, fresh. Soy-bean sprouts. Soy milk. Soy sauce (incl. Japanese, Chinese dark and light, Japanese usukuchi, Indonesian ketjap manis). Tao Hoo Yee (see Bean curd, fermented). Tempeh. Yuba. Sources (of ingredients; p. 507-10).

Note 1. This is the earliest English-language document seen (Oct. 2010) that uses the term "Nam yee" to refer to a kind of fermented tofu. Address: New York City, NY.

1473. Kushi, Michio; Jack, Alex. 1983. The cancer prevention diet: Michio Kushi's nutritional blueprint for the relief and prevention of disease. New York, NY: St. Martin's Press. xi + 460 p. Index. 22 cm. [32 ref]

• ***Summary:*** In this book, cancer preventing effects are attributed to miso (p. 50-51, 220-21, 304-06), and to soybeans (p. 51, 154-55, 293, 306). Natto, soymilk, tamari, tempeh, and tofu are also discussed.

Pages 50-51 note: "A ten-year study completed in 1981 by the National Cancer Center of Japan reported that people who ate miso soup daily were 33 percent less likely to contract stomach cancer than those who never ate miso soup. The study also found that miso was effective in preventing against heart and liver diseases...

"Soybeans, a major source of protein in the macrobiotic diet, have been singled out as especially effective in reducing tumors. The active ingredient in soybeans is called a protease inhibitor. Laboratory tests show that soybeans and certain other beans and seeds containing this factor added to the diet prevent the development of breast, stomach, and skin tumors. Whole soybeans and soy products, including miso, tamari soy sauce, tofu, tempeh, and natto are staples of the macrobiotic diet... At St. Luke's Hospital in Nagasaki, a group of macrobiotic doctors and patients who had survived the atomic bombing on August 9, 1945 subsequently protected themselves against potentially lethal doses of radiation on a diet of brown rice, miso soup, sea vegetables, and sea salt."

Pages 220-21 contain a long excerpt from the account of Dr. Tatsuichiro Akizuki, director of internal medicine at St. Francis's Hospital in Nagasaki. He survived the world's first atomic bomb attack on 9 Aug. 1945. He believed that the main reason that neither he nor any of his co-workers at the hospital suffered or died from radiation was because of their diet, based on miso, brown rice, and sea vegetables.

Pages 293, and 304-06 summarize a number of publications which seem to show that consumption of soybeans, miso, or soymilk may prevent cancer. Pages 391-99 contain soyfoods recipes. Address: Boston,

Massachusetts.

1474. Puetz, Jean; Gollhardt, Heinz. 1983. Hobbythek Buch 8 [Hobby book 8]. Cologne, Germany: Verlagsgesellschaft Schulfernsehen. 168 p. See p. 130-39. [3 ref. Ger]
• ***Summary:*** This book describes how to make tofu, tempeh, and soy sprouts, and how to build a tempeh incubator (bio-box) at home. Flora Yap (4/92) notes that the author has demonstrated tempeh making before 1988. Address: Germany.

1475. Rasyid, Abdul. 1983. Protein quality of soybean, red bean and corn tempeh. MSc thesis, Washington State University. viii + 46 leaves. 29 cm. *
• ***Summary:*** Includes bibliographic references (leaves 43-46). Abdul Rasyid was born in 1950.

1476. Rohé, Fred. 1983. The complete book of natural foods. Boulder, Colorado: Shambhala. xvi + 491 p. Illust. Index. 26 cm. [120 ref]
• ***Summary:*** This book is about "The New American Diet," which is an "omnivarian" diet including some fish and meat. Chapter 14, titled "New and future natural foods," contains a section titled "Soy foods" (p. 162-65) including tofu, tempeh, miso, soy sauce, soy milk, and other soy products (yuba and sufu). The work of William Shurtleff and Aoyagi, and their Soyfoods Center, is mentioned 2-3 times. Toward the back of the book are many soyfoods recipes.

The Prologue tells Rohe's life story and pioneering work with natural foods. In 1964, at the ripe old age of 27, he didn't feel good, didn't look good, and didn't like it–the result of years of smoking, drinking, eating bad food and "burning the candle at both ends." "It was time to do something about it. Adelle Davis became my guru and Thom Hamilton–the health foods store owner who sold me [her book] *Let's Eat Right to Keep Fit* became my mentor." Within a few months he was feeling much better. "So in 1965 I bought a small health food store in the Sunset district of San Francisco." It was named Sunset Health Foods." He discarded most of the dietetic foods on the shelves and replaced them with "old-fashioned groceries–basic stuff, traditional, simple, whole food... What was evolving was a modern version of an old-fashioned grocery store." He would provide information instead of hype, bulk retail foods sold out of barrels, crocks, jars, and drawers instead of packaged products, food instead of food supplements. He renamed the store "New Age Natural Foods."

"My career ended in 1973, after eight years. New Age Natural Foods had served as a model for what were called in those days 'hippie food stores.' It is credited as being the prototype natural foods store, as distinct from a health food store." Since 1973 Fred continued to work in the natural foods industry. In 1979, in his capacity as a consultant, he met the people of Sunburst Farms, who are his collaborators on this book. "Sunburst is the realization of a vision experienced in 1951 by its founder Norm Paulsen, while he was living as a student monk studying yoga at the Self-Realization Fellowship in Los Angeles. He moved to the Santa Barbara area, and while operating a construction business in 1968 established Sunburst Farms as a group of people living communally under spiritual principles on 160 acres of land in the mountains above Santa Barbara. The community-owned business, Sunburst Natural Foods, grew foods organically and flourished. In 1970 they opened a natural foods retail store in Santa Barbara. The community grew to include a second ranch and a total membership of over 200 people. "The business came to include manufacturing and wholesaling as well as retailing. There are now five Sunburst Farmer's Markets, two of them–in Goleta and Ventura–large, complete, natural foods supermarkets. Sunburst also owns and operates a natural foods restaurant, 'The Farmer and the Fisherman,' 35 miles north of Santa Barbara along the coastal highway." Then Norm envisioned a new direction and everything changed. They traded their 6,000 acre coastal ranch for land in northeastern Nevada totaling over 500,000 acres. "It could hardly have been a more radical change. But the soil is rich in minerals and there is abundant water from artesian wells. They are responding strongly to the challenge of, as they say, 'making the desert bloom as a rose.'"

"Appendix eight: Recommended reading list" (p. 470-78) includes a section titled "Soyfoods."

This book was Re-published in 1986 as *Nature's Kitchen* by Garden Way in Brattleboro, Vermont.

Interview with Fred Rohe. 1988. Nov. 3. Fred bought Sunset Health Foods in 1965 and transformed it into New Age Natural Foods at 1326 Ninth Ave. in San Francisco. Address: 4014 Lincoln Way, San Francisco, California 94122. Phone: 415-564-7024.

1477. Santoso, Agus Muji. 1983. Penggunaan bawang putih (*Allium sativum L.*) untuk pengalengan tempe [The use of garlic in tempeh canning]. Thesis (Skripsi), Fakultas Teknologi Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia. 43 p. [Ind]*
Address: Yogyakarta, Indonesia.

1478. Shurtleff, William; Aoyagi, Akiko. 1983. Leaders of the Soyfoods Movement in Europe (Document part). In: Shurtleff and Aoyagi. 1983. Soyfoods Industry and Market: Directory and Databook. 3rd ed. Lafayette, CA: Soyfoods Center. 121 p. See p. 109.
• ***Summary:*** The name, address, and phone number of the following people are given: Wolfgang Furth-Kuby of Sojaquelle, Peter Wiegand of Auenland Tofu, and Boo Massobrio of Weg Der Natur in West Germany. Verena Krieger and Walter Daenzer of Soyana in Switzerland. Sjon Welters of Manna Natural Foods in the Netherlands. Ted

Nordquist and Tim Ohlund of Aros Sojaprodukter in Sweden. Bernard Storup of Soy SARL and Alexander Nabben of Europa Farm in France. Gilberto Bianchini of Community Food in Italy. Kym Olsen in England. Pierre Gevaert of Lima Foods in Belgium. Jane O'Brien in Ireland. Dr. Brian J.B. Wood of the University of Strathclyde, Microbiology Department, in Scotland. Lawrence Dreyer of Weg Der Natur in Austria. As of July 1982 there are 609 European names and addresses on the Soyfoods Center Mailing List. Address: Lafayette, California. Phone: 415-283-2991.

1479. Shurtleff, William. comp. 1983. Questions on the history of tempeh in Japan (Overview). Lafayette, California. 1 p.
• ***Summary:*** Contains 15 questions. Address: Founder and Director, Soyfoods Center, Lafayette, California.

1480. Soebagyo, Slamet Elly. 1983. Studi interaksi enzim-enzim dari dua biakan lapuk *Rhizopus* [Study of the interaction of enzymes from cultivated *Rhizopus* molds]. Thesis (Skripsi), Departemen Kimia, Matematika dan Ilmu Pengetahuan Alam Institut Teknologi Bandung, Bandung, Indonesia. 19 p. [Ind]*
Address: Bandung, Indonesia.

1481. Soetiarto, Siti Roswati. 1983. Identifikasi dan determinasi djamur genus *Rhizopus* yang berasal dari tempe [Identification and determination of molds of the genus *Rhizopus* isolated from tempeh]. Thesis (Skripsi), Bagian Biologi Institut Teknologi Bandung, Bandung, Indonesia. 51 p. PBITB. [Ind]*
Address: Bandung, Indonesia.

1482. Soy Power Co. 1983. Everything you wanted to know about tofu–But were afraid to ask (Leaflet). Santa Monica, California. 4 panels. 11 x 14 cm.
• ***Summary:*** Contains basic information about tofu, 6 recipes, and a list of Soy Power products: Silken tofu, Chinese tofu, Pressed tofu, Savory baked tofu, Whatta salad, Fiesta salad, Hi-Pro tempeh burger, and Non-dairy soymilk (Plain, Carob & honey). Printed with purple ink on gray paper. Address: 2811-A Ocean Park Blvd., Santa Monica, California 90405.

1483. *SoyaScan Questions.*1983. Questions about the history of tempeh. Further research needed. Compiled by William Shurtleff of Soyinfo Center.
• ***Summary:*** 1. Learn more about the early history of tempeh in Indonesia before 1875. There must be some earlier references by missionaries, travelers, traders, etc.

2. Learn more about tempeh (tou chiah ping) in China.

3. Were there no references to tempeh by Indonesians prior to Soetan in 1956? Not even dictionaries?

4. How does the vitamin B-12 content of fresh tempeh compare with that of cooked (boiled, fried) tempeh?

5. Which was the first commercial European tempeh Co? Firma E.S. Lembekker in Jan.1959? Ask them about Firma ENTI?

6. Where was ENTI founded? When did they start to sell tempeh commercially? Where did the April 1946 founding date come from? Europe? van Dappern?

7. Did Robert van Dappern learn to make tempeh from the man who started Firma ENTI? If not, from whom? When did he move his plant to Kerkrade (about 1972-73)? When did he buy the $1 million plant (about 1980-81)? In mid-1982 was production 7,000 lb/wk or 10,000 lb/day as Ike said? How much tempeh does he make now each day? Each week?

8. What have Hedger and Basuki done with tempeh at Wales and what are they planning to do (O'Neill 1980)? Did they ever start a tempeh plant?

9. How many pages does Nakazawa have on Rhizopus? Does he mention tempeh at Penicillium?

10. Who wrote the early article on tempeh at Kyushu University, Japan, that interested Torigoe?

11. Get full citations for and copies of the following documents: Wigman, pre 1900.

12. Did Ohta or Karauchi write an early article on tempeh in about Showa 7 or 8 (1932-33)? Ohta mentioned this.

13. Try to get the article (about 1947-48) from Nosan Seizo, written by Ohta Teruo or Nakano Masahiro.

14. When did the Natto Gyokai News (or any natto newspaper) publish its first article on tempeh. I'd like to get copies of all early and recent important articles it has published.

15. Dr. S.O. Robson, Netherlands. Reward of $1 per year for citations on tempeh prior to 1875. Maximum $100.

16. K.K. Fuji was interested in Japan since 1980, says Dr. Wang at NRRC. Who are they? Who is Nihon Kogyo?

17. Get samples of Michael Cohen's new tempeh bags and labels.

18. Get answers to all the questions I wrote to Watanabe and Takamine in Kyushu.

19. Who made the early tempeh starter in Japan?

20. KOPTI: Please send me the names and locations by city of Indonesia's five largest tempeh companies. How many kg of tempeh does each make per week?

21. Get a full bibliographical citation for Kawarai.

1484. Steinkraus, K.H. 1983. Industrial applications of Oriental fungal fermentations. In: J.E. Smith, D.R. Berry, and B. Kristiansen, eds. 1983. The Filamentous Fungi. 4 vols. Fungal Technology. London: Edward Arnold. See p. 171-89. Chap. 7. Illust. Index. 24 cm. [35 ref]
• ***Summary:*** Contents: Introduction. The koji principle. Soy sauce / Japanese shoyu as indigenous fermentations. Japanese miso. Japanese saké. Indonesian tempe / oncom–

fungal fermented traditional meat analogues. Indonesian tapé ketan and tapé ketella fermentations. Conclusions. Address: New York State Agric. Exp. Station, Geneva, NY 14456.

1485. Steinkraus, Keith H. 1983. Progress in preservation of food through fermentation. In: L.W. Shemilt, ed. 1983. Chemistry and World Food Supplies: The New Frontiers CHEMRAWN II. New York: Pergamon Press. See p. 421-35. [78 ref]
• ***Summary:*** Discusses tempeh, Rank, Hovis, MacDougall Institute in England (meat analogs from mold mycelium), microbial protein (SCP, or single-cell protein), ontjom, etc. Address: Prof. of Microbiology and Food Science, Inst. of Food Science, Cornell Univ., Geneva/Ithaca, New York 14456.

1486. Steinkraus, Keith H. 1983. Fermented foods, feeds and beverages. *Biotechnology Advances* 1(1):31-46. [70* ref]
• ***Summary:*** Contents: Abstract. Indigenous fermented foods / beverages: Indian idli, dawadawa (daddawa), soy sauce (Thailand), Indonesian tape, fish sauces, Japanese koji, Nigerian millet beer (oyokpo), Kenyan uji. Microbial / single cell protein (SCP): Mushrooms. Address: New York State Agric. Exp. Station, Geneva, NY 14456.

1487. Steinkraus, K.H. 1983. Traditional food fermentations as industrial resources. *Acta Biotechnologica* 3(1):3-12. First published in 1982 in Saono et al., eds. Traditional Food Fermentations as Industrial Resources in the ASCA Countries. The Indonesian Institute of Sciences (LIPI) Jakarta. p. 3-16. [31 ref. Eng; ger]
• ***Summary:*** Contents: Summary. Introduction. Production of meat-like flavors from vegetable proteins. Soy sauce (Japanese shoyu) and miso fermentations. Fish / shrimp sauces and pastes. The koji principle. Meat substitutes (analogues). Indonesian tempeh kedele. Traditional tempeh fermentation. Industrial production of tempeh. A process for raising the protein content of high starch substrates. Leavened bread-like foods without the use of wheat or rye. Coconut protein as an industrial resource. References. Address: New York State Agric. Exp. Station, P.O. Box 462, Geneva, New York 14456.

1488. Sumarsono, -. 1983. Aspek-aspek penggunaan tepung tempe [Aspects of tempeh flour utilization]. Thesis (Skripsi), Fakultas Teknologi Pertanian Universitas Gadjah Mada, Yogyakarta, Indonesia (College of Agricultural Technology, Gadjah Mada University). 50 p. [Ind]*
Address: Yogyakarta, Indonesia.

1489. Swaminathan, Mahadeva. 1983. Oilseed and nut proteins. In: Miloslav Rechcigl, ed. 1983. CRC Handbook of Nutritional Supplements. Vol. I. Human Use. Boca Raton, FL: CRC Press. 564 p. See p. 3-27. [147* ref]
• ***Summary:*** Contents: Introduction. Production: Soybeans, cottonseed, sesame seed, copra, sunflower seed. The chemical composition and nutritive value of the proteins of certain oilseeds and nuts: Chemical composition, essential amino acid composition and nutritive value of proteins, amino acid supplementation of the proteins of oilseeds and nuts. Deleterious constituents present in oilseeds and legumes. Effect of processing on the nutritive value. Processed foods based on oilseeds and their meals: Preparation of edible meals, protein isolates from oilseeds and nuts. Infant foods and milk substitutes from oilseeds and nuts: Infant foods and milk substitutes from soybeans (soy milk, dried soybean milk, large-scale production), nutritive value of soybean milk and soybean milk proteins (animal experiments, treatment of protein malnutrition in children), feeding experiments with infants and children, milk substitutes and infant foods from peanut, nutritive value of peanut milk and its proteins, feeding trials with infants and children, coconut milk and products based on coconut milk. Milk substitutes based on other nuts and oilseeds: Almond milk, cashewnut milk. Protein foods based on oilseed meals and isolates: Supplements based on soybean meal, on peanut meal, on cottonseed flour, on sesame flour, on coconut meal, on sunflower seed meal. Other processed products based on oilseeds and nuts and their meals: Products based on peanut and peanut flour, enriched tapioca flour and macaroni products, products based on soybean and soybean meal (baked products, macaroni products, tofu, natto, tempeh), foods based on protein isolates from peanut and soybean, products based on peanut protein isolate, products based on soy protein isolate (infant foods, textured food products). Conclusion.

Table 13 (p. 18) lists "Supplementary foods for weaned infants and preschool children." The following contain soya (usually defatted soy flour): Protein Food I and II (India). Fortifex (Brazil). Cerealina (Brazil; with full-fat soy flour). Multipurpose Food, CSM, WSB (USA). Pronutro (South Africa).

Note: On pages 156-57 is a brief description of quark, a non-fermented edible milk protein product widely used in Germany. It is a fresh, uncured cheese, usually sold in bulk form. Versatile and easy to use, it is made by coagulating the milk exactly like cottage cheese, "but instead of cutting, cooking, and washing the curd particles, the whole coagulum is passed through a specially designed centrifuge" to separate the whey from the solidified protein curd, which is then cooled and packaged in bulk. When made under sanitary conditions, the quark has a good shelf life under refrigeration. Some 30-40 different food products based on quark (such as spreads, dips, and desserts) are now sold in western and eastern Europe. A survey concluded that quark has considerable potential in the USA if (like yogurt, the most newly accepted dairy food in the USA) it is well advertised and promoted. Address: Retired, Applied

Nutrition and Dietetics Discipline, and Emeritus Scientist, CFTRI, Mysore, India.

1490. Tims, William; Allanson, Robert. 1983. Macrobiotic dietary suggestions. Mountain Ark Publishing Co., 109 S. East Street, Fayetteville, AR 72701. 38 p. 22 cm.
• ***Summary:*** Under "Bean Products," tofu, tempeh, and natto are mentioned. "Fermented foods make wonderful seasonings for soups and strengthen the digestive function. Those used in making soups include: Miso, shoyu, tempeh, sauerkraut." There are recipes for Boston baked soybeans, and Boiled tofu. Address: Fayetteville, Arkansas.

1491. Tofu Shop Specialty Grocery & Deli (The). 1983. The Tofu Shop Delicatessen (Poster). Arcata, California. 8½ by 11 inches.
• ***Summary:*** Printed on front in blue on white with a gold border on glossy cardstock paper: "We make our own tofu: traditional methods for a sweet, delicate taste.

"Delicatessen: featuring fresh food to go. Tofu burgers. Sandwiches. Salads. Desserts with honey. Whole grain breads. Fresh juices. Fresh coffee. Herb teas. Marinated cutlets. Tofu sausages. Baked goods.

Specialty groceries: Fresh tofu. Tempeh. Miso (domestic & imported). Sea vegetables. Macrobiotic supplies. Cook book & recipes. Tofu making supplies."

In the center is the company's long-time logo of a blue dragon inside a thick green circle.

"Handmade tofu since 1977."

A green, blue and gold illustration by Bernice Kagan (left) shows a small tofu shop on stilts on a cliff by the ocean, with an Oriental-style roof and a wind-blown tree arching overhead.

Note from Matthew Schmit. 2009 April 2. "A rather gawdy 1st attempt with a marketing poster. The 'Blue Dragon' was phasing out and the 'Shop on the cliff' was phasing in as our logo." Address: 768 18th St., Arcata, California 95521. Phone: 707-822-7409.

1492. Wang, H.L. 1983. Oriental soybean foods. In: Ivan A. Wolff, ed. 1983. CRC Handbook of Processing and Utilization in Agriculture. Vol. II: Part 2. Plant Products. Boca Raton, FL: CRC Press, Inc. See p. 91-106. Illust. Index. 26 cm. CRC Series in Agriculture. [10 ref]
• ***Summary:*** Contents: Introduction. Traditional nonfermented soybean foods. Fermented soybean foods. Tables: (1) Oriental nonfermented soybean foods: Fresh green soybeans, soybean sprouts, soybean milk, protein-lipid film [yuba], soybean curd [tofu], soybean flour (local names: Tou-fen, kinako). (2A) Composition of some indigenous soybean foods, 100 g, edible portion. (2B) Composition of some indigenous soybean foods, 100 g, edible portion. (3) Essential amino acid content of some indigenous soybean foods. (4) Oriental fermented soybean foods. (5) Characteristics of rice miso in relation to fermentation condition. (6) Average composition of soy sauce made from whole soybeans and defatted soybean meal. (7) Composition of various types of miso.

Figures: (1) Flow sheet for the preparation of soybean milk and its related products. (2) Flow sheet for manufacture of soy sauce. (3) Flow sheet for manufacture of miso. (4) Flow sheet for making hamanatto. (5) Flow sheet for preparation of sufu. (6) Flow sheet for tempeh fermentation. (7) Flow sheet for preparation of natto.

Note: Vol. 1 is "Animal products." Vol. 2 is "Plant products," Part A. Vol. 3 is "Plant products," Part B. Address: NRRC, Peoria, Illinois.

1493. Wildwood Natural Foods. 1983? Wildwood Natural Foods (Ad–Point of purchase cards). Fairfax, California. 2 p. Undated.
• ***Summary:*** Each of these two point-of-purchase (POP) cards is 4 by 6 inches, dark green on white, showing a silhouette of woods with birds. On the first card, under the words "Fresh daily," are written the names of seven Wildwood products: BRT–Brown Rice & Tofu Sandwich, Curry BRT, Mustard BRT, Tofunofish Sandwich, Tofu Steak Sandwich, Avo-Steak Sandwich, and Supreme Bean Tempeh Burger.

On the other card, under the words "Ready-To-Eat Foods, Naturally," are written the names of five more Wildwood products: Potato Salad, Tofu-Vegetable Salad (Curry-Tofu Salad, Tofu-Dill Salad), Hummus, Tabouli, and Good Puddin'. Under each product on this card is more information about that product. For example: "Good Puddin'. Couscous, apples and raisins cooked in apple juice with a creamy carob-tofu topping. Sweetened with apple juice." Address: 135 Bolinas Rd., Fairfax, California 94930. Phone: 415-459-3919.

1494. *Toyo Shinpo* (*Soyfoods News*).1984. Wadai no "tenpe." Seihin shôkai. Sono hinshitsu to saikin no ugoki. Shokuhin gakusha mo hyôka [People are talking about tempeh. Product introduction. Its quality and latest trends. Food researchers also value it]. Jan. 1. p. 29. [Jap]
• ***Summary:*** At the end of 1983 Torigoe Seifun started test marketing tempeh at a major department store in Kyushu. Taste testing done among college girls in Japan shows that they prefer tempeh (76.4%) to natto. Torigoe Seifun says that after marketing tempeh to industrial users (institutions and food processors) at 1,500 yen/kg, they have received many enquiries. They haven't decided the price for home use yet. Their goals: (1) Tempeh production of 15,000 kg/month; (2) Sales of 100 million yen from July–Dec. 1983; (3) In three years their sales goal is 2,000 million yen.

1495. **Product Name:** Homestyle Tempeh Burgers (Sesame Wheat Tempeh Burger).

Manufacturer's Name: 21st Century Foods Inc.
Manufacturer's Address: 30 Germania St., Jamaica Plain, MA 01230.
Date of Introduction: 1984. January.
Ingredients: Organic soy tempeh, San-J tamari, herbs, spices.
Wt/Vol., Packaging, Price: 7 oz 2 round burger patties, vacuum packed.
How Stored: Refrigerated, 30 day shelf life.
New Product–Documentation: Leaflet from Norbert C. Belanger, General Manager. 1984. Jan. 16. The company now makes and sells six tempeh products, including Tempeh Burger. Label. Undated. 3 inch diameter. Reddish brown on yellow. Leaflet. 1983. "Tempeh with a Difference."

1496. Nasoya Foods. 1984. Make the Nasoya Foods section a part of your store (Ad). *Natural Foods Merchandiser.* Jan. p. 11 (unnumbered) of 12-page color advertising insert. Soyfoods Pavilion '84. Marketing soyfoods in America.
• ***Summary:*** A 7.75 by 10.5 inch black-and-white ad. An illustration show the following Nasoya products: Firm Style Tofu, Soft Style Tofu, Marinated and Broiled Tofu, Tofu Burgers, Tempeh, Tempeh Burgers, Fresh Noodles, Wonton Skins, Egg Roll Wrappers, Tofu Vegi Dip (Creamy Dill, Soyannaise, Onion, Creamy Garlic) and Corn Cakes (Blueberry, Cranberry, With Bran). "Nasoya Foods. A commitment to quality."

This ad also appeared in *Soyfoods* magazine (summer, p. 9). Address: P.O. Box 841, Leominster, Massachusetts 01453. Phone: 617-537-0713.

1497. Shurtleff, William. 1984. Soyfoods year in review 1983. Lafayette, California: Soyfoods Center. 2 p. Unpublished typescript.
• ***Summary:*** A month by month chronology of important events in the soyfoods industry from January to December 1983, followed by a summary of important trends. Address: Co-founder and director, Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1498. Soyfoods Assoc. of America. 1984. Soyfoods Pavilion '84. Marketing soyfoods in America (Ad). *Natural Foods Merchandiser.* Jan. 12-page color advertising insert.
• ***Summary:*** Contains large color ads by Legume Inc. (6 frozen tofu entrees), Erewhon, Inc. (shoyu tamari), Vitasoy (USA), Inc. (natural and coconut soy drink, sweetened with maple syrup), San-J International, Inc. (tamari, teriyaki sauce, tamari crackers, teriyaki crackers), Tofu-Time, Inc. (Tofutti "nondairy tofu frozen dessert"), Eden Foods, Inc. (Edensoy soy beverage in plain and carob flavors, retort pouch), and Westbrae Natural Foods (natural ramen in 100% whole-wheat, buckwheat, brown rice, mushroom, seaweed, miso, 5-spice, and curry flavors).

Contains black-and-white ads by Westbrae Natural Foods (shoyu, tamari, and soy sauce), Chico-San, Inc. (imported miso and soysauce), Fantastic Foods, Inc. (tofu burger mix), Penguino's, Inc. (dairy-free frozen dessert), Nasoya Foods (Firm Style Tofu, Soft Style Tofu, Marinated & Broiled Tofu, Tofu Burgers, Tempeh, Tempeh Burgers, Tofu Vegi-Dip [Creamy Dill, Soyannaise, Bleu Cheese, Onion, Creamy Garlic], Corn Cakes [Plain with Bran, Blueberry, Cranberry]; Non-soy products in the "Oriental Cuisine" line include Fresh Noodles, Wonton Skins, Egg Roll Wrappers), Hinode Tofu Co. and Azumaya, Inc. ("The #1 and #2 tofu producers in America").

The only article, whose author is not given, is titled "Soyfoods Pavilion debuts at Natural Foods Expo '84." On the front cover of the insert is a list of members of the Soyfoods Association of America (formed in Feb. 1983) that participated in Natural Foods Expo '84. In addition to the advertisers mentioned above, they include: Farm Foods, Laughing Moon Food Co., Paradise Distributors, Inc., Soyfoods Magazine, Tempeh Works, Inc., and White Wave, Inc. Address: 526 East 20th St., New York, NY 10009.

1499. **Product Name:** Leandro's Meatless Lasagna (Tempeh Blended with Four Cheeses in Whole Wheat Pasta).
Manufacturer's Name: Soyfoods Unlimited, Inc.
Manufacturer's Address: 14670 Doolittle Dr., San Leandro, CA 94577.
Date of Introduction: 1984. January.
Ingredients: Sauce: Crushed tomatoes, tempeh, whole wheat lasagna noodles, onion, water, vegetable oil, white wine, honey, garlic soy sauce, black pepper, basil, oregano. Filling: Ricotta cheese, mozzarella cheese, Romano cheese, Parmesan cheese, egg white, parsley flakes, nutmeg.
Wt/Vol., Packaging, Price: 10 oz vacuum pack.
How Stored: Frozen.
New Product–Documentation: Label. 1984, undated. 2.5 by 4.5 inches. Red, green, and white. "Old fashioned goodness. Single serving." Poster. Two color, with ingredients. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center. Spot in Soyfoods. 1984. Summer. p. 43-44. Spot in Whole Foods. 1984. May. p. 63. Press release. 1984. 2 p. with photo. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 54.

Letter (e-mail) from Valerie Robertson. 2011. Sept. 21. We had Alioto's restaurant in San Francisco make our tempeh lasagna. We took them tempeh that had been ground (in a meat mixer) and seasoned. They put it all together (with whole wheat lasagna noodles) and froze it. It was good.

1500. **Product Name:** Tempeh Burgers [Plain, or Bar-B-Q].
Manufacturer's Name: Turtle Island Soy Dairy.
Manufacturer's Address: 2017 21st Ave., Forest Grove, OR 97116. Phone: 509-493-2004.
Date of Introduction: 1984. January.
Ingredients: Organic soybeans, well water, soy sauce,

1983 – 1984

1982

Living Lightly™

MEATLESS READY TO EAT

TEMPEH PATTIES

INGREDIENTS: SOY TEMPEH [SOYBEANS (ORGANICALLY GROWN IN ACCORDANCE WITH SECTION 26569.11 OF THE CALIFORNIA HEALTH AND SAFETY CODE), WATER, TEMPEH CULTURE (RHIZOPUS OLIGOSPORUS)], NATURAL SOY SAUCE, HERBS, SPICES.

TO SERVE: Ready To Eat. Heat in oiled pan or steam 5 minutes.

NUTRITIONAL INFORMATION: Per 3 oz. Serving

Calories 120 Protein 12 gm. Sodium 443 mg.
Carbohydrates 8 gm. Fat 4 gm. Cholesterol 0 mg.

PERISHABLE—KEEP FROZEN OR REFRIGERATE (AT 40° F UP TO 28 DAYS)

NET WT. 6 OZ. (170 G.)

NOT FRIED! NO CHOLESTEROL!

DIST. BY LIVING LIGHTLY, SAN FRANCISCO, CA 94110

ALL NATURAL
NO CHOLESTEROL

homestyle TEMPEH BURGERS

Steam, pan fry or warm in oven. Serve on bun with favorite garnish. Keep refrigerated or frozen before use.

Ingredients: Organic Soy Tempeh, Tamari, Herbs and Spices.

21ST CENTURY FOODS Inc.
30A Germania Street
Jamaica Plain, MA 02130
(617) 522-7595

NET WT. 7 OZ.

1981

PACIFIC TEMPEH

TEMPEH BURGER

A NATURAL HEARTY MEAL

To Serve: Steam 5-8 minutes in a covered pan with 4 tbls. of water. Create your favorite burger! Ingredients: Soy Tempeh, Water, Shoyu (natural soy sauce), Lemon Juice, Natural Herbs and Spices, Oleic Safflower Oil.

KEEP REFRIGERATED

NET WT. 7 OZ.

PACIFIC TEMPEH, EMERYVILLE, CA 94608

1982

Living Lightly™

Tempehroni Pizza

MADE WITH: Crust (Whole Wheat Flour, Water, Yeast, Sesame Seeds, Salt), Sauce (Tomatoes, Onions, Carrots, Parsley, Soy Oil, Garlic, Green Pepper Spices), Rennetless Mozzarella Cheese, Tempehroni (Soybeans, Brown Rice, Water, Tempeh Culture(Rhizopus Oligosporus), Shoyu Soy Sauce, Herbs, Spices).

To Serve: Remove Wrapper, Warm in 350° F Oven for 20-30 Minutes, So Cheese Melts.

NO PRESERVATIVES-PERISHABLE-KEEP FROZEN

NET WT. 8 OZ.

DIST. BY LIVING LIGHTLY, SAN FRANCISCO, CA 94110

1984

SERVING SUGGESTIONS
1. Preheat oven to 375°F.
2. Remove product from package and place in a baking dish which conforms to product size.
3. Bake 55-60 minutes or until lightly browned.
4. Let cool 5 minutes before consumption.

MICROWAVE OVEN
1. Remove product from container. Place in a non-metallic dish which conforms to product size.
2. Heat for 9 minutes.
3. Let cool 5 minutes before consumption.

Dist. by Soyfoods Unlimited, Inc., San Leandro, CA.

Soyfoods Unlimited

PERISHABLE
KEEP FROZEN UNTIL READY TO USE. IF PRODUCT THAWS, PREPARE PROMPTLY.

Ingredients (Sauce): Crushed Tomatoes, Tempeh, Whole Wheat Lasagna Noodles, Onion, Water, Vegetable Oil, White Wine, Honey, Garlic, Soy Sauce, Black Pepper, Basil, Oregano.

Ingredients (Filling): Ricotta Cheese, Mozzarella Cheese, Romano Cheese, Parmesan Cheese, Egg White, Parsley Flakes, Nutmeg.

Old Fashioned Goodness

Leandro's Meatless Lasagna

Single Serving

Net Wt. 10 oz. (270 g.)

0 79265 14668 6

herbs, spices, apple cider vinegar, rhizopus oligosporus.
Wt/Vol., Packaging, Price: 6 oz package. Retails for $1.79 (Plain), $1.89 (Bar-B-Q).
How Stored: Frozen or refrigerated.
New Product–Documentation: Interview with Seth Tibbott of Turtle Island. 1984. Jan. 17. The burgers are sold vacuum packed.

Soya International. 1990. April/June. p. 24. Contact: Seth Tibbott. Address is now P.O. Box 218, Husum, Washington 98623.

Leaflet. 1992. "Discover Turtle Island." Turtle Island makes 3 types of burgers, with have the registered trademark "Big T Burgers." They are marinated, not fried, and vacuum packed in resealable bags, two patties per pack. "Eat one/save one" and still have a handy "Ziploc" bag when all is done Sold frozen or refrigerated–delicious, ready to eat. Tempeh Burgers are made from the company's own soy tempeh, simmered to perfection in their own herb soy sauce blend. Great as a quick meal. BarBQ Burgers are cooked through and through with Turtle Island's own special barbecue sauce to make them jut right for your grill or microwave.

1501. Burgeson, Travis; Takamine, Kazuhiro. 1984. Making tempeh and tempeh burgers at Pacific Tempeh and Torigoe (Interview). Conducted by William Shurtleff of Soyfoods Center, Feb. 5. 2 p. transcript.
• ***Summary:*** Details of the processes are given.

1502. **Product Name:** Tempeh.
Manufacturer's Name: Cheribon Foods.
Manufacturer's Address: 7223B–101 Ave., Edmonton, ALB, T6A 0H9, Canada.
Date of Introduction: 1984. February.
New Product–Documentation: Letter from Max Pieroelie (or spelling may be Pierolie, or Periolie), tempeh maker. 1985. July 4. They use 50 lb/day of soybeans. He also makes gado-gado sauce. "Items served in Health Foods Cafe in Edmonton: Enchilada tempeh. Tempeh lasagna. Tempeh shepherd's pie. Tempeh curry, and many more."

1503. **Product Name:** Tempeh Burger.
Manufacturer's Name: Cheribon Foods.
Manufacturer's Address: 7223B–101 Ave., Edmonton, ALB, T6A 0H9, Canada. Phone: 403-462-1097.
Date of Introduction: 1984. February.
New Product–Documentation: Letter from Max Pieroelie, tempeh maker. 1985. July 4. They use 50 lb/day of soybeans.

1504. **Product Name:** Breaded Tempeh Cutlets.
Manufacturer's Name: Finger Lakin' Good.
Manufacturer's Address: 103 N. Aurora St., Ithaca, New York. Phone: 607-272-9177.
Date of Introduction: 1984. February.
How Stored: Refrigerated.
New Product–Documentation: Call from J.J. Schultz. 1992. Jan. 28. Bohdan's tempeh company was named Finger Lakin' Good, after the Finger Lakes region of New York. It was in business from 1982 to 1986, making 75 to 100 lb/week of regular soy tempeh and breaded tempeh cutlets. Most of his products were sold fresh at the very large and old Greenstar Food Co-op in Ithaca.

Talk with Bob Bohdan and Joan Tregaskin. 1992. Jan. 31. They introduced these cutlets as a commercial product in early 1984. To make them: Cut fresh tempeh into fingers (sort of like fish sticks), dip them in either beaten egg or arrowroot powder, then bread with bread crumbs and pan fry. These were sold both in the restaurant and outside, mostly at Greenstar Cooperative Market in Ithaca.

1505. Kendig, Joan. 1984. Tempeh: No cholesterol–no fat, can be made to taste like many gourmet foods. *Nutrition Health Review.* Winter. p. 20-21.
• ***Summary:*** An introduction to tempeh with two recipes: Tempeh with mushroom sauce. Stuffed peppers with tempeh. A photo shows Kendig. Address: Vegetus Nutrition Society, P.O. Box 1378, New York City, New York 10156.

1506. *Soyanews* (*Sri Lanka*).1984. The Indonesian art of making soyafoods. 6(6):4-5, 9. Feb. [1 ref]
• ***Summary:*** "Recently the UNDP invited the Soyabean Foods Research Centre in Gannoruwa to send a team of food technicians to study the Indonesian experience. They have now returned to Sri Lanka after a two-month study tour which helped to acquaint them with the home and cottage level processing of soyafoods."

Fermented foods are highly developed and very important in Indonesia. "The only fermented preparation Sri Lankans are perhaps acquainted with is with the making of hoppers, thosai [dosai], and iddli [idli in south India]."

Those who took part in the two-month study course were: Miss Ellen Jayawardene, Miss H.M. Lalitha Padmini, Mrs. J.M.K. Jayaratna, Mrs. K.G.S. Ariyaratna and Mrs. Soma Weerasuriya.

Five large photos show fermented foods being made in Indonesia on a cottage level. The foods are tempeh, tofu, yuba, soya sauce, and a shop that makes both tofu and tempeh. At least one person appears in each photo.

1507. Henningsen, Peter. 1984. Re: Growing soybeans in Nova Scotia. Improving tempeh incubator. Letter to William Shurtleff at Soyfoods Center, March 15. 2 p. Typed, with signature on letterhead.
• ***Summary:*** Peter is working for Wolfgang Furth-Kuby, translating *The Book of Tempeh,* by Shurtleff and Aoyagi, into German. He and his wife now live at exactly 45 degrees north latitude. All of Germany and most of France is far north of their home. "Soybeans are grown commercially in

the Annapolis Valley of Nova Scotia, one of the best areas in Canada for growing apples..." Statistics show that production of pedigreed soybean seed production in Nova Scotia was 17,367 kg in 1979 and 7,167 in 1980.

Peter and his wife live in a very good microclimate in zone 5b. "Our problem here is that the soil keeps very cold long into the spring, and soybeans need fairly warm ground to germinate–otherwise they will hesitate and be overtaken by rot. So I plan to plant my soybeans by the middle of June, which leaves me with 105 or maybe even 120 days before the first frost." The climate of Nova Scotia during the summer gets very hot during the day–very similar to the climate of Brazil in summer.

"By the way, I think you could improve upon [the design of] your small incubators [for making tempeh at home] by putting the heat source at the bottom and using a low-temperature heat source like a mini-greenhouse heating cable (light bulbs give off so much radiant heat that heats only the surface it strikes)." Address: RR#1 Walton, Nova Scotia, Canada B0N 2R0.

1508. Kawarai, Kumiko; Kikuchi, Kyoji; Aoki, Sadao. 1984. Tenpe hakkô katei ni okeru seibun no henka [Change in nutrients during tempeh fermentation]. *Tochigi-ken Miso Shoyu Gijutsu Kaishi* (*Tochigi Prefecture Miso and Shoyu Technical Journal*) No. 34. p. 28-32. March 15. [Jap] Address: Tochigi-ken Shokuhin Kogyo Shidosho.

1509. Sharma, Renu; Sarbhoy, A.K. 1984. Tempeh–A fermented food from soybean. *Current Science* (*Bangalore, India*) 53(6):325-26. March 20. [7 ref]
• ***Summary:*** Summarizes the results of an MSc thesis by Renu Sharma. Good quality tempeh was developed using popular Indian soybean cultivars and *Rhizopus oligosporus*. Address: Div. of Mycology and Plant Pathology, Indian Agricultural Research Inst., New Delhi 110012, India.

1510. Storup, Bernard. 1984. Re: New developments at Société Soy. Letter to William Shurtleff at Soyfoods Center, March 22. 3 p. Typed, with signature on letterhead (photocopy). [Eng]
• ***Summary:*** "A brief history of Société Soy: Oct. 1981–Sept. 1982. Search for a place to settle near Paris, choose and install equipment. The company's first commercial production began in June 1982.

"Oct. 1982–May 1983. Production of tofu (firm for the natural food market and soft for the Japanese community–30,000 Japanese living in Paris); distribution by our own means in Paris only.

"From May 1983. Nationwide distribution of firm tofu–vacuum packed, 24 day shelf-life–and tofuburgers (called 'Croque Tofou') by Paris based distributors (actually, from Rungis, which is the biggest market of its kind in the world, and a key point for fresh products for western Europe).

"We carry 5 types of burgers (see labels), with 26 day shelf-life (we could put 2 months, according to a strict microbiological survey we ran, but prefer to shorten it in order to have a more regular rotation).

"This week have begun a nationwide advertising promotion for 'tonic burgers' (in Paris subway, on the national radio); it is run by a fast food chain that wants to promote a more dietetic way of eating. We make the burgers.

"We should double our production within the next 6 months; We don't really have time to develop new products, at least for this year.

"We are presently making 2,500 kg/week of tofu, including 1,400 kg/week of burgers; one year ago we were making 1,000 kg/week.

"Some news from Europe: Several types of soymilk have recently been put on the market: Lima Soya Drink, Sojal, and Soyo.

"I think the biggest tofu manufacturer in Europe is Vanka-Kawat in Rijswijk, Holland. They sell about 30,000 pieces of tofu (250 gm and 450 gm) per week, mostly for the Asian (Indonesian) community. They also make sprouts and tempeh. They have an automatic plant with only European equipment; there is no way to visit it.

"The French dairy lobby (France is the world's leader in cheese consumption) has recently clearly defined its new priorities: fight by all means against all kinds of substitutes for dairy products–above all soymilk." Address: Société Soy, Plateau de l'Ardennais, 91590 Cerny, France. Phone: (6) 457 52 01.

1511. Caty, Thérèse. 1984. Dossier: Le soja [Dossier on soyfoods in France]. *France Dietetique.* Feb/March. p. 24-31. [Fre]
• ***Summary:*** This extremely interesting article gives an introduction to the various soyfoods, then list all known soyfoods products sold in France, complete with the brand, product name, ingredients, nutritional composition, weight or volume, and packaging. The last half of the paper is a French translation of a paper titled "The American boom in traditional soy products," presented by Richard Leviton on 11 Oct. 1983 at a conference in Parma, Italy.

The following products, manufacturers/marketers (and brands) are listed: 1. Whole soybeans and flour: Lima (Organic soybeans, organic whole soy flour). 2. Textured soya: Charusse, Soyavit. 3. Convenience prepared foods for vegetarians: Pural (Frika Vita, Sojafleisch, Pasta Chuta, Sojavite, Soja Mignon, Sojanelles, Sojanelles épicées), Hera (Croq Meal, Herameal, Végémeal, Potage), Fritini (Aux herbes). 4. Liquid soymilk: Celnat (Soyo), Lima, Pural (Sojlactis), Sapov (Sojal), Provamel (Soya Drink, Soya dessert choco [a pudding, made by Alpro in Belgium]), Naturvit (Soyalet, Soyalet sans sucre). 5. Tofu: Le Bol en Bois (Koya-dofu), Soy (Tofu, Croque Tofu [6 types]). 6. Tempeh: Traditions du Grain. 7. Miso: Celnat (Brown rice

miso imported from Japan, Barley miso), Lima (Hatcho miso, barley miso). 8. Soy sauce: Celnat (Shoyou), Lima (Tamari, Tamari Shoyu). Address: France.

1512. Handy, R.; Mardanus, D. 1984. Menjadi bangsa tempe yang baik [Becoming a good tempeh nation]. *Majalah Promosi.* March. p. 17-19. [Ind]*
• ***Summary:*** Java has 78% of Indonesia's total soybean production and 77% of the total harvested acreage.

1513. Isnijah S.P., Siti; Suharto, Ig.; Yuda M., Adin; Indianti, Tami. 1984. Evaluasi proses panas pada lima jenis olahan tahu dan tempe dalam kaleng [Evaluation of heating on five different processes for canning tofu and tempeh]. Paper presented at Scientific Meeting (Pertemuan Ilmiah) Lembaga Kimia Nasional–LIPI. 24 p. Held March 1984 at Bandung. [Ind]*
Address: Bandung, Indonesia.

1514. Kantha, S. Sri; Erdman, John W., Jr. 1984. The winged bean as an oil and protein source: A review. *J. of the American Oil Chemists' Society* 61(3):515-26. March. [160* ref]
• ***Summary:*** The past 10 years of published literature concerning nutritional studies on and uses of the winged bean are reviewed, including its origin and cultivation, its overall proximate composition, its nutritional value and antinutritional factors, the functional properties of its proteins, and its use in protein based foods (supplemented breads, weaning food products, fermented products, winged bean milk and tofu). Address: Dep. of Food Science, Univ. of Illinois, Urbana.

1515. Leviton, Richard. 1984. Tempeh in America: Selling sizzle, not steak. *Whole Foods.* March. p. 28-29.
• ***Summary:*** "Tempeh–the soyfood with culture, as one manufacturer puts it–has never enjoyed the unremitting publicity, the near celebrity status that has propelled its sister soyfood, tofu, into market prominence since 1976."

According to new statistics compiled by researcher William Shurtleff, director of The Soyfoods Center, there are 53 commercial tempeh makers in the United States and tempeh was the fastest growing soyfood in the USA in 1983.

"Approximately 20 companies represent 90 percent of the total output of tempeh and the top four producers enjoy a 63 percent market share." In 1983, some 1.998 million pounds of tempeh were made in the USA, almost double the amount made in 1981. "Moreover, it appears, the entire (visible) tempeh industry is controlled and staffed by non-Indonesians."

While "tempeh has a strong presence in natural food stores (on the coasts) it is minimally represented in supermarkets." "At least eight brands of pre-cooked brands of tempeh burgers" are available. Address: Editor, Soyfoods Magazine, P.O. Box 511, Encinitas, California 92024.

1516. Pride, Colleen. ed. 1984. Tempeh cookery. Summertown, Tennessee: The Book Publishing Co. 127 p. Illust. by Jeanne Purviance and Greg Lowry. Color plates and photography by Michael Bonickson. Index. March. 26 cm. [10 ref]
• ***Summary:*** A very important tempeh cookbook (see next page). Contents. 90 recipes–1. Dips and appetizers. 2. Salads. 3. Main dishes. 4. Side dishes. 5. Making tempeh at home.

This vegan cookbook contains no recipes calling for eggs or dairy products. Address: Summertown, Tennessee.

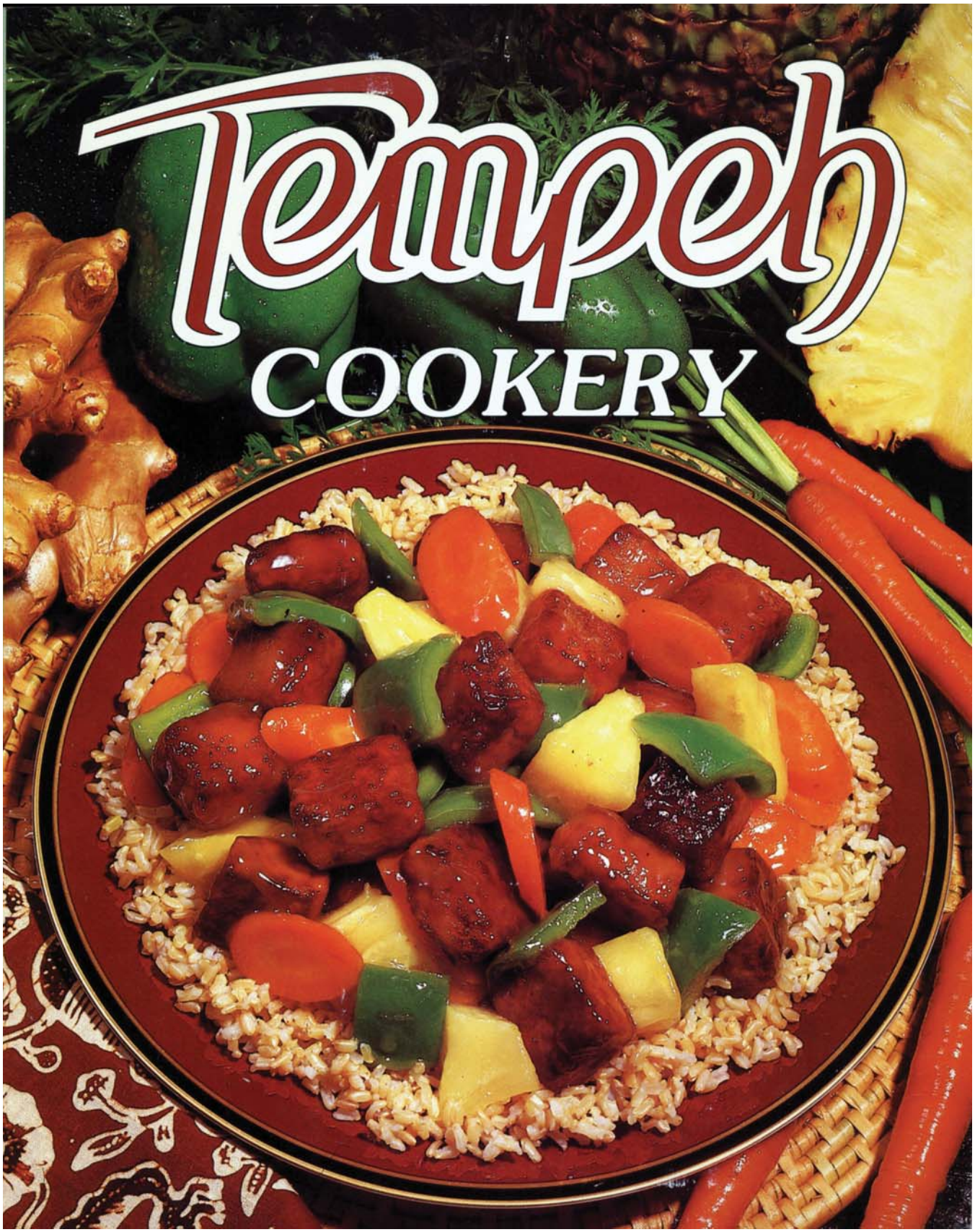
1517. Somaatmadja, Sadikin. 1984. Development of soybean culture in Indonesia. *Tropical Agriculture Research Series* No. 17. p. 23-36. March. International Symposium on Soybean in the Tropics and Subtropics. [3 ref]
• ***Summary:*** Contents: Abstract. Area and production: Share in national food production, national soybean production, producing centers, soybean area. Supply and demand situation: Export and import, future demand and production, utilization. Methods of cultivation: Cropping system, cultivation, pests, diseases and other problems. Research and CRIFC: Research program and activities. Support for soybean production. Further prospects and main constraints. Discussion (questions and answers).

Utilization (p. 28): "1. Side-dish with rice: Tempe (fermented soybean cake), tahu (soybean cake), tauco (soybean paste), tauge (soybean sprout), kecap (soy sauce) and goreng kedelai (fried soybeans). Of these, tempe and tahu are very important in the diet of the people.

"2. Snacks: Roasted soybeans, kerupuk tahu (tahu chips), boiled young soybean pods" [edamame].

Tables: (1) Annual average soybean production during and before PELITA (Five-year development plan, 1964-1981). (2) Soybean production in the last six years, 1977-1982 (East Java, Yogyakarta, Lampung, Central Java, Nusa Tenggara Barat {NTB}, West Java). (3) Soybean production in six [major soybean producing] provinces, 1988-1981. (4) Soybean production in four additional centers, 1977-1981 (D.I. Aceh, N. Sulawesi, Bali, S. Sulawesi). (5) Soybean harvested area, yield and production in sawah (rice fields) and tegalan (dry land), 1979-1981. (6) Export and import of soybean, 1969-1982 (Indonesia was a small exporter until 1977 when exports stopped; imports over 100,000 tonnes began in 1976, and by 1982 had risen to 476,000 tonnes). (7) The estimated demand for soybean and production target, 1983-1988 (Source: Directorate General of Food Crops). (8) The important insects of soybean. (9) Improved soybean varieties. (10) Packages of technology in the intensification and areal [area] expansion programs.

Graphs: (1) Demand, production, and import of soybeans, 1978-1982. (2) Target of soybean area, 1983-1988 (tegalan field area is expected to rise rapidly; sawah field



area will stabilize starting in 1985). A map of Indonesia (p. 31) shows seven research institutes under the Central Research Institute for Food Crops (CRIFC). They are located in Bogor, Sukamandi, and Lembang (W. Java), Sukarami (W. Sumatra), Banjarmasin (S. Kalimantan), Maros (S. Sulawesi), and Malang (E. Java). Address: Central Research Inst. of Food Crops, JL Merdeka 99, Bogor, Indonesia.

1518. **Product Name:** Tempeh Chips.
Manufacturer's Name: Soycraft.
Manufacturer's Address: P.O. Box 420, Woollahra (near Sydney), NSW 2025, Australia. Phone: (02) 32 0716.
Date of Introduction: 1984. March.
Ingredients: Incl. tempeh.
New Product–Documentation: Letter from Ralph and Volli Henderson, founders of Soycraft. 1984. Jan. 17. "Our tempeh cabinets will be ready the first week of next month, however due to limited freeze facilities [freezer space] of the health food retailers, and our need to transport the product inter-state, we will produce the tempeh chips. Local tempeh is made, some in Queensland, some by an Indonesian restaurant, very, very small, servings, and expensive, so much so that local shops are giving up because of consumer reaction to price."

1519. Suzuki, Steven. 1984. Pacific Rim potential for edible soybeans. In: Ontario Soya-Bean Growers' Marketing Board. ed. 1984. Ontario Soybean Symposium. Chatham, Ontario, Canada: OSGMB. 319 p. See p. 224-41.
• ***Summary:*** Soybeans were first exported from Canada about 12 years ago when a Japanese house approached the Ontario Soybean Grower's Marketing Board for a trial shipment to Japan. The trial worked out very well and in a short time Ontario's soybean exports became a multi-million dollar business. Ontario soybeans are very clean, the quality is comparable to Japanese and Chinese soybeans, and the supply is consistent. However the price is high in relation to Chinese and U.S. soybeans. As a result, Ontario soybeans are sold in high-priced markets, as for making premium quality miso or soyamilk. The supply of Chinese soybeans is irregular. Address: Manager, Grain Trading Section, Okura & Co. America Ltd., New York, NY.

1520. **Product Name:** Tempté (Spicy Tempeh Spreads) [Hearty Chili, Hot Curry, or Garlicky Onion-Herb].
Manufacturer's Name: Tempeh Works (The).
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01302.
Date of Introduction: 1984. March.
Ingredients: Hearty Chili: Tempeh, spices, sea salt.
Wt/Vol., Packaging, Price: 7 oz deli container.
How Stored: Refrigerated.
New Product–Documentation: Label, undated. 3 inches diameter. Yellow and brown on white. Spot in Soyfoods. 1984. Summer. p. 44. "Tempting Tempeh." Leaflet. Back to back. 8½ by 11 inches. 2 color. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center. "Tempte. The all natural spicy [tempeh] spreads." In 7.5 oz deli containers, 12 to a case. Shurtleff & Aoyagi. 1985. History of Tempeh. p. 52.

1521. Wang, Hwa L. 1984. Tofu and tempeh as potential protein sources in the Western diet. *J. of the American Oil Chemists' Society* 61(3):528-34. March. [22 ref]
• ***Summary:*** Contents: Abstract (uses the word "soybean foods" several times). Introduction. Traditional soybean foods. Trends in market growth for tofu and tempeh (based on statistics gathered by Shurtleff & Aoyagi of The Soyfoods Center in California, 1983). Tofu. Tempeh.

Traditional soybean foods can be classified as either nonfermented or fermented. Tables show: (1) Oriental nonfermented soybean foods (gives food name, local names, description, uses): Fresh green soybeans (local names: mao-tou, edamame). Soybean sprouts (huang-tou-ya, daizu no moyashi). Soybean milk (tou-chiang). Protein-lipid film (tou-fu-pi, yuba). Soybean curd (tofu, tou-fu, tubu, tahoo, touhu, tau-foo, dou-fu, dau-fu). Soybean flour (tou-fen, kinako) (Wang 1983).

(2) Oriental fermented soybean foods (gives food name, local names, microorganisms used, substrate, nature of product): Soy sauce (local names: chiang-yu, shoyu, toyo, kanjang, ketjap, see-iu). Miso (chiang, doenjang, soybean paste). Hamanatto (tou-shih, tao-si, tao-tjo [sic]). Sufu (fu-ru, fu-ju, tou-fu-ju, bean cake, Chinese cheese). Tempeh (tempe kedelee). Natto.

(3) Tofu industry in the United States (No. of manufacturers and annual production in 1975, 1979, 1981, 1982, and 1983).

(4) Soybean solids and proteins in soybean soak water as affected by soaking conditions (temperature vs. time; Lowry protein / Lowry's protein). (5) Ratio of protein to oil content of tofu and soy milk as affected by protein content of soybeans (for different soybean varieties; the highest ratios come from the varieties Wase-Kogane, Vinton, Toyosuzu, and Coles).

Figures: (1) Flow diagram for the preparation of tofu. (2) Graph: In vitro digestibility of soybean milk as affected by the duration of boiling. Best digestibility is 12-14 minutes. (3) Four graphs: Relationship of concentration and type of coagulant to the yield of tofu. Coagulants are calcium sulfate, calcium chloride, magnesium sulfate, and magnesium chloride. The 4 graphs are: Gross weight of tofu. Moisture content. Total solids recovery. Nitrogen recovery. Calcium sulfate gives the highest values on all four graphs. (4) Four graphs: Relationship of concentration and type of coagulant to the texture characteristics of tofu. Same coagulants. The four graphs are: Hardness. Brittleness. Cohesiveness. Elasticity. (5) Flow diagram for tempeh

fermentation. Address: NRRC, ARS, USDA, Peoria, Illinois 61604.

1522. White Wave Inc. 1984. Order form and list of products. 1990 North 57th Court, Boulder, CO 80301. 1 p. March.
• ***Summary:*** Soyfoods include: Bulk tofu (hard or soft). Packaged tofu (hard or soft). Savory baked tofu. Soysage (1 lb. or ½ lb.). Tempeh burgers (bulk or packaged). Tempeh (soy, soy rice, or five grain). Polar bean (soy ice cream, 1 pint; carob mint, strawberry, chocolate, vanilla, and mocha).

The company also makes various nut and seed butters. Address: Boulder, Colorado. Phone: (303) 443-3470 or 3485.

1523. Randall, Gale. 1984. Update on his work with tempeh (Interview). *SoyaScan Notes*. April 21. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** He first made tempeh commercially in Unadilla, Nebraska. Later he moved to Palmyra. There he worked as a postal employee.

He is still making tempeh, but mostly experimentally in his basement. He sells a little, but not much. he is not satisfied with ways to blanch the tempeh. He is looking for better ways to stabilize and flavor it. And he is studying microbiology. Overall, he is trying to increase the shelf life of his tempeh. Address: Indonesian Tempeh Co., Route 1 Box 146, Palmyra, NE 68418. Phone: 402-780-5634.

1524. Tan, Tjeng Giok. 1984. Early work with tempeh in Canada (Interview). *SoyaScan Notes.* April 22. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Mr. Tan never made tempeh commercially and he does not have a company–though he was involved with tempeh. An acquaintance of his was studying at a university in the United States and he wanted a sample to test for vitamins. Mr. Tan used to make tempeh, but only for himself and friends, starting in about 1968. He does not know of any early Canadian tempeh companies. Address: 324 Apache Trail, Toronto, Ontario, Canada. Phone: 416-491-2328.

1525. Steinkraus, Keith H. 1984. History of his work with tempeh (Interview). Conducted by William Shurtleff of Soyfoods Center, April 27. 2 p. transcript.
• ***Summary:*** First Flora Yap came to do tempeh research at his lab. Then he began working on tempeh with Dr. György in Philadelphia, Pennsylvania. Dr. György had traveled to Indonesia many times and knew tempeh well; he was well aware of the severe malnutrition among Indonesian children, and he felt that tempeh offered a way of improving their diet. But he didn't have the facilities to make tempeh in larger quantities, so Dr. Steinkraus made the tempeh and sent it to Dr. György, who used it in his nutritional studies.

György found that tempeh was much more resistant to the development of rancidity than soybeans. That led to the work with Murata on antioxidants. Many nutritionists believe that rancid food, which contains high levels of peroxides, is quite harmful to consumers.

Then in 1959 Dr. Steinkraus went to Indonesia, mainly to visit the Saridele soymilk plant there which was supported by UNICEF. They were having trouble with the nutritional value of their soymilk. While in Indonesia, Dr. Steinkraus visited some tempeh plants for the first time. Address: New York State Agric. Exp. Station, Geneva, NY 14456.

1526. Steinkraus, Keith H. 1984. Re: Early work with Flora Yap and Tempeh at Geneva, New York. Letters to William Shurtleff at Soyfoods Center, April 30 and May 14. 1 p. each. Typed, with signature on letterhead.
• ***Summary:*** Yap Bwee Hwa of Indonesia obtained her degree in nutrition. At that time Dr. Steinkraus was also a faculty member in the Graduate Field of Nutrition. She did her course work under the direction of Prof. Louise Daniel. She did her research in Dr. Steinkraus' laboratory but the rat feeding experiments were done under the direction of Louise Daniel and Dr. Richard Barnes, formerly Director of the Graduate School of Nutrition.

"Dr. van Veen and I were in contact for a number of years before he left FAO in Rome to come to Cornell University. It is obvious that Flora Yap also had been in contact with Dr. van Veen, perhaps during his trips to Indonesia...

"Perhaps a letter to Ms. Yap at Am Muehlenwaldchen 1A, D-6670 St. Ingbert, West Germany, will give you further information on why Flora came to my laboratory clutching her small bottle of sun-dried tempeh which she used for inoculum. I still have that original bottle of dried ground tempeh... On it was written 'Enzyme Preparation Obtained in Indonesia by Miss Yap.'" Address: Prof. of Microbiology, Dep. of Food Science & Technology, New York State Agric. Exp. Station, P.O. Box 462, Geneva, NY 14456-0462. Phone: 315-787-2276.

1527. Bates, Cynthia. 1984. Re: History of The Farm's work with tempeh. Letter to William Shurtleff at Soyfoods Center, undated. 3 p. Typed, with signature on letterhead.
• ***Summary:*** Alexander [Lyon] and Dianne Darling began experimenting with tempeh in about 1972. Dr. Hesseltine had sent some literature and starter culture on the hunch we would be interested. I did not work at the [Soy] Dairy at this time, but I have been told about this time space by others who did work there then. Alexander was the Dairy straw boss and overview person; he set up the [soy] milk operation and ran it. Dianne mostly worked with the cultures and got into miso for the most part, I was told, but didn't get into tempeh so much because she thought large scale production was not practical. Occasionally she and Alexander would make a small batch of tempeh, enough for the people who worked there to get a taste. Deborah Flowers started working at the

Dairy and liked tempeh, and wanted to turn the Farm onto it. She made a couple of large batches, incubated in the boiler room at the Canning and Freezing plant, that were served for breakfast two different times at our community kitchen; that was the first time I tasted it. Deborah was trying to figure out ways to produce enough spores, a limiting factor along with the lack of an incubator...

"In 1974 I was researching algae for alternative protein sources in human foods and wanted to start an algae farm. I joined the [Soy] Dairy because soy systems looked like a good intermediate step that would accomplish the same ends (i.e. feed more people with less waste). One day we (the Dairy [soy] milk crew, Mary Hubbard, Marsha Ellis, JoAnne Else, and I) made some soy pulp [okara] sausages. Soon after I adopted the project and built an incubator out of an old refrigerator. JoAnne showed me the way the Dairy was currently making spores–inoculating petri dishes of chopped sweet potatoes (sterilized) with cultures in test tubes. Alexander taught me basis lab procedure: transferring cultures with a needle, making agar slants, doing serial dilutions.

"November 1974 is the first recorded batch of tempeh in the Tempeh Shop, but I was not keeping very good records at the time. I made 20-30 pound batches out of soy pulp [okara] for the rest of the year. Alexander [Lyon] scored us the Flour Mill's old bean dryer for an incubator which we used into 1975. At that time Alexander was still the overall manager of the [Soy] Dairy and, although he didn't actually work at the tempeh shop, he would come in and do a project sometimes, be encouraging, give advice. He was the Dairy expediter and teacher. Deborah Heavens and Valerie Epstein both worked at the Tempeh Shop at different times in its first year."

"So far I haven't been able to come up with a documented date on the first printed instructions [for making tempeh]. They were most likely written in 1975 after *The Farm Vegetarian Cookbook* came out, but they may have been published in late 1975 or early 1976."

For a history of The Farm's pioneering work with tempeh to about 1984 see: *History of Tempeh, a Fermented Soyfood from Indonesia,* by William Shurtleff and Akiko Aoyagi (1985). Available on Google Books in full view. Address: The Tempeh Lab., P.O. Box 208, Summertown, Tennessee 38483. Phone: 615/964-2286.

1528. Cusumano, Camille. 1984. Tofu, tempeh, & other soy delights: Enjoying traditional Oriental soyfoods in American-style cuisine. Emmaus, Pennsylvania: Rodale Press. x + 261 p. Illust. Index. April. 23 x 20 cm.
• ***Summary:*** Each chapter on a specific food describes (with illustrations and nutritional information) how to prepare that food at home, followed by many recipes. Contents: 1. The coming age of soyfoods cuisine. 2. Tofu 3. Tempeh. 4. Soymilk. 5. Japanese soyfoods. 6. Whole dry soybeans. 7. Fresh green soybeans. 8. Soy sprouts. 9. Soy flour and soy grits. 10. Soy sauces. 11. The soyfoods pantry.

Scattered throughout the books are 1-page descriptions of various American soyfoods companies, each accompanied by a black-and-white photo. Photos show: Greg Weaver and two other workers at The Lotus Cafe, Rochester, New York (p. 83). Sharon Rose of Brightsong Light Foods, Petaluma, California (p. 142). Steve and Sara Yurman of The Soy Shop, Atlanta, Georgia (p. 169). A craftsman cutting tofu at Tomsun Foods, Greenfield, Massachusetts (p. 195). Toby Alves of Blair Island Natural Foods Restaurant, Eugene, Oregon. A worker making brown rice and tofu sandwiches at Wildwood Natural Foods, Fairfax, California (p. 235). The company is owned by Bill Bramblett, Paul Orbuch, and Frank Rosenmayer.

Note: As of Sept. 1989 some 25,688 copies of this book had been sold by Rodale Press. It was sold out and will not be reprinted. Address: Rodale Press, Emmaus, Pennsylvania.

1529. Jacobs, Susan. 1984. The Cultured Club. Fantastic fermented foods. *Vegetarian Times*. April. p. 44-45, 47-48.
• ***Summary:*** Includes a brief introduction to tempeh, fermented tofu, miso, natto, and soy sauce.

1530. Jayaratna, J.M.K. (Mrs.). 1984. Tempeh–the health food. *Soyanews* (*Sri Lanka*) 6(8):6-7. April. [Eng]
• ***Summary:*** Mrs. Jayaratna, a 49 year old soya cookery demonstrator, is working at the Soyabean Foods Research Centre at Gannoruwa; her favorite soyfood is soya karawala (dried tempeh). A large photo shows her making tempeh in Indonesia.

1531. Ohta, Teruo. 1984. Seijinbyô o fusegu to Amerika de hyôban no Jawa nattô, tenpe [Tempeh, Java natto, prevents geriatric diseases and is popular in America]. *Watashi no Kenko* (*My Health*). April. p. 66-69. [Jap]
Address: National Food Research Inst. (Shokuhin Sogo Kenkyujo), Kannon-dai 2-1-2, Yatabe-machi, Tsukuba-gun, Ibaraki-ken 305, Japan: Bucho, Norin Suisansho.

1532. **Product Name:** [Tempeh Burgers].
Manufacturer's Name: Paul Stuart Zacharowicz. Renamed Vollwert und Wertvoll by June 1984. Later renamed Natuerliche Lebensmittel. Named "Von Anfang an Natur, Paul Stuart's" by Dec. 1992.
Manufacturer's Address: Staudgasse 70, A-1180 Vienna, Austria. Phone: 0222/48 50 03.
Date of Introduction: 1984. April.
New Product–Documentation: Letter (handwritten) from Paul Stuart. 1984. April 9. "I am in the process of expanding my already existing tempeh workshop. We're planning more with soyfoods as well as a soy deli. Currently we supply kilo and half kilo tempeh cakes as well as tempeh burgers. The burgers are our best advertisement. Unfortunately they are labor intensive and costly and not very lucrative." He then

describes his production process in detail.

1533. Shurtleff, William; Aoyagi, Akiko. 1984. Soyfoods industry and market: Directory and databook 1984. 4th ed. Lafayette, California: Soyfoods Center. 203 p. April. 28 cm. [325 ref]
• ***Summary:*** Traditional soyfoods, which include tofu, tempeh, soymilk. miso, soy sprouts, soynuts and soy sauce accounted for $465 million in annual domestic retail sales. High-tech, modern soy protein foods, which include soy flour and grits, soy protein isolates and concentrates, extrusion textured soy flour and meat analogs, totaled $501 million. When the two sectors are tallied together, Americans spent $966 million in 1984 for soyfoods... not including soy oil or exported products. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1534. Soyplant (The). 1984. Pickup distributor price list effective April 16, 1984 and subject to change. Ann Arbor, Michigan. 1 p. 28 cm.
• ***Summary:*** This typewritten sheet lists products made by the Soyplant and their prices: Tofu tubs in milk crates. Tofu tubs in cardboard cases. Spiced tofu tubs. Tempetaco tubs. Temperoni tubs. Tofu bulk. Spiced tofu bulk. Soymilk (plain or flavored). Tempeh (8 oz or 8 lb sheet). Soysage (8 oz, 1 lb). Tempeh burgers (3 per package). Tempeh burgers (bulk, 50 singles). Address: 711 Airport Blvd., Suite #1, Ann Arbor, Michigan 48104. Phone: (313)-663-8638.

1535. Soyplant (The). 1984. Produce co-op price list–Delivered. Effective April 30, 1984 and subject to change. Ann Arbor, Michigan. 1 p. 28 cm.
• ***Summary:*** This typewritten sheet lists products made by the Soyplant and their prices: Tofu bulk. Spiced tofu bulk. Soymilk (plain or flavored). Dofu Gan savory baked [tofu]. Soysage (8 oz). Tempeh (8 oz). Tempeh burgers (3 per package). TempeTaco. Temperoni. Address: 711 Airport Blvd., Suite #1, Ann Arbor, Michigan 48104. Phone: (313)-663-8638.

1536. Tepper, Robert. 1984. Development of commercial tempeh starter and the Tempeh Lab at The Farm in Tennessee (Interview). *SoyaScan Notes.* May 4. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Robert and Cynthia Bates sat down yesterday and tried to work out this history.

Note 1. In about 1974 Alexander Lyon of The Farm sent out 3 pages of "Tempeh instructions." This is the earliest document seen that lists The Farm as a source of tempeh starter.

In 1975 Cynthia Bates set up a little laboratory and began to make powdered, pure-culture tempeh starter for use on the Farm. By 1976 it was being sent out or sold commercially to interested people.

Note 2. By late September 1976 Don Wilson of The San Rafael Farm was making his own tempeh starter, and using to make tempeh which that Farm Soy Deli sold commercially.

In June 1977 H.L. Wang and co-workers of the USDA's Northern Regional Research Center (NRRC) wrote articles for *Organic Gardening and Farming* magazine and listed NRRC as a source of starter. The NRRC was soon overwhelmed with requests for free starter; when she got to where she couldn't handle all the requests, she passed the people's requests to The Farm. By 1978 Cynthia thinks Dr. Wang sent most of the orders she received to The Farm, where Cynthia handled them. In Sept. 1977 another major article on tempeh in *Mother Earth News* said that both split dehulled soybeans and tempeh starter were available from The Farm; orders poured in. Also in 1977 Farm Foods started selling tempeh starter and promoting tempeh to the natural foods industry.

By 1978 Robert was serving tempeh and selling tempeh starter at trade shows.

The question of how Cynthia Bates learned to make tempeh starter that was pure, potent, and reliable remains an unanswered question; she probably learned from Alexander Lyon, from published articles on the subject, and from trial and error. Address: Summertown, Tennessee.

1537. Morris, Linda Lowe. 1984. Popularity of soyfoods keeps cookbook authors busy. *Journal-Gazette* (*Ft. Wayne, Indiana*). May 9. [3 ref]
• ***Summary:*** About Shurtleff & Aoyagi (authors of *The Book of Tofu, The Book of Miso*), Jana Crutchfield (*Tofu–Not Just for the Health of It*), and Juel Anderson (*Tempeh Primer*). Address: Baltimore Sun.

1538. Murata, Kiku. 1984. Re: History of her work with tempeh. Letter to William Shurtleff at Soyfoods Center, May 16–in reply to inquiry. 2 p. Typed, with signature. [Eng]
• ***Summary:*** Her profession is biochemical nutritionist.

One of the first companies to make tempeh in Japan was Marusan-Ai Co., best known as a miso manufacturer (1 Aza Arashita, Niki-cho, Okazaki City, Aichi prefecture, 444-21, Japan. Phone: 0564-45-3111). They started research on tempeh production about 10 years ago. In Feb. 1984, after introduction of tempeh to dieticians, they started to distribute tempeh for the school lunch program. For that purpose they made a pamphlet (which Murata sensei will send to Shurtleff with copies of requested papers). They also started to sell tempeh to caterers. They presently make about 30 metric tons per month of tempeh.

She initially went to Dr. Gyorgy's laboratory to work on the mechanisms of cirrhosis production in animals fed a high sugar diet. Then she gradually got involved with tempeh.

Note: For details see the book *History of Tempeh: A Fermented Soyfood from Indonesia* by Shurtleff and Aoyagi

(1985). Address: Teikoku Women's Univ., 173-6 Thodacho, Moriguchi City, Osaka, Japan. Phone: 06-902-0791.

1539. Yap, Bwee Hwa Flora. 1984. Re: Early history of her work with tempeh. Letter to William Shurtleff at Soyfoods Center, May 17. 2 p. Typed, with signature.
• ***Summary:*** The first Indonesian to do scientific research on tempeh, and to write a post-graduate thesis on the subject was Ms. Yap Bwee Hwa–a Chinese Indonesian, whose name comes from the Hokkian dialect of Fujian (Fukien) province. After graduating from the Fakultet Ilmu Pasti dan Alam (Faculty of Natural Sciences and Mathematics) in Bandung with a major in biochemistry (degree equivalent of MSc), she went to work in Jakarta at the Nutrition Institute under Dr. Poorwo Sudarmo, a progressive physician interested in nutritious, low-cost foods for infants. She then won a Fulbright scholarship to the United States and Sudarmo encouraged her to study tempeh. After reading an article by van Veen on the value of tempeh in prisoner of war camps, she made up her mind. The Fulbright committee suggested that she study at Cornell University, so she wrote Dr. Hand, head of the Department of Food Science and Technology at Cornell's New York State Agricultural Experiment Station. While still in Indonesia, she visited tempeh plants to study the process, collected tempeh from the Jakarta market, then dried it and put it into a little brown bottle for later use as tempeh starter. She left Indonesia for the USA in August 1957. In the summer of 1958 she started to work in Dr. Keith H. Steinkraus' laboratory at Geneva, New York, where, for the first time, she prepared tempeh. This was probably the first tempeh ever made in America. A graduate student in nutrition and food science, Ms. Yap pursued her interest in tempeh as a nutritious food for infants and children, in part because of the high rate of infant mortality in Indonesia caused by undernutrition. In 1960 she wrote her MS thesis titled *Nutritional and Chemical Studies on Tempeh, an Indonesian Soybean Product.* That same year she co-authored the Cornell group's first tempeh publication "Studies on Tempeh–An Indonesian Food" (Steinkraus et al. 1960). It is also interesting to note that it was from the pulverized sample of tempeh that Yap brought with her from Indonesia that the group isolated the culture of *Rhizopus oligosporus,* which Dr. C.W. Hesseltine later identified and gave the number NRRL 2710 (ATCC 22959). This is still the most widely used tempeh culture strain in the USA. Address: Am Muehlenwaeldchen 1A, D-6670 St. Ingbert-Rohrbach, West Germany.

1540. Oda, Lorraine. 1984. Re: Soyfoods in Hawaii. Letter to William Shurtleff at Soyfoods Center, May 22. 1 p. Typed, with signature on letterhead.
Address: Editorial Asst., The Hawaii Herald, 917 Kokea St., Honolulu, Hawaii 96817. Phone: 845-2255.

1541. Torii, Yasuko. 1984. New developments with tempeh in Japan (Interview). Conducted by William Shurtleff of Soyfoods Center, May 25. 4 p. transcript.
• ***Summary:*** This interview, conducted during a visit by Mrs. Torii to Soyfoods Center in Lafayette, California, discusses: Marukin Shokuhin Kogyo in Kumamoto city, Japan, Mr. Goro Kanasugi, the recent start of production of tempeh starter in Japan, tempeh made by Takashin / Takato, René Breuls, sales outlets for tempeh in Japan, Marusan-Ai in Okazaki, update on Torigoe, soybeans in Indonesia, symposium at Tsukuba (Japan) on tempeh and natto, Japan Tempeh Research Society (*Tenpe Kenkyukai,* Korin Shuppan KK, Iriya 1-27-4, Taito-ku, Tokyo), Okinawa fermented tofu (*tofu-yo*), Yamagata no Shojin Bushi (dried tofu that is shaved like katsuobushi). Address: Kamitsuchidana 324, Ayase-shi, Kanagawa-ken 252, Japan. Phone: 0467-76-0811.

1542. Kawai, Naoki. 1984. Re: History of Marusan-Ai's work with tempeh. Letter to William Shurtleff at Soyfoods Center, May 30. 2 p. Handwritten, without signature. [Jap; eng+]
Address: Manager, Development Section, Marusan-Ai Co. Ltd., 1 Arashita, Niki-cho, (P.O. Box 444-21), Okazaki-shi, Aichi-ken 444-21, Japan. Phone: 0564-45-3111.

1543. Soyfoods Center. 1984. Tempeh (color slide show). P.O. Box 234, Lafayette, CA 94549. 75 slides. Narration with each set.
• ***Summary:*** Slide show (#4). 1. The Soyfoods Center Presents... 2. Tempeh is a delicious high-protein fermented or cultured soyfood. Sold in 3/4-inch thick cakes and usually deep or shallow-fried until crisp and golden brown, tempeh has a flavor and texture resembling those of southern-fried chicken or fish sticks. For centuries a backbone of the Indonesian diet, tempeh is prepared fresh each morning at some 41,000 shops on Java alone. 3. Tempeh is increasingly available at reasonable prices throughout the United States, especially at natural or health food stores, or at Indonesian specialty shops. Tempeh is an excellent source of nutrients, containing 50 percent more protein than hamburger and completely free of cholesterol; it is also the world's richest known source of vegetarian vitamin B-12. Like all soyfoods, tempeh is rich in lysine, the essential amino acid in shortest supply in most cereal grains. Serving tempeh and grain at the same meal boosts the amount of usable protein by up to 40 percent. 4. Tempeh has many virtues. 5. It promises to be an important part of meatless diets and of the new emerging American cuisine.

6. A typical package of tempeh. 7. There are various types of tempeh. 8. Here is a kit for making tempeh at home; it contains everything you will need. 9. Tempeh at a market in Bali, Indonesia. 10. Different sized packages of tempeh in Indonesia; made and sold wrapped in banana leaves.

11. Tempeh sold in a market place in Java. On the left is

tofu simmered in turmeric, a natural preservative. 12. Now let's learn how to make tempeh at home. The soybeans can be dehulled either wet or dry. We prefer wet dehulling. But this is how it is done dry. For best results with dry dehulling, preheat the soybeans at 250ºF in an oven for 10 minutes, or just until the hulls split. 13. Tempeh is easily made at home. Begin by combining 2½ cups soybeans with 7½ cups water in a large pot. 14. Bring just to a boil. 15. Then remove from heat, cover, and allow to stand for 8 to 16 hours.

16. Carefully pour off water from pot then vigorously rub beans between the palms of both hands for 3 to 4 minutes to remove hulls. 17. Then pour off hulls into a strainer. Repeat this process several times until all the beans are dehulled. 18. To the drained beans in the pot add 10 cups (hot) water and 1½ tablespoons vinegar. 19. Bring to a boil and cook, uncovered, for 45 minutes, then pour contents of pot into a large colander and allow beans to drain well. 20. Then allow beans to dry for 20 to 30 minutes on a double layer of absorbent toweling.

21. To make the container for incubation you can use Ziploc bags, baking pans, pie tins, etc. We prefer Ziploc bags. Take two 7-by-8-inch polyethylene bags and, using an ice pick, make holes in a grid pattern every ½ inch. 22. When the soybeans have cooled to body temperature and are well dried, transfer them to a separate clean tray for inoculation. 23. Now we are ready to inoculate them. The inoculum, tempeh starter, is available from The Farm in Tennessee or from Organic Gardening magazine. Once you buy one small packet you can make more of your own, using illustrated instructions in our book of tempeh. To inoculate, simply take 1 teaspoon of starter, sprinkle it over the beans... 24. And mix well. 25. Then spoon half of the inoculated beans into each of the two perforated bags.

26. Flatten each bag to a thickness of ½ to 3/4 inch. 27. Then place bags in an incubator. This incubator is made from a Styrofoam cooler or picnic basket heated by a 20-watt electric bulb regulated by an aquarium or chick brooder thermostat. A water heater room or any other place as warm as 86ºF (30ºC) can serve as an incubator. 28. Incubate the tempeh at 86 to 88ºF for 22 to 26 hours. When done, the beans should be bound together firmly into fragrant white cakes. 29. A large cake of finished tempeh and tempeh in burger rounds made in yogurt containers. 30. Here is an incubator made from two cardboard boxes, the space between the larger and the smaller being filled with batting for insulation. Note the perforated rack on which the tempeh is placed.

31. Good tempeh looks like this when sliced. 32. Tempeh is as versatile and delicious as it is nutritious and inexpensive. Most of the tempeh in Indonesia is served deep-fried or shallow-fried to give it a crisp texture and savory flavor. Here tempeh is being shallow fried to make crisp tempeh chips. 33. Crisp tempeh chips with creamy tofu dip. 34. Tofu burger. 35. Tofu burgers (open faced) made with round tempeh patties.

36. Some people like to grill their burgers first with a miso sauce. 37. Label of tempeh patties. 38. TLT; Tempeh, Lettuce & Tomato Sandwich. 39. Tempeh Sloppy Joe. 40. Canning Tempeh Sloppy Joe.

41. Tempeh burritos or tacos. 42. Tempeh in pita bread. 43. Tempeh Guacamole and Crisp Tempeh Bits on tortillas. 44. Breaded Tempeh Cutlets or Croquettes. 45. Tempeh Lumpia, a Filipino dish.

46. Tempeh Gyoza or Egg Rolls. 47. Tempeh Felafels; Temptations. 48. Tempeh is delicious simmered in coconut milk with herbs and spices. The milk is easily made at home in a blender as described in *The Book of Tempeh.* 49. Simply pour the mixture of coconut pulverized with hot water into a strainer and press out the coconut milk with your fingertips. 50. Tempeh starter can also be made at home. Here is a method for growing it on soybeans and sifting off the spores. 50A. It can also be grown on pressure cooked white rice, cooked in a Mason jar.

51. Now to Indonesia. A sketch of a large Indonesian tempeh shop. 52. In a few areas, tempeh is incubated packed in bamboo halves. 53. Close-up. 54. Carrying the tempeh to market. 55. Indonesian tempeh wrapped in banana leaves and polyethylene bags.

56. Tempeh in small packets wrapped with banana leaves in the Yogyakarta market, May 1977. 57. Close-up. 58. Here is a wife cooking tempeh in a typical village kitchen. 59. Thin tempeh slices at the marketplace are dipped in a batter of spiced coconut milk and rice flour, then deep-fried to make tempeh chips. 60. Here are tempeh cutlets, seasonings, and chips.

61. Other ready-to-eat tempeh items in a West Javanese market. 62. Tempeh chips in a marketplace in Yogyakarta, Java. 63. Making grilled tempeh on skewers like shish kebab over a home barbecue. 64. Making Sate, a similar skewered delicacy with a wonderful dipping sauce, sold here by a street vendor. 65. Javanese markets are a festival of colors. Most tempeh cuisine includes a load of blazing hot chilies...

66... which are ground by hand in stone mortars for use in sauces. 67. Like most traditional societies, Indonesia has a grain-centered diet. The colors of natural grains and beans in the markets are a feast for the eyes. 68. In Indonesia the remarkable winged bean is also made into tempeh; or it can be made into tofu or deep-fried tofu. 69. A close relative of tempeh is onchom, which is usually made from peanut presscake or okara with a Neurospora mold. It is sold in cakes in the markets of West Java. 70... and may have a distinctive orange color from the mycelium.

71. To make onchom, steamed peanut presscake is packed into molds, 72. Inoculated with onchom from a previous fermentation, 73. Placed in an incubator where it generates its own heat from fermentation, 74. And looks like this when it is finished. Address: Lafayette, California.

1544. Soyfoods Center. 1984. Tempeh production in the USA (color slide show). P.O. Box 234, Lafayette, CA 94549. 77 slides. Narration with each set.
• ***Summary:*** Slide show (#5). A. The Soyfoods Center presents... B. Basic types of tempeh shops. C. Temperate climate dry dehull tempeh method. D. Temperate climate wet dehull tempeh method.

1. This sequence shows The Tempeh Works in Greenfield, Massachusetts, April 1980. The soybeans are dry dehulled without preheating or pre-grading. 2. Overview of the shop interior. 3. Ditto, with soaking vats in use. 4. Cooking soybeans in a steam-jacketed cooker. 5. Skimming off the hulls. 6. Running soybeans from cooker into sack in centrifuge. 7. Beans in sack in centrifuge. 8. Preparing to centrifuge beans. 9. Transferring centrifuges soybeans into inoculation container. 10. Inoculating the soybeans.

11. Mixing in inoculum by hand. 12. Scooping inoculated beans into pre-perforated polyethylene bags. 13. Weighing bags. 14. Another view of filling area. 15. Heat-sealing the bags. 16. Compacting beans and flattening bags. 17. Transferring bags on rolling rack into incubation room. 18. Bags on racks in incubation room. 19. Pressure steaming tempeh in bags; tempeh is distributed refrigerated, not frozen. 20. Wall mounted sanitation unit.

21. Making tempeh at Island Spring in Vashon, Washington state. The weighed soybeans are transferred into a used (inoperative) steam jacketed kettle used as a wash and rinse tank. 22. After washing and rinsing (but without soaking), the beans are dehulled in a tofu shop stone mill. 23. Then cooked and skim-dehulled in a steam jacketed kettle. 24. After being drained in the screen-bottom kettle, they are dewatered in a centrifuge. 25. Then put in a mixer with inoculum and mixed well. 26. The inoculated beans are placed 8 ounces at a time in polyethylene tofu tubs, packed by hand with a tamp.

27. Then placed on trays in a rolling rack in the tubs. 28. The mouth of each tub is covered with plastic film using a tofu packaging machine, perforated with an attachment on the machine. 29. As shown here. 30. The tubs filled with inoculated beans are placed on trays in a rolling rack and rolled into an 8-foot-cube incubation room. 31. After incubation the perforated top of each tub is covered with a label to close the perforations. 32. The finished tempeh and its package look like this.

33. Now we will visit Surata Soyfoods in Eugene, Oregon. The tempeh maker is Benjamin Hills. The soy beans are precooked in a large pot over a gas burner. 34. Then dehulled in a tofu shop stone mill. 35. After a second cooking they are drained in the pressing sack of a tofu hydraulic press, then pressed to dewater them. 36. Inoculated with starter. 37. Mixed well by hand. 38. Scooped in 8-ounce quantities into perforated Ziploc-type bags. 39. Which are placed on bread racks. 40. And incubated in a large incubation room. 40A. Examining the finished tempeh. 40B. Freezing the tempeh for long distance distribution.

41. Tempeh Enterprises in Toronto, Ontario. The soaked beans are dehulled in a meat grinder with a special extruder blade attachment. 42. The cooker, specially designed, places the cooking pot on the stove then carries it later to the draining sink. 43. The hulls are skimmed off during cooking. 44. Ziploc-type bags are perforated using a sharpened screwdriver and a special grid set over an opened drawer.

45. The beans are weighed into perforated bags in 16-ounce quantities. 46. Tamped firm. 47. And placed overhead on racks in an incubation room. 48. Each cake is cut into fourths. 49. For freezing, the cakes are placed between perforated racks to ensure air circulation. 50. These Coleman refrigerators, used to distributed refrigerated or frozen tempeh, plug into the cigarette lighter of a car.

51. At Northern Soy in Rochester, New York, the tempeh is frozen on these racks. 52. Finished tempeh made in a metal tray, from The Tempeh Works. 53. Tray tempeh being cut. 54. Freezing this tempeh. 55. A low-technology dry dehuller developed at the University of Illinois. 56. Another view. 57. Gale Randall's home tempeh incubator in Nebraska. 58. Bag tempeh. 59. Tray tempeh.

60. Making tempeh starter at Island Spring. A positive pressure hood with the hood down. 61. Inoculating rice (already pressure cooked in a Mason jar) under the hood. 62. Overview of positive pressure hood. 63. Pulverizing the starter in a blender. 64. Drawings of Rhizopus oligosporus by the Japanese scientist, Kendo SAITO, who named it in 1905. 65. The Rhizopus mycelium. 66. The Rhizopus sporangia. 67. Rhizopus after sporulation.

68. Living tempeh starter, made by GEM Cultures on nutrient agar in a petri dish. 69. Method for doing a viable spore count on tempeh starter (or transferring a pure culture). Pipetting a spore suspension or dilution into petri dish. 70. Adding nutrient agar. 71. Shaking all together. Address: Lafayette, California.

1545. Soyfoods Center. 1984. Tempeh production in Indonesia USA (color slide show). P.O. Box 234, Lafayette, CA 94549. 72 slides. Narration with each set.
• ***Summary:*** Slide show (#6). 1. The following slides show the production of tempeh in Indonesia in a number of different shops using different technologies, methods, and scales of production. Here we see a very large shop, the Oeben shop in Bandung, West Java, which uses 660 pounds of dry soybeans daily. First, water is brought to a boil in large caldrons. 2. Then poured into wooden vats containing washed soybeans. 3. The soybeans are soaked overnight in the warm water. There they undergo a prefermentation, which lowers the pH and causes foaming. 4. The soak water is discarded and the beans drained in woven bamboo baskets. 5. Then they are treaded underfoot to remove the hulls, which are floated off in a tank. 6. The beans are transferred back into the caldron and simmered or steamed for 1½ to 2

hours.

7. Again they are well drained. 8. And a weight is put on top to help expel excess water. 9. After about 30 minutes they are transferred to a large cooling tray, and cooled with a fan. 10. Tapioca is sprinkled on in this shop to serve as an energy source for the starter and to help reduce the moisture content. 11. The inoculum consists of soybeans which have been inoculated and allowed to sporulate between hibiscus leaves (we will see the process shortly). The leaves are pulled apart and their surfaces rubbed over the warm soybeans; the spores come off and inoculate the beans. 12. The inoculated beans are then poured into shallow trays lined with perforated plastic. 13. Leveled and smoothed.

14. Stacked and covered on top to form a sort of incubator, the heat being generated by the fermentation process. 15. After about 8 hours of incubation in this way, the trays are unstacked and placed in incubation racks. Here they are left to incubate for 14 hours. 16. Then each tray is inverted leaving the plastic-wrapped tempeh resting on the bottom of an empty tray. 17. Here they are allowed to stand for about 17 hours more, or a total of 39 hours. 18. At about midnight, each pallet of tempeh is cut into cakes and sold.

19. The same shop also incubates about half of its tempeh in small perforated plastic bags. 20. To make the typical Indonesian tempeh inoculum, inoculated soybeans are placed about 20 to 30 on the fuzzy underside of hibiscus leaves, which are placed together like sandwich halves and stacked 4 to 6 layers deep in trays lined with perforated plastic sheeting. 21. Several trays are covered with cloth while they incubate for 3 to 4 days until the mold sporulates. 22. The leaves are then uncovered and allowed to dry. 23. Just before inoculating the next batch of soybeans, the leaf sandwich is opened, revealing the sporulated mold.

24. A modern stone mill dehuller. 25. A simple machine for dehulling and hull separation.

26. In this next small shop in West Java, the beans are dehulled by rubbing between the hands. 27. And the hulls poured off. 28. They are incubated in plastic bags, which are first stacked and perforated many at once with an ice pick. 29. Inoculated beans are poured into each bag. 30. The bags flattened. 31. Then arranged on long incubation shelves. 32. Which are put into racks. 33. Or under the rafters and incubated at room temperature for about 48 hours. 34. Midway through the fermentation, each bag is inverted and patted to compact the beans. 35. At the same shop, some of the inoculated beans are incubated inside long tubes of banana leaves joined together by wooden pins. 36. The finished tempeh is carried to market to be sold by children. 37. Or elders.

38. In this small but typical shop in Bali the soybeans are cooked in a drum-can caldron. 39. Treaded underfoot by the riverside to loosen the hulls. 40. Which are poured off first. 41. Then completely floated away by the river current. 42. After the second cooking, the beans are inoculated with homemade hibiscus leaf starter. 43. Scooped into plastic bags. 44. And incubated under the eaves, outdoors, for about 48 hours. 45. The next morning the craftsmen puts his tempeh and his neighbor's tofu in cans on the back of his bicycle. 46. And is off to market.

47. Now lets look at a large modern Indonesian shop, Tempeh Murni, in Yogyakarta (in special region near East Java). Here is Mr. Murni and his soybean granary. 48. The soaked beans are carefully washed and any stones removed by hand. 49. Then they are cooked in large caldrons. 50. And dehulled in this homemade stone mill rather than by foot. 51. The hulls are floated off by hand on shallow bamboo trays in barrels of water. 52. A delicate process.

53. Inoculation takes place again with hibiscus leaf inoculum on large bamboo trays. 54. Small portions of beans are wrapped in banana leaves. 55. And incubated in racks. 56. In some west Javanese shops the beans are wrapped in long portions in banana leaves. 57. And in food technology laboratories new dehullers are being developed, which both remove the hulls and float them off.

58. The aristocrat of Indonesian tempehs is Malang Tempeh, made in the city of Malang, East Java. In many areas there are tempeh cooperatives and the beans are dehulled by treading them underfoot in bamboo baskets in communal ponds. Then they are recooked and cooled in bamboo trays. 59. The hibiscus leaf inoculum rubbed in. 60. Banana leaves are perforated. 61. And used to line large tables. 62. A unique method. 63. Inoculated beans are poured onto the tables. 64. And smoothed.

65. To form a layer the depth of the middle finger up to the knuckle, about 1¼ inches, which is much thicker than most tempeh 66. The layer of beans is then covered with perforated banana leaves. 67. And the leaves weighted with bricks to compact the beans and hold in the heat. 68. After a 48-hour fermentation, the tempeh is cut at a slant into cakes. 69. Which look like this. 70. These are placed in boxes. 71. And taken to the market to be sold. Address: Lafayette, California.

1546. **Product Name:** Tempeh.
Manufacturer's Name: Tempeh Foods.
Manufacturer's Address: 30 Greyfriars Road, Ipswich, Suffolk IPl 1UP, England.
Date of Introduction: 1984. May.
Ingredients: Soya beans, Rhizopus oligosporus culture, rice flour.
Wt/Vol., Packaging, Price: 8 oz (227 gm).
How Stored: Frozen.
Nutrition: Per 100 gm (3.5 oz). Calories 157, Protein 19.5%, fat 7.5%, carbohydrates (incl. fiber) 9.9%, calcium 142 mg, phosphorus 240 mg, iron 5 mg, vitamin B-1 0.28 mg, vitamin B-2 0.65 mg, niacin 2.52 mg.
New Product–Documentation: Leah Leneman. 1985. The Vegetarian. July/Aug. p. 23. "Tomorrow's Food." "The first

company to manufacture tempeh on a large scale [in the UK] is *Tempeh Foods* (30 Greyfriars Road, Ipswich, Suffolk, IP1 1UP). They only started trading officially last June, but their tempeh is already being distributed by The Regular Tempeh Company, and by wholesalers in London, Middlesex and Lancashire."

Label. "Best before 15 Jan. 1988." 8.5 by 4 inches. Black on tan paper. "Gluten free. No cholesterol. High protein. No preservatives." The company address is given as Unit 1, Cowslip Farm, Witnesham, Ipswich, Suffolk, England. On back of label are 5 recipes plus promotion for The Book of Tempeh. Letter from Simon Bailey. 1988. Oct. 10. This company is now owned by Fruits of the Earth (a co-operative), same address. Phone: 0473-211282. Contact Sue or April.

L. Leneman. 1988. Soya Foods Cookery. p. 86. Tempeh Foods in Ipswich makes tempeh and distributes it to a number of health food stores in England.

Form filled out by Graham Lanman and Jennie Greenhalgh. 1989 or 1990. They are in charge of Tempeh Foods at Unit 1, Cowslip Farm, Witnesham, Ipswich, Suffolk, England. Phone: (Ipswitch) 213114. They opened in May 1984, and today make approximately 500 8-oz. packs of frozen tempeh per week.

Talk with (call from), followed by a letter, from Tom Wells, now a partner/owner with Louise Tonkin of Tempeh Foods in West Wales. 1992. June 26 and July 22. The company has changed hands. "The former owners were Graham Lanman and Jennie Greenhalgh, who started the company in Ipswich in about 1984, but they stopped making tempeh several years ago. This was the company referred to by Leah Leneman. When they gave up, Friends of the Earth in Ipswich took over, trading under the name of 'Fruits of the Earth,' but they never really got off the ground. The equipment and name then passed to another person (name unknown) in Ipswich; he was already connected with the food business in some way, but he too never got going. Graham and Jenny then 'repossessed' their equipment when they heard that Stephen Bowles, a long time friend of theirs from Ipswich, wanted to take up the reins in West Wales; and so in late 1989 or early 1990 they brought it all over to him, including a large amount of paperwork. Stephen was offered a small workshop at Felin Geri, which is a 16th century flour mill (felin = mill) that operates as a tourist attraction. He paid only a low rent in exchange for converting it. He made a fine job of the conversion, but by the spring of 1991 he was running out of steam and money and hadn't really got going on the production side. I met Steve through a mutual friend and as Louise and I wanted to get out of London, and pursue something worthwhile, and Steve wanted to do a teacher training course, we agreed to take over. Louise and I started production in Wales in Oct. 1991." Encouraged by success, they are planning to move into a new building.

Letter from Andy McAuley of The Soya Dairy. 1992. Nov. 6. While working at Fruits of the Earth, Dave Carless had run a small scale tempeh kitchen for about 3 years under the name of Tempeh Foods. Davy and Andy later co-founded The Soya Dairy in Sheffield. Dave taught Andy how to make tempeh.

1547. **Product Name:** Tempeh, and Okara Tempeh.
Manufacturer's Name: Traditional Foods Cooperative.
Manufacturer's Address: Route 1, Gays Mills, WI 54631.
Date of Introduction: 1984. May.
How Stored: Refrigerated.
New Product–Documentation: Talk with Liz Coleman of Traditional Foods. 1991. Nov. 25. This company was started as a home business by Bob Mandel and Cindy Wiar. They used to make tempeh, but it was not profitable. The company is now located in a bakery at P.O. Box 92 (Corner of Grove and North Railroad Streets), Gays Mills, WI 54631. Phone: 608-735-4711.

Talk with Mary Ruth of Traditional Foods. 1991. Nov. 25. Bob Mandel and Cindy Wiar started making and selling tofu, then tempeh out of their home, which was located just outside of Gays Mills. They only sold the foods through their local co-op, The Kickapoo Exchange, in the little rural town of Gays Mills. In April 1989 Traditional Foods was formally incorporated into a cooperative (a legal form of corporation in Wisconsin) with the same name. Bob and Cindy put up a sign at the local co-op (where Cindy was manager) inviting interested people to a meeting; a group of co-op members formed and began to have meetings. Then, in Sept. 1989, the group found and bought a local commercial bakery named Wheat Heart Bakery, and moved the business out of Bob and Cindy's home into the bakery. Before this time, tempeh and tofu had been discontinued.

Talk with Cindy Wiar. 1991. Nov. 25 and 28, then 1992. Jan. 12. She and Bob started in about April 1984 making tofu at their home located on Route 1 outside of Gays Mills. They didn't have a phone, and they had no business name until the fall of 1986, when they started making tempeh and seitan. At that time they started calling their business "Traditional Foods" but it was not official or incorporated. They learned how to make the tempeh from books by Shurtleff and Aoyagi. They made both regular and okara tempeh, which they initially sold mostly at one co-op in Madison, Wisconsin. They phased out tempeh in the summer of 1989, after the new cooperative had been formed, because of their very low profit margins and time pressures to make the more profitable seitan and miso–which were being sold to warehouses and larger places. They intended to continue the tofu and tempeh later, but it has not yet happened.

Cindy is no longer associated with Traditional Foods; Bob works there 1 day a week making koji. After Bob passes on his knowledge of making koji, he plans to leave too. He now works the rest of the time on other people's farms. It was their dream to form a cooperative making these foods,

but it didn't work out. The quality of the foods declined and the other members of the cooperative often just wanted a job, rather wanting to be owners of the business. There were endless problems and meetings. Cindy and Bob were put in a position of being the bosses, which they didn't want to be. By the summer of 1991 they realized they wanted to get out–but it still hurts.

Talk with Bob Mandel. 1992. Jan. 11. In the fall of 1986 he and Cindy started to make and sell tempeh and seitan from their home in Gays Mills. They also sold a little tempeh and seitan in Madison, which is a college town with a lot of health food stores. In Dec. 1988 there was meeting called to establish a co-op. In April 1989 they incorporated as a co-operative. In Aug. 1989 they purchased a commercial bakery. The original plan was to start making tempeh (to get initial cash flow) in the new building, and to develop a line of miso products. But the person who was supposed to make the tempeh was never able to–so they found themselves in a bind. Therefore in about Feb. 1990 they started to make seitan again. To get things started, Traditional Foods sold their products to the co-ops in Madison. The co-ops asked North Farm Co-op (a natural foods wholesaler and distributor) to starting distributing Traditional Foods products; North Farm became Traditional Foods' first distributor in Feb. 1990–distributing to co-ops, other retail stores, and buying clubs. Soon Blooming Prairie was also distributing Traditional Foods' products, especially west of the Mississippi to buying clubs. in Feb. 1990. Today the company makes seitan (packaged and in bulk) and 3 types of miso.

1548. Yamanaka, Mitsuaki. 1984. Re: The work of Takashin Ltd. with tempeh in Japan. Letter to William Shurtleff at Soyfoods Center, May. 3 p. [Jap]
• ***Summary:*** Our company, Takashin, Ltd. (*Takashin Shokuhin*) is a member of the Japanese National Natto Association (*Zenkoku Natto Kyôdô Kumiai Rengokai*). In early 1983, with director Ose's announcement of *Tempe Gannen* (The First Year of Tempeh) we started basic research on tempeh production and on second generation tempeh products–with other members in full force. From the beginning of 1984, under the leadership of our president Makito Takato, we are making progress on marketing and commercialization. We are also consulting with Oita-sensei, the top tempeh researcher in Japan, from the Ministry of Agriculture and Forestry Research Center (*Nosui-sho Shokuhin Sôgo Kenkyû-sho*).

We are now preparing to build a tempeh plant, with tempeh-making equipment, in order to make consistently good quality tempeh at low price for the market.

To answer your questions: 1. In April 1983 our president attended the Association meeting. Since then we have been doing research on tempeh. As a new fermented food in Japan, tempeh appealed to our president's progressive nature. We believe it has many advantages over natto.

2. July 1983. Right after Mr. Kanasuki / Kanasugi of the association returned from Indonesia, we invited him to our company and asked him to teach us how to make tempeh. In Sept. 1983 we started to sell hamburger with tempeh.

3. We are making and selling both tempeh (40 kg/day) and second-generation tempeh foods (20 kg/day)–such as hamburger, croquettes, cutlets, etc.

4. Monthly production is 1,500 kg.

7. We are selling or tempeh and tempeh products through natural foods restaurants and natural foods stores. We tried to test market our products in regular food stores but it didn't sell well because of lack of promotion and publicity. Address: Tachibana 1-29-2, Sumida-ku, Tokyo 131, Japan.. Phone: 048-644-1323.

1549. Schipper, M.A.A. 1984. A revision of the genus *Rhizopus.* I. The Rhizopus stolonifer group and Rhizopus oryzae. *Studies in Mycology* No. 25. p. 1-19. June 1. [42 ref]
• ***Summary:*** "The genus *Rhizopus* Ehrenb. is revised, mainly using the strains maintained in the CBS culture collection. In the *Rh. stolonifer* group only 2 species are maintained, both with several varieties. The variable species *Rh. oryzae* is described. Numerous older taxa are treated as synonyms. Keys to the accepted taxa are provided.

"The genus *Rhizopus* Ehrenberg (1820) was based on *Rhizopus nigricans,* an incorrect name change for *Mucor stolonifer,* which was earlier described by Ehrenberg (1818)."

"The early history of the genus was first reviewed by Zimmermann (1871)... Well known treatments of the genus are those of Lendner (1908), Hanzawa (1915), Zycha (1935), Zycha et al. (1969), Naumov (1935/1939) and Inui et al. (1965)." Address: Centraalbureau voor Schimmelcultures, Baarn, Netherlands.

1550. Schipper, M.A.A.; Stalpers, J.A. 1984. A revision of the genus *Rhizopus.* II. The Rhizopus microsporus group. *Studies in Mycology* No. 25. p. 20-34. June 1. [11 ref]
• ***Summary:*** "The complex around *Rhizopus microsporus* has been revised. Two species are recognized, viz. *Rh. homothallicus* and *Rh. microsporus,* the latter with 3 additional varieties: var. *chinensis,* var. *oligosporus* and var. *rhizopodiformis.*"

"In addition to this apparent continuum in patterns of ornamentation, another type is found in *Rh. microsporus* var. *oligosporus.* This type is derived from the above but not well developed; we consider it to be rudimental or degenerate. The spores are often more or less collapsed with recognizable ridges which are rarely entire, largely consisting of rows of warts." Address: Centraalbureau voor Schimmelcultures, Baarn, Netherlands.

1551. Hansen, Barbara. 1984. Tofu. *Los Angeles Times.* June 7. Food section (Part VIII). p. 1, 9, 12, 14. Thursday.

• ***Summary:*** Don Bushman, American Soybean Assoc. director in Singapore, notes that the Asian soybean market is growing rapidly. "Indonesians consume about 1 million tons of soybeans annually, 60% to 65% of them in the form of tofu, and 35% to 40% as *tempe.* The fifth-largest nation in the world in terms of population, Indonesia imports 400,000 tons of soybeans a year, about 90% of them from the United States. Some 25,000 to 30,000 tons of soybeans are used annually for food in Malaysia, and 15,000 to 20,000 tons are imported to Singapore for food use, Bushman said. In Singapore and Malaysia, most of the tofu is made with Canadian beans, he added, explaining that Canada is able to deliver the beans at a lower cost. Thailand produces all of its food beans domestically and does not import additional supplies, Bushman said. However, the United States sends soy meal for animal feed to this and other Asian countries."

1552. Kira, Motoo. 1984. Re: History of Marukin Shokuhin's work with tempeh. Letter to William Shurtleff at Soyfoods Center, June 8. 5 p. Handwritten, with signature. [Jap; eng+]
• ***Summary:*** Marukin Foods. The first natto company to start large-scale production of tempeh in Japan was Marukin Shokuhin (Marukin Foods Industry Co. Ltd.). Located in Kumamoto, Kyushu (Japan's southernmost main island), they were (in 1984) one of Japan's Big Five natto manufacturers, and they also made several other foods such as roasted soy flour (kinako), tofu, and konnyaku. In about 1964 Mr. Hayashi of the Japanese-American Soybean Institute suggested that Marukin start to study tempeh. At that time Marukin was looking for a new product, so Mr. Haruo Kato (the brother of Marukin's president and chief of natto production, research, and development) began with great interest to collect material and investigate this little-known fermented soyfood. Kato obtained tempeh culture from an unknown source in 1964 and was soon making small batches of tempeh. However the company eventually came to believe (incorrectly) that tempeh culture could interfere with the natto fermentation, and taste tests of tempeh led Kato to feel that it might be difficult to introduce tempeh into Westernized diets in Japan. So interest in tempeh waned. In July 1982 Marukin and eleven other small- to medium-sized soyfoods manufacturers from throughout Kyushu joined to establish the Kyushu Soyfoods Industry Association (*Kyushu Daizu Shokuhin Kogyo Kumiai*). Marusan's president, Itsuo Kira, became head of the cooperative Association. To help them compete with larger companies, and supported by Japanese government aid, they built a large and modern factory (6,600 square meters), with a daily capacity of 15 tonnes of natto and 6 tonnes of kinako and soy soup base (*gojiru no moto*). In April 1983, this new natto factory, the largest in Japan, started production, employing 85 workers. Marukin decided to use its former natto factory to make tempeh, since there was a growing interest in soyfoods and healthful foods, and since they already had extensive experience in making fermented soyfoods. In November 1983 Marukin Foods launched SunSeed brand tempeh. An article on the product in the 1 December 1983 issue of the *Japan Food News* (*Nihon Shokuryo Shimbun*) was headlined "nonsticky natto" and by May 1984 they were selling 1,500 packs of 200 gm each (300 kg) daily, about 4,620 lb (2,100 kg) a week or 9,150 kg a month. They were also developing secondary tempeh products, including snack foods, paste-type foods, and fried foods. The person in charge of tempeh production and sales was Moto-o Kira, eldest son of the president, Itsuo Kira, and next to top man in the company. Marukin sold its tempeh in department stores and in supermarkets at their own in-store booths. To promote tempeh, the company employed two professional nutritionists to do demonstrations and lectures at cooking classes. Marukin soon hopes to sell tempeh to school lunch programs. Address: Manager, tempeh production, 380 Yoyasu-machi Kumamoto-shi 860, Japan. Phone: 096-325-3232.

1553. *Recorder* (*Greenfield, Massachusetts*).1984. Soy curd [sic] firm expands with state loan aid. June 9. p. 3.
• ***Summary:*** Tempeh Works Inc. [which makes tempeh, NOT soy curd] is beginning an expansion using a five-loan $215,000 financing package. The bulk of the funds ($165,000) included a Small Business Administration guaranteed loan through the Shawmut Bank of Franklin County. The money will be used (1) To purchase the 74 Fairview St. building in which Tempeh Works has operated since September; (2) To purchase new state of the art food processing equipment; (3) To construct a 2,000 square foot addition that will increase the firm's space from 4,200 to 6,200 square feet. The addition will provide space for incubation and cold storage; (4) To provide working capital to launch a line of new products and save money through bulk buying.

Tempeh works now has 7 full-time and 4 part-time workers. "In the first year, when there were just three employees at Tempeh Works, sales totaled $65,000. In the operating year that ended June 30, 1983, sales had jumped to $265,000. Sales in the current year, which ends June 30, will total about $330,000, Cohen said." Address: Staff reporter.

1554. Karyadi, Darwin. 1984. Re: New developments with tempeh in Indonesia. Letter to William Shurtleff at Soyfoods Center, June 16. 1 p. Typed, with signature on letterhead.
• ***Summary:*** "Dear Mr. Shurtleff, Since the issue of your famous book of tempeh, I keenly observed the tremendous fast trend of increased consumption of tempeh all over the world.

"In the last few years our institute has researched other medical aspects of tempeh which might be useful for public health intervention program. Therefore it is time now to gather updated information on the current knowledge

on several aspects of tempeh such as food technology, gastronomy, medicine, food microbiology, etc.

"To realize this, our Institute is planning to organize an international symposium on advanced knowledge of tempeh sometime in late 1985, either in Bogor or Bali.

"While preparing the first circular I would appreciate your comments and suggestions about the symposium. If there are sponsorships from the United States I would appreciate this for the success of the meeting.

"With best regards, sincerely yours..." Address: M.D., Ph.D., Director and Professor, Nutrition Research Development Center (Ministry of Health, National Institute for Health and Development), Komplek Gizi, Jalan Dr. Semeru, Bogor, Indonesia. Phone: (0251) 21763.

1555. Lewis, Bea. 1984. Tempeh: Tofu's first cousin. *Newsday* (*Long Island, New York*). June 16. [2 ref]
• ***Summary:*** Robert Werz, owner of Appropriate Foods, prepared tempeh recipes that she liked and published: Sweet & Sour Tempeh, and Tempeh Salad.

1556. Kato, Eihachiro. 1984. Re: Work with natto at the NRRC and in Japan. Work with tempeh in Japan. Letter to William Shurtleff at Soyfoods Center, June 18. 2 p. Handwritten on lined paper; 3 p. transcript. [Jap; eng+]
• ***Summary:*** In Oct. 1983 the author started doing research on natto under Drs. Hesseltine and Wang at the Northern Regional Research Lab. in Peoria, Illinois. In Japan, the soybeans used to make natto are grown mostly in Japan or China. U.S. soybeans are believed to be unsuited for making natto since they remain hard after cooking, and they produce natto that has less sweetness and stickiness (*nebari*) than desired. He is now trying to find U.S. soybeans suited to making natto. He has found that the environment and conditions under which the soybeans are grown has more influence on the natto than the varieties themselves. He thinks that natto has many potential uses in a dried powdered form that could be mixed with other foods. He plans to return to Japan in late Aug. 1984. He has an extensive collection of publications on natto, which he is willing to share.

In Japan, he teaches at Meiji University in the agricultural chemistry dept., fermented foods research lab. He worked under Dr. Masahiro Nakano for a long time when he was there. His father (Haruo Kato) and brother (Itsuo Kira) produced natto after World War II in Kumamoto prefecture, Kyushu. They also tested tempeh for about 15 years. Their company is called Marukin Shokuhin Kogyô K.K. In July 1983 they established the Kyushu Soyfoods Association (*Kyûshu Daizu Shokuhin Kogyô Kumiai*) with Japanese government aid, and in Uto-chi, Kumamoto prefecture, they built a new plant. Marukin shokuhin is mainly handling the sales. Mr. Kato has no direct connection with Marukin. Address: NRRC, Peoria, Illinois.

1557. *Toyo Shinpo* (*Soyfoods News*).1984. Tenpe honkaku shihan [Marusan-Ai plans to really market tempeh from June 1]. June 21. [Jap]

1558. Ebine, Hideo. 1984. Tenpe no seishitsu to riyô-jô no shomondai [Various problems concerning the character and utilization of tempeh]. *Shokuhin Kogyo* (*Food Industry*) 27(12):20-24. June 30. [16 ref. Jap]
• ***Summary:*** Contains 3 tables and 3 graphs. Address: National Food Research Inst. (Shokuhin Sogo Kenkyujo), Kannon-dai 2-1-2, Yatabe-machi, Tsukuba-gun, Ibaraki-ken 305, Japan.

1559. Noguchi, Kazuko. 1984. Tenpe no seijô to chôri kakô [Tempeh, characteristics and cooking]. *Shokuhin Kogyo* (*Food Industry*) 27(12):38-46. June 30. [Jap]
• ***Summary:*** Contains one table with details about: Tempeh sambal. Tempeh soup. Fried tempeh. Tempeh sauce. Also a related bar chart. Plus 12 photos of prepared tempeh dishes. Address: Saga Joshi Tanki Daigaku, Kaseigaku-ka.

1560. Takamine, Kazuhiro. 1984. Tenpe no seizô-hô to riyô o meguru gijutsu-teki hatten to kadai [Technical advances in tempeh production and utilization]. *Shokuhin Kogyo* (*Food Industry*) 27(12):25-33. June 30. [14 ref. Jap]
• ***Summary:*** Contains 10 photos of tempeh. Address: Torigoe Seifun, Fukuoka, Kyushu, Japan.

1561. Watanabe, Tadao. 1984. Tenpe to kôsan kasei [Tempeh and antioxidative activity]. *Shokuhin Kogyo* (*Food Industry*) 27(12):35-37. June 30. [7 ref. Jap]
• ***Summary:*** Contains 2 graphs. Address: Kyushu Daigaku Meiyo Kyoju, Nôgaku Hakase (Dep. of Food Science and Technol., Kyushu Univ.).

1562. **Product Name:** Vegetarian Paté (Made with Tempeh).
Manufacturer's Name: 21st Century Foods Inc.
Manufacturer's Address: 30A Germania St., Jamaica Plain, MA 02130. Phone: 617-522-7595.
Date of Introduction: 1984. June.
Ingredients: Organic soy tempeh, sesame tahini, carrots, parsley, onions, lemon juice, olive oil, garlic, tamari, sea salt.
Wt/Vol., Packaging, Price: 6 oz glass jar.
How Stored: Shelf stable; refrigerate after opening.
New Product–Documentation: Label. 1987, undated. 4 by 2 inches. Red and black on white. "Ready to eat. Gourmet. Organic." Posner. 1987. 21st Century Whole Foods Cook Book. Inside rear cover. Talk with Rudy Canale. 1988. Sept. 13. The invoice for printing the labels for this product is dated June 1984.

1563. Appropriate Foods, Inc. 1984. Eat Appropriately! Summer catalog '84. 137 New Hyde Park Rd, Franklin, NY

11010.
• ***Summary:*** The following lines are carried and distributed: Appropriate Foods (tempeh, soymilk), New York Soy Deli, Grainaissance (amazake and mochi), Garden of Eatin', McZand Products, N.Y. Miso, Nasoya, Nutri-Gest, The Soy Source, Sister Shorter, Swan Gardens, Sprout Delights, Willow Run Margarine, Great Eastern Sun (all of their products). Address: Franklin Park, New York.

1564. Ariyaratna, K.G.S. (Mrs.). 1984. Tempeh–the health food. *Soyanews* (*Sri Lanka*) 6(10):4-5, 7. June.
• ***Summary:*** Describes how to make and serve tempeh on a small commercial scale in Sri Lanka. Four large photos show the process. Tempeh is presently sold at the Soyabean Foods Research Centre sales centre, Gannoruwa, at Rs. 20/ a kilo. Address: Food Technician, Soyabean Foods Research Centre, Gannoruwa, Sri Lanka.

1565. Beuchat, Larry R. 1984. Fermented soybean foods. *Food Technology* 38(6):64-70. June. [31 ref]
• ***Summary:*** Discusses soy sauce, miso, and tempeh, and gives details of their fermentation processes. Address: Prof., Dep. of Food Science, Univ. of Georgia, Agric. Exp. Station, Experiment, GA 30212, USA.

1566. Bo, Thi-an. 1984. Tôshi no engen to sono seisan gijutsu ni tsuite [On the origins of soy nuggets [douchi] and their production technology. I and II.]. *Nippon Jozo Kyokai Zasshi* (*J. of the Brewing Society of Japan*) 79(4):221-23; 79(6):395-402. [7 ref. Jap]
• ***Summary:*** A definitive history of the subject. Includes a discussion of *shuidouchi,* which might be called salted Chinese natto; it is fermented with *Bacillus subtilis* and made in Shandong province in China–directly west of South Korea. Address: Iwate Daigaku Nôgaku-bu, Sogaku 80 shunen no gosukuji ni kaete; Present address, China.

1567. Farm Foods. 1984. Soyfoods a hit at American Booksellers Assoc. Convention (News release). P.O. Box 37, Summertown, TN 38483. 1 p. June.
• ***Summary:*** Farm foods and its sister company, The Book Publishing Company, served samples of Tofu Cheesecake, Tofu Onion Dip, and Deep-Fried Tempeh to nearly 20,000 convention attendees in Washington, DC. This helped to promote their books *Tofu Cookery* and *Tempeh Cookery.* Address: Summertown, Tennessee.

1568. Kanasugi, Goro. 1984. Re: Work with tempeh in Japan. Letter to William Shurtleff at Soyfoods Center, June. 4 p. Handwritten, with signature. [Jap]
• ***Summary:*** Mr. Kanasugi, vice president of the Japan Natto Assoc., started a soyfoods restaurant named Mame-no-ko ("child of the soybean") in Omiya city, Saitama prefecture. By mid-1983 he was serving tempeh there as an alternative to meat in various side dishes: tempura, harumaki (spring rolls), karinto (sweet fried dough cake), curried sauce, sauteed vegetables, croquettes, and various others. He also sells ready-to-eat tempeh dishes at his take-out deli. Many of his recipes contain 10-20% chicken or meat.

Mr. Kawashima of Tsukuba told him that his tempeh has a very good flavor. Lots of big Japanese companies are now looking at tempeh manufacturing. Address: Shimo-cho 3-6, Omiya-shi, Saitama-ken 330, Japan. Phone: 048-644-1323.

1569. Leneman, Leah. 1984. The foods that are soya good. *Vegetarian* (*The*). May/June. p. 12.
• ***Summary:*** "Soya foods are playing an increasingly important role in the American health food movement, a positive trend which hopefully will be echoed in the U.K. By soya foods I do not mean TVP (which has never really caught on in a big way in the States), but tofu (soya bean curd) and tempeh. These are low-cost, low-technology products simple enough to make in your kitchen." In America the movement away from dairy products is for reasons of health rather than ethics. In Britain, ethics come first. Cholesterol is the real bugbear to Americans. In New York the author tasted a soft-serve tofu ice cream with a "creamy texture I would not have believed possible in a dairyless product."

1570. **Product Name:** [Tempeh Burgers (Marinated and Baked. No Oil)].
Manufacturer's Name: Noble Bean.
Manufacturer's Address: Toronto, ONT, Canada.
Date of Introduction: 1984. June.
New Product–Documentation: Letter from Allan Brown. 1985. Aug. 7. Ready to eat. 4 oz for $1.65. Letter (fax) from Allan Brown. 1998. Jan. 21. Tempeh burgers were first sold in June 1984.

1571. Shurtleff, William; Aoyagi, Akiko. 1984. Using tofu tempeh, & other soyfoods in restaurants, delis & cafeterias. Lafayette, California: Soyfoods Center. 181 p. June. 28 cm. Revision of Report on Soy Delis, Cafes, and Restaurants. [21 ref]
• ***Summary:*** Contents: 1. Introduction and overview. 2. Directory of soyfoods delis, cafes and restaurants. Secondary soyfoods manufacturer-distributors. Soyfoods marketer-distributors. 3. Chronology of opening (Farm Food Company in San Rafael, California, was first in Aug. 1976). 4. Names of recipes served at each soy deli and ranking of the best-selling of these recipes. 5. Names of recipes produced by second generation soyfoods manufacturer-distributors. 6. Names of recipes produced by soyfoods marketer-distributors. 7. Individual bulk recipes for tofu and tempeh dishes. 8. Alphabetical listing of recipes given above. 9. Articles published about soyfoods restaurants, delis, and cafeterias. 10. Menus, posters, and promotional materials. 11.

Conclusion and summary. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1572. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Sojvita Produktions GmbH.
Manufacturer's Address: Hauptplatz 1, 2493 Lichtenwoerth, Austria. Phone: 02622/75494.
Date of Introduction: 1984. June.
Ingredients: Sojabohnen, Edelpilzkultur.
Wt/Vol., Packaging, Price: 450 gm.
How Stored: Refrigerated.
Nutrition: 157 calories/100 gm.
New Product–Documentation: Letter from Norbert Brunthaler. 1988. Jan. 4. Gives date of introduction as starting date of company, June 1984. Label. 1987. 3.5 by 3 inches. Dark green, light green, orange, and black on white. "Tempeh is versatile food that is rich in protein and vitamin B-12, which is good for frying (plain or in a breaded batter), baking, or dicing. Keep refrigerated. Do not use raw."

1573. **Product Name:** Tempeh.
Manufacturer's Name: Soyabean Foods Research Centre.
Manufacturer's Address: Gannoruwa, Sri Lanka.
Date of Introduction: 1984. June.
Ingredients: Soybeans, water, starter culture.
New Product–Documentation: Ariyaratna, K.G.S. (Mrs.). 1984. *Soyanews* (Sri Lanka). "Tempeh–the health food." Tempeh is presently sold at the Soyabean Food Research Centre sales centre, Gannoruwa, at Rs. 20/ a kilo.

Note: Tempeh made by this same Centre had been sold commercially in Sri Lanka as early as Sept. 1981, but only in a booth at agricultural fairs–never on a permanent basis.

1574. Watanabe, Tokuji; Kishi, Asako. 1984. The book of soybeans: Nature's miracle protein. New York, NY: Japan Publications. 191 p. June. Illust. General index. Recipe index. 26 cm. [21 ref]
• ***Summary:*** Contents: Introduction. Part 1. General information: 1. Characteristic traits: Agronomic and other biological characteristics, physical properties, chemical properties, soybean protein, properties of soybeans as food material. 2. Current ways of using and processing soybeans: Throughout the world, traditional ways of using and processing, new soybean food products. 3. Tofu and other nonfermented soybean food products: Tofu, deep-fried tofu, dried-frozen tofu, soy milk, yuba, roasted soy flour (kinako), soybean sprouts. 4. Miso and other fermented soybean products: Miso, natto, Hama-natto (tera-nattô), soy sauce, sufu, tempeh. 5. Other ways of eating soybeans–Simple traditional Japanese foods: Parched soybeans, boiled soybeans (*budo-mame; hitasahi mame*), beaten and mashed [or ground] soybeans (*go,* or (from edamamé) *zunda or jinda*), molded soybean mash (*jinta-dôfu*), molded mashed soybeans and rice flour (*shitogi*), soybean soybean-mash paste. 6. New soybean protein products.

Note 1. This is the earliest document seen (Nov. 2008) that mentions *zunda.* The text (p. 84) reads: "When fresh green soybeans (edamame) are used in cooking, they are boiled for from ten to twenty minutes; ground; and flavored with salt, sugar, and soy sauce. The resulting dish is called *zunda* or *jinda."*

Note 2. Zunda is a healthy and tasty snack or treat made from mashed edamamé. It is sweet, rich in protein, high in fiber and emerald green. It is said to have originated hundreds of years ago in Japan in Miyagi prefecture. In and around Sendai (capital of Miyagi prefecture) one can find many shops and booths that sell zunda cakes, zunda mochi treats, and zunda shakes, all made from edamamé (green vegetable soybeans). One well-known company in Japan that markets delicious zunda products is Zunda Saryo.

Part 2. Cooking with soybean food products: Tofu, yaki-dofu, kori-dofu, nama-age, abura-age, gammodoki, yuba, natto, miso, soy milk, soybeans, bean sprouts. Afterword. Bibliography.

In the chapter on tofu, pages 43-44 discuss okara or *unohana* (the residue remaining after soy milk production); a photo shows it in a glass bowl. "Though it formerly appeared on many Japanese tables seasoned and cooked with vegetables, today it is most often fed to animals. As the number of animals raised in urban and suburban areas decreases, however, tofu manufacturers are finding it harder to dispose of residue."

Page 99 notes of tofu: "At a certain temple in Kyoto is a plaque bearing the following inscription, which, while comparing this food to religious faith, clearly shows the esteem in which the Japanese people hold tofu. 'Religious faith should be like tofu: it is good under any circumstances. It is good boiled, grilled, or fried. Raw, chilled, served with soy sauce and other seasonings, it is good with steamed rice. Simmered in hot water and flavored, it is good with sake. Because it is soft, old people and sick people welcome it, but children and young people like it too. Men like it, women like it; poor and rich both like it. Though common, it has elegance enough to find a place in the upper class.

"'It cuts clean and well for use in clear broths. It is good in the meatless diets of religious training. It can be crushed for use in miso soup. It is used all the time and in all seasons. It is inexpensive yet numbered among the delicious treats. It is welcomed everywhere, in mountains as well as in big cities. It is well received at dinners for dignitaries and guests yet is convenient enough for college students who do their own cooking. Women especially should be like tofu. The mature and cultivated person should be tender, yet firm, like tofu. Though apparently tasteless, it is delicious. Though apparently ordinary, it is extraordinary.'"

Other ways of eating soybeans (p. 83-84): (1) Parched–"Parched gently in unglazed ceramic dishes made for the

purpose," then tossed by people at Sestubun in February around their houses as they chant "Demon out! Good luck in!" "Then they pick up the beans and eat them. "Parched soybeans are included in some varieties of *mochi* (glutinous rice cake) and in *okoshi* a confection made of puffed rice bound together with sugar syrup. In the past they were eaten with salt, miso, or soy sauce." Note: In the USA, parched soybeans are called "dry roasted soynuts."

Tables show: (1) World production of soybeans (1977-1982). (2) Price trends in dollars per ton for wheat, soybeans, and corn (1970-1981). (3) Soybean yields in the USA and Japan (1974-1981). (4) Chemical composition of soyfoods: Tofu, abura-agé, kôri-dôfu, yuba, kinako, soybean sprouts, nattô, miso (dark yellow), soy sauce (common), soybean (Japanese). (5) Statistics on production of modern soybean products in Japan (1975-1981). (6) Annual production and prices of modern soy protein products in the USA (May 1983).

Japan once produced a million tonnes (metric tons) of soybeans annually. This figure decreased dramatically during World War II. After the war, as soybean imports from the United States steadily increased, Japan's domestic crop gradually fell to the level of no more than 100,000 tonnes. In 1977 it was 111,000 tonnes, yet by 1982 it had jumped to 226,000 tonnes as rice acreage was reduced.

All photos are black and white. Figures show: (2) Line drawing of soybean plant with flowers and leaves. (2) Cross section of soybean seed-coat and cotyledon. (3) Graph of protein solubility (NSI) of defatted soybean meal at different pH values. (4) Graph of protein solubility (NSI) of defatted soybean meal at different concentrations of calcium chloride. (5) Graph of relationship between time and temperature of soaking soybeans in water (colder water temperature requires longer soak time). (6) Flow sheet for making regular tofu. (7) Photo of regular (*momen*) "cotton tofu." (8) Line drawing of grinder (horizontal type) used with soaked soybeans when making tofu. (9) Photo of continuous filter for soy-milk preparation. (10) Photo of small-scale soy-milk processing plant. (11) Line drawing of molding box [forming boxes with lids] for making regular tofu. (12) Photo of yaki-dofu [grilled tofu]. (13) Photo of okara in a glass cup. (14) Line drawing of molding box [forming box] for silken tofu. (15) Photo of silken tofu. (16) Flow sheet for packaged tofu production [GDL]. (17) Photo of packaged tofu in package. (18) Flow diagram of large-scale process for making tofu and abura-age with 26 pieces of equipment labeled. (20) Flow diagram of continuous process for making packaged tofu [GDL]. (21) Photo of 2 pieces of abura-agé. (22) Photo of deep fryer for making abura-agé. (23) Photo of nama-agé [deep fried tofu cutlet]. (24) Photo of two types of ganmodoki. (25) Line drawing for tofu kneader for ganmodoki production. (26) Photo of kôri-dofu [dried frozen tofu]. (27) Flow sheet for making dried-frozen tofu. (28) Flow diagram of process for making large-scale dried-frozen tofu. (29) Photo of aseptic carton and glass of soy milk. (30) Flow sheet for making aseptically packaged soy milk. (31) Photo of 5 different forms of dried yuba. (32) Photo of kinako in two clear glass bowls. (33) Photo of soybean sprouts in a woven bamboo basket. (34) Flow sheet for making miso. (35) Three different types and colors of miso on 3 bamboo rice paddles (*shamoji*). (36) Line drawing of cut-away view of traditional pressure cooker (*koshiki*) for rice cooking. (37) Diagram of continuous rice cooker with 7 parts labeled. (38) Line drawing of *Aspergillus oryzae* with conidia (spores), sterigmata, and mycelium labeled. (39) Photo of pieces of koji. (40) Diagram of modern fermentation room for making koji. (41) Cut-away view of miso fermenting in a wooden vat with stone weights above vinyl film on top. (42) Line drawing of a mashing machine for miso. (43) Photo of natto in rice straw wrapper and polystyrene tray. (44) Cross sectional view of pressure cooker for soybeans. (45) Line drawing of rotating mixer to combine cooked soybeans with pure-cultured *Bacillus natto.* (46) Photo of soy sauce table dispenser. (47) Flow sheet for making Japanese soy sauce (shoyu). (48) Transparent view of crusher (roller) for roasted wheat in making soy sauce. (49) Photo of modern stainless steel fermentation tanks / vats (indoors). (50) Photo of a jar and a cup of sufu [fermented tofu]. (51) Diagram showing relationships between modern soy protein foods.

Note: Surprisingly, edamamé, one of the most popular soyfoods in Japan, is mentioned only once, in passing (p. 84) in this book.

Photos on the rear cover show Tokuji Watanabe (born in 1917, graduated from the Faculty of Agriculture of Tokyo University, 1941, with Doctor of Agriculture) and Asaki Kishi. A brief biography of each is given. Address: 1. D. Agr., Kyoritsu Women's Univ., Tokyo.

1575. Praskin, Laurie. 1984. Work with soyfoods on The Farm in Tennessee. Luci Morren working with soyfoods in Mexico. *SoyaScan Notes.* July 1. Compiled by William Shurtleff of Soyfoods Center.

• ***Summary:*** The Farm Soy Dairy had a centrifuge for making soymilk and dewatering soypulp in 1975. Laurie started working in the soy dairy in late 1974 or early 1975. Alexander was still there. There was a centrifuge there before that. All the tempeh at that time was okara tempeh. She does not recall if they used the centrifuge to dewater whole soybeans for tempeh.

Suzie and Chris Jenkins. Utah. 801-532-4289. Suzie made tempeh before she went to Guatemala.

Luci Morren is a woman working in Mexico with refugees from Guatemala. She went to the World Soy Conference. To make tortillas, add soybeans with corn to boiling lime water (cauldron cuts cooking time a lot), soak over night, then rinse, grind, form and cook tortillas.

Also using soybeans with local black beans, 1:5. Soak over night to do away with some SBTI [soybean trypsin

inhibitor]. Also cook with rice. People don't use enough wood to cook things longer. Suzi utilizes everything when she does her demos. The whey is drunk with sugar and limes; refreshing. The pulp [okara] used in *masa,* and fried. Luci is a Belgian woman, who got turned onto soy in Mexico. She went to Nicaragua right after the revolution and started a big soy program. Nicaragua has classified soy as one of its protein sources. For 3 years, she worked closely with women; she also has a program with 5 farmers growing soybeans.

Laurie will try to get me Luci's address. Its sickening to see the poor kids. Mexicans do not want to help too much. Foreigners aren't allowed into camps. Including Luci. She works out of San Cristobal in her office, training Mexican promoters, but not all are as dedicated as she. Another student of hers is making tofu in her house to sell to tourists. Laurie taught her to make tofu cheesecakes.

Plenty is funding Luci to do this soy project in Guatemala. Do they buy beans in Tapachala? Are any Chinese in Guatemala making soyfoods?

1576. Stuart, Paul. 1984. Re: Searching deeper for information on Franz Anton Brillmayer in Austria. Letter to William Shurtleff at Soyfoods Center, July 12. 4 p. Handwritten. [Eng]
• ***Summary:*** "Thanks for writing again." Paul has not since been able to contact Anton Wolf and thus has not been able to learn much more about Mr. Brillmayer.

"The address of my current provisional business is: Neustiftgasse 24 / MAG., 1070 Vienna." He presently has no telephone since he intends to move to an environmentally healthier area. "If all goes well we will be able to produce with much more professionalism in the fall. It has been a very difficult road thus far with no letting up in sight.

"I intend to visit my family and existing tempeh & soy products companies in the U.S. at this time. Perhaps you could recommend some good contacts, preferably in the northeastern U.S.

"Austria is overflowing with grains and legumes. Unfortunately soybeans (Austrian) are short of impossible to obtain... Presently I pay over 20 [Austrian] shillings for Austrian soybeans. Peas cost a mere 5.

"Mrs. (Emile) Brillmayer lives under the address Nied. Oes. [Nieder Oesterreich] 2051 Platt Nr. 14. She does not have a telephone. Her brother died in 1964. She also reported in her postcard that there are no soybeans grown in her area. And that I should take a look in the Marchfeld area. Marchfeld is sort of the Sacramento Valley of Austria. As of yet I have not been able to make any connections in this regard.

"The town, better said village Platt where Brillmayer lived lies roughly 50 km. northwest of Vienna. Near Hollabrunn. It is a quaint very old dorf [village] that has remained pretty much untouched. When I was there I felt as though I was 50 years earlier in time.

"Thanks much for the informative brief history of soybeans in Austria. The article gives me much to go on. With luck I will be able to find some info about at least some of the scientists you listed."

"After a visit to the Austrian National Library I can happily say that I now have all of F.A. Brillmayer's works photocopied. *Wunderpflanze "Soja"* (1947), *Die Kultur der Soja in Oesterreich* (1947), and *Die Bedeutung der Soja fuer die Ernaehrung Oesterreichs* (1947), plus a couple of other interesting works. All of these works are very interesting. If you would like I could photocopy and forward these for you providing you pay the cost of photocopying and sending which would roughly be about 600 Sch [Austrian schillings]–as I unfortunately don't have access to a photocopier other than the public ones which costs between 1-2 Sch a side. (600 Sch = about between 30-35 U.S. dollars). Perhaps with luck I can get the works photocopied less expensively. Let me know if you're at all interested first. Looking forward to hearing from you."

Note: Paul used to write his surname as Zacharowicz. Address: Neustiftgasse 24, 1070 Vienna, Austria.

1577. *Nikkei Sangyo Shinbun* (*Japan Economics and Industry News*).1984. Indonesia daizu shizen shokuhin. Nihon de tenpe kokusai kaigi [An Indonesian natural soyfood. International tempeh symposium in Japan]. July 13. [Jap]
Address: Tokyo, Japan.

1578. *Bee* (*Fresno, Califoria*).1984. Tempeh making its way into American kitchens. July 18.
• ***Summary:*** Contains four recipes for the "soyfood with culture."

1579. Lindsley, Kathy. 1984. Meatless, but not tasteless: You won't miss the meat in these recipes. *Times Union* (*Rochester, New York*). July 31.
• ***Summary:*** Vegetarian cookery, featuring tofu and tempeh, has gone gourmet at The Lotus Cafe (686 Monroe Ave.) in Rochester, New York. A large photo shows Greg Weaver with a blackboard menu.

1580. Hermana, -. 1984. "Tempe" superior to any other vegetarian food. *Indonesia.* July. p. 58-59.
• ***Summary:*** Mr. Hermana, age 45, whose photo is shown, recently earned his doctorate from the Bogor Institute of Agriculture (IPB) with a thesis on tempe. As part of his research from Dec. 1980 to Sept. 1982, Hermana fed tempeh to 420 children between the ages of 13 and 36 months in the villages of Bendungan in Bogor and Dlingo in Yogyakarta. About 30% of Indonesian children suffer an alarming protein-calorie deficiency. Feeding them a mixture of grain and tempe led to dramatic weight gains. Address: Bogor,

Indonesia.

1581. Shurtleff, William; Aoyagi, Akiko. 1984. History of tempeh: A fermented soyfood from Indonesia. Lafayette, California: Soyfoods Center. 81 p. July 17. No index. 28 cm. 2nd ed. 1985. 91 p. [375 ref]
• ***Summary:*** Contents: 1. Introduction. 2. Etymology. 3. World Overview. 4-8. History of Tempeh in Indonesia–discusses (for the first time) the world's earliest known reference to tempeh in the *Serat Centini* manuscript, which was probably written in about A.D. 1815. 9-11. History of Tempeh in Europe and Australia. 12-15. History of Tempeh in the United States and Canada. 16-18. History of Tempeh in Japan. 19-23. History of Tempeh in Asia (China, Taiwan, Southeast Asia, India, Sri Lanka). 24. History of Tempeh in Latin America. 25. History of Tempeh in Africa. 27. International Interest. 28. U.S. and Third World Problems.

The world's largest tempeh manufacturers are as follows:

Company name, Country, Year Started, Avg. Weekly Production

1. Marusan-Ai, Japan, 1983, makes 15,148 lb/week = 6,885 kg/week
2. Tempe Production Inc., Netherlands, 1969, makes 13,200 lb/week = 6,000 kg/week
3. Quong Hop/Pacific Tempeh, USA/CA, 1980, makes 7,000 lb/week = 3,182 kg/week
4. White Wave, USA/CO, 1979, makes 5,850 lb/week = 2,659 kg/week
5. Soyfoods Unlimited, USA/CA, 1981, makes 5,800 lb/week = 2,636 kg/week
6. Torigoe Flour Milling, Japan, 1983, makes 5,770 lb/week = 2,623 kg/week
7. The Tempeh Works, USA/MA, 1979, makes 5,500 lb/week = 2,500 kg/week
8. Marukin Foods, Japan, 1983, makes 4,620 lb/week = 2,100 kg/week. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1582. Kira, Motoo. 1984. Re: More history of Marukin Shokuhin's work with tempeh. Letter to William Shurtleff at Soyfoods Center, Aug. 4. 4 p. [Jap; eng+]
• ***Summary:*** Answers to Shurtleff's questions: (1) From the end of last year until the beginning of this year, Marukin was making 1,800 kg/week of tempeh. However presently (July 1984) they make only 15 kg/month in order to use it for developing second generation food. They have stopped making tempeh for the general market.

(2) Marukin's president is named Itsuo Kira.

(3) In July 1982 the twelve manufacturers of natto, kinako, and *gojiru no moto* in Kyushu all got together and founded the *Kyushu Daizu Shokuhin Kogyo Kumiai* (Kyushu Soyfoods Association). In April 1983 we built a large plant in Uto / Udo city on the outskirts of Kumamoto city. The capacity of the plant for making natto is 250,000 shoku per year (1 shoku = 100 kg; so 25 million kg/year). And kinako and Gojiru no moto is 6 tons. Marukin makes 80% of the total production of this plant, and the plant is run by Marukin's people with Marukin's technical assistance.

(4) As I wrote you in my last letter, Mr. Haruo Kato took charge of researching and developing now fermented soyfoods. He was also very interested in tempeh and was doing tempeh research and development when he died on 3 Dec. 1983. He did not leave clear records of the history of his work with tempeh. However his records show that in about 1950 he experimented with making tempeh. In 1963 in Kumamoto he attended a lecture given by Mr. Dr. Iwao at the National Nutritional Research Center and Dr. Kato became deeply interested in the subject of that lecture, "A growth quickening factor in tempeh." He again started his research on tempeh, and in Feb. 1964 Hayashi-kaicho (a leader) and tried to get a copy of Dr. Iwao's paper as well as tempeh starter culture. "I am sending you the article that was sent by Hayashi-kaicho to Mr. Kato." Address: Manager, tempeh production, 380 Yoyasu-machi Kumamoto-shi 860, Japan. Phone: 096-325-3232.

1583. Yap, Bwee Hwa Flora. 1984. Re: Ahorn Verlag and current work with tempeh. Letter to William Shurtleff at Soyfoods Center, Aug. 4. 1 p. Typed, with signature.
• ***Summary:*** Ahorn Verlag as recently moved to Pitenhart. Mrs. Kuby said that it would be difficult for a foreigner to translate *The Book of Tempeh* into German, but Flora can work with others as expert advisors on the translation.

Flora is sending to everyone she knows (in Indonesia and Germany) Shurtleff's offer of a cash prize to whoever finds the earliest reference to tempeh in Indonesia.

"To my knowledge the soybean is only used for cattle feeding in Germany, and I was much surprised to find an article about soy products for human consumption in a periodical published by AOK (Health Insurance in Germany). It is distributed to each member and I think covered a great part of the population of Germany–all working people have to be insured."

Flora is considering writing an article about tempeh for a German lady's journal (women's magazine), or doing cooking demonstrations on television–as a way of introducing tempeh to people in Germany. Address: Am Muehlenwaeldchen 1A, D-6670 St. Ingbert-Rohrbach, West Germany.

1584. Kanasugi, Goro. 1984. Re: More on work with tempeh in Japan. Letter to William Shurtleff at Soyfoods Center, Aug 7–in reply to questions. 2 p. Handwritten. Plus 4 p. translation. [Jap]
• ***Summary:*** To answer your questions: (1) Mame-no-ko restaurant and deli opened on 10 Feb. 1977. (2) Tempeh started to be served at Mame-no-ko in late May 1983. "I

got tempeh starter from Teruo Ota sensei and soon tried to make tempeh. It turned out well and the first dish served was tempeh sauteed with vegetables.

(3) My natto and tempeh plant is located about 150 meters (500 feet) away from Mame-no-ko. We make tempeh there about once a month. (4) At Mame-no-ko we use tempeh once or twice a week in various dishes; we use 15-20 kg/month.

(5) At our plant we make 100 to 200 kg/month of tempeh, entirely for use in second generation soyfood products. (6) I would estimate that, on average, about 500 people per day eat the tempeh we make, both at the restaurant and deli and from retail stores.

(7) I depend on Ota sensei for tempeh starter so I don't know who makes tempeh starter in Japan. Soon the research center for making cultures in Tokyo will start making tempeh starter. (8) I think that Takashin started to make tempeh in about Aug. 1983, and that they now make about 50-100 kg/month.

(10) I am enclosing a copy of a *Shin Eiyo* magazine article about tempeh.

Here is my recipe for tempeh jam. I have just received very big news. The Japanese government has announced that it will help development and popularization of tempeh in Japan. They told the Japanese Natto Association that they will lend ¥8.7 million as part of a program to promote practical use of new technologies. Address: Shimo-cho 3-6, Omiya-shi, Saitama-ken 330, Japan. Phone: 048-644-1323.

1585. *Toyo Shinpo* (*Soyfoods News*).1984. Daizu tanpaku [Soy protein foods]. Aug. 11. [Jap; eng+]
• ***Summary:*** This is a translation of an article about nutrition in some U.S. magazine that mentions tempeh.

1586. Viavant, Suzy Jenkins. 1984. Re: Work with soyfoods Sri Lanka and Guatemala. Making tempe at The Farm in Tennessee. Letter to William Shurtleff at Soyfoods Center, Aug. 13–in reply to inquiry. 1 p. Typed, with signature.
• ***Summary:*** Suzy has been "extremely busy getting ready for a soy development tour in Sri Lanka due to happen on the 27th of August through the end of September. I am being sub-contracted by CIDA thru Plenty as a Soy Development Consultant. We will be investigating opportunities for an in-depth soy development project in Sri Lanka. Accompanying me will be the director of Plenty Canada, his wife and a member of the Sarvodaya movement."

"I started making tempe [tempeh, at The Farm in Summertown, Tennessee] in Sept. of 1976 at which time I took over production so Cynthia [Bates] could go full time into making spores [for tempeh]. At this time I was the first one to try using the centrifuge to dewater the soybeans after cooking, although I think it was originally Cynthia's idea. I made tempe until July 1977 when I went to Guatemala."

In Guatemala the "escalation of the political violence made it impossible for our extension workers to hold classes without being looked upon as subversives by the government. Because the dairy [soy dairy at Solola] was just a business it never really threatened the government so it was able to run for a few years. Now the dairy is closed for economic as well as political reasons. We hope to return if it [the political situation] cools down. Our latest report from Guatemala is that people in Itzapa are still growing soybeans and their wives are still making tofu and soymilk. I don't know if the people in Solola are still growing them because we never quite isolated the best variety for their altitude." Address: Utah.

1587. Six-Chan, Pauline. 1984. Work with soyfoods in Belgium (Interview). *SoyaScan Notes.* Aug. 18. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Pauline (age 41) earned a MSc degree in food science from Michigan State Univ. (East Lansing) in 1979. In 1982 she started Premier Foods to focus on foods that were international, fresh, and healthy. Since Oct. 1983 the company as been very active in presenting tofu and tofu products to the Belgian public and to buyers at supermarkets, cafeterias, etc. Once a month she gives free tofu cooking demonstrations to the general public. She is the most active person in Belgium with soyfoods, and she would like to start a Soyfoods Center there. She prompted the American Soybean Assoc. to hold the forthcoming soyfoods seminar, but they are charging a lot for it, so she fears that few people will come. She dislikes ASA; they are only interested in animal feeds. She also dislikes macros; they are not interested in soyfoods for the general public, and they insist that she sell "organic (biological) tofu." She makes mung bean sprouts. She buys all of her tofu from Heuschen in the Netherlands, and has an exclusive distribution contract for Belgium with him. She is most interested in developing second generation tofu products. She already has a tofu tart/cheesecake/pie, and she wants to demo U.S. second generation tofu products at the ASA seminar. Her literature about tofu and tempeh is in Flemish.

Heuschen Products started making tofu on a small scale many years ago. They automated and got big about a year ago. Now they cannot sell nearly as much as they can make. Address: Manager & owner, Premier Foods p.v.b.a., Dietstraat 197, 3000 Leuven, Belgium. Phone: 016.23.31.48.

1588. Fiske, Doug. 1984. Soyfoods in the supers [supermarkets]. *Soyfoods.* Summer. p. 18-23.
• ***Summary:*** Gives an in-depth look at the marketing strategies of Legume Inc., Tomsun Foods, Eden Foods, Vitasoy, Tempehworks, Nasoya, Eden Foods, Soyfoods of America (Furama and Naturespring brands), White Wave, Hinode Tofu Co., Tofu Time (Tofutti), and Nasoya.

Eden Foods of Clinton, Michigan, has been involved

with natural foods for 15 years, but only within the past year have they been able to establish a beachhead in supermarkets with their miso, soymilk, and soy sauce products. They are presently selling through 5 chains representing about 50 individual stores. Supermarket sales now account for about 10% of their $7.5 million yearly sales.

1589. House, S.L. 1984. Spotlight: Institutional foodservice. Alive Polarity, Murrieta, California. *Soyfoods.* Summer. p. 6.
• ***Summary:*** "Northeast of San Diego and southeast of Los Angeles lies a peaceful place where people can go for a day, a week, a month to experience spiritual renewal and better health practices. Among other diverse activities, Alive Polarity's Murrieta Hot Springs offers mudbaths, marriage counseling and superb vegetarian cooking."

"The lacto-vegetarian diet offered at Alive Polarity emphasizes purifying, health-building and gourmet dishes. Soyfoods make up a large part of the menu.

"'More than 50 percent of our meals contain soy products,' says Breese English, kitchen manager. Tofu is by far the soyfood used most often because it's so receptive; it adds little flavor of its own yet takes on the flavor of ingredients used with it. 'I'd say we consume at least 70 pounds a day."

"Alive Polarity's restaurant serves breakfast, lunch and dinner buffet style, totaling about 1000 meals daily."

"While tofu is a primary ingredient in many of the recipes, other soy products are used extensively as well. Bragg's Liquid Aminos and tempeh are two products that have found a place in Alive Polarity's kitchen.

"Bragg's is a liquid mineral soy bouillon often used instead of soy sauce or tamari. Its slightly less salty flavor had made it a popular item for the cooks as Mary Ann Beauchamp attests. 'I use it in almost everything, sauces, salad dressings, soups.' About 25 gallons of Bragg's Liquid Aminos are consumed weekly.

"Tempeh is the third most popular soy product used. Tempeh is a complete protein food with a texture that lends itself to hearty foods and entrees. Used in place of hamburger for summer barbecues, tempeh burgers are very popular. The kitchen staff estimates they use about 400 tempeh patties a week.

"Two soyfoods recently introduced at Alive Polarity include soymilk and Tofutti. Given that almost 20 gallons of soymilk are consumed weekly, it appears it's already gained acceptance among the clientele."

"Mary Ann Beauchamp, whose mother is Japanese explains, 'My mother is amazed with the things we do with tofu. The Japanese use tofu in traditional ways for specific purposes. I don't feel that they experiment or work with it as we do.' For example, Beauchamp explains a favorite recipe, Tofu Tidbits. 'You take cubes of tofu and bread them in a mixture of flour, nutritional yeast, herbs and spices. Then layer the cubes in a pan with a small amount of oil. Bake for an hour at 500º. Serve with tartar sauce and lemon wedges, it's fantastic. People just love it.'"

A photo shows the staff: Jane Buck, Breese English, Mary Ann Beauchanp, and Diane Luzzi. Contains a "favorite recipe" for Tofu french toast.

1590. Kronenberg, Hananya J.; Hang, Yong D. 1984. Biochemical changes in okara during meitauza fermentation. *Nutrition Reports International* 30(2):439-43. Aug. [12 ref]
• ***Summary:*** "Okara (soybean milk residue) was fermented with *Actinomucor elegans* to produce meitauza, a traditional food from China." In China, meitauza is found primarily in the Wuchang, Hankow [part of Wuhan since 1950], and Hanyang regions, where it is traditionally prepared for consumption by frying in vegetable oil or by cooking in a soup with vegetables and spices. Since Shih's original study in 1937 [*Lingnan Science Journal* 16(1):27-38. Jan. 13] there has been no further research on meitauza.

In the USA, where production of tofu and soymilk are growing, an estimated 14,000 tons of okara are produced as a by-product each year. Despite desirable nutritional properties, it is largely treated as a waste or animal feed due to poor organoleptic characteristics.

Okara was formed into cakes and fermented on trays until the cakes became covered with a white mycelium. Biochemical changes in okara during 80 hours of fermentation at 15ºC were characterized by a rise in pH from 5.48 to 7.50, an 8-fold increase in nonprotein nitrogen, marked liberation of ammonia, and production of an acid protease. Address: Dep. of Food Science and Technology, Cornell Univ., Geneva, New York 14456.

1591. Leviton, Richard. 1984. Plant profile: Quong Hop. *Soyfoods.* Summer. p. 26-28.
• ***Summary:*** An excellent history of Quong Hop & Co. plus an accurate account of their present activities. Address: 100 Heath Rd., Colrain, Massachusetts 01340. Phone: 413-624-5591.

1592. Leviton, Richard. 1984. Soyfoods market: The top 15 prepared convenience soyfoods. *Soyfoods.* Summer. p. 42-43.
• ***Summary:*** "Since 1980 most of the innovation–and excitement–in the American soyfoods industry has centered around what are now called prepared convenience soyfoods." The top 15 are: (1) Legume Light & Natural Tofu Entrees. (2) Edward & Sons' Miso-Plus Jalapeno and Chive miso dips. (3) Farm Foods' Ice Bean and Ice Bean Sandwich. (4) Tofu Time's Tofutti. (5) Light Foods' Light Links (tofu hot dogs). (6) Brightsong Light Foods' Tofu Desserts and Dips. (7) Tomsun Foods' Spice and Herb Tofu. (8) Eden Foods' Edensoy. (9) Nasoya's Vegi Dips. (10) Sonoma Specialty Foods' Nutcracker Sweets. (11) Pacific Tempeh and Soyfoods Unlimited's Tempeh Burgers. (12) Soyfoods

Unlimited's Leandro's Meatless Lasagna. (13) Fantastic Foods' Tofu Burger Mix. (14) Quong Hop's Soy Fresh. (15) Garden of Eatin's Nuclear Freeze (soymilk ice cream pops). A photo shows each product.

1593. Neumann, P.E.; Walker, C.E.; Wang, H.L. 1984. Fermentation of corn gluten meal with *Aspergillus oryzae* and *Rhizopus oligosporus*. *J. of Food Science* 49(4):1200-1201. July/Aug. [12 ref]
• ***Summary:*** "Corn gluten meal (CGM) is the 60% protein co-product obtained during the wet-milling of corn. The protein is very low in lysine and tryptophan and consequently is of poor nutritional quality. Fermentation with proteolytic fungi has been shown to alter the composition and, in some cases, improve the nutritional quality of protein in various substrates."

The introduction discusses three other studies in which the fermentation of soybeans with *Aspergillus oryzae* or *Rhizopus oligosporus* led to improvements in the protein quality of the substrate. Address: NRRC, Peoria, Illinois.

1594. Shurtleff, William. 1984. Japan's first and largest tempeh companies. *Soyfoods.* Summer p. 30-32.
• ***Summary:*** Discusses: Ryoji Nakazawa (a microbiologist; the first Japanese to study tempeh and publish information about it, in 1928). Department of Applied Microbiology, established in 1944 within the National Food Research Institute. The Food and Nutrition Laboratory at Osaka University (late 1950s and early 1960s).

Torigoe Flour Milling Co. (Torigoe Seifun, Kyushu University's Dep. of Food Science and Technology, Kazuhiro Takamine). Takamine goes to study tempeh at the University of Minnesota's Dep. of Food Science and Nutrition under Dr. William Breene and with PhD candidate Abdul Ribai. Returning to Japan, Takamine develops an improved type of tempeh. In June 1983 Torigoe starts making tempeh at their Fukuoka flour mill in a pilot plant that cost $50,000 and had a capacity of 33,000 lb/month of tempeh. They make the key decision not to sell plain tempeh but rather two semi-prepared products, both called Gold Tempeh. By early 1984 Torigoe was making 24,200 lb/month of tempeh–making it the world's sixth-largest tempeh maker.

Marusan-Ai, one of Japan's most dynamic and forward looking food companies, started in early 1984.

Two large natto companies began making tempeh in early 1984: Marukin Shokuhin Kogyo in Kyushu, and Takushin in Tokyo–both prompted by the Japan Natto Association's promotional work for tempeh.

Note: This article is an excerpt from "The Tempeh Revolution in Japan," by William Shurtleff, who is now writing a History of Tempeh (worldwide). Address: Soyfoods Center, P.O. Box 234, Lafayette, California.

1595. *Soyanews* (*Sri Lanka*).1984. Letters: Tempeh. 6(12):8. Aug.
• ***Summary:*** A reader (President, Howpe Consumers Society, Galle) writes to asks about tempeh. Answer: "The dried form of tempeh is available at present from the Sales Centre of the Soyabean Foods Research Centre in Gannoruwa. There is also a sales point at the Soya Centre, 15 Gospel Lane, Jaffna, as well as at the NADSA Sales Centre in Getambe, Peradeniya. It is possible for consumer societies such as yours to act as retail points for some of the soya products made in Gannoruwa; please inquire from the SFRC, Gannoruwa."

1596. Soyfoods Unlimited, Inc. 1984. Discover the little known pleasures of Indonesian cuisine–enjoy Tempeh! Fact sheet and selling guide (Leaflet). 14670 Doolittle Dr., San Leandro, CA 94577. 1 p. Single sided. 8½ by 11 inches. Aug.
• ***Summary:*** At the top of the letterhead is the Soyfoods Unlimited 3-leaf logo. Below that is the title, in bold white letters on a black background. Contents: What is soy tempeh (12 points). Nutritional information and % RDA per 4 oz. serving of soy tempeh. Soy & Five Grain Tempeh [launched 1982]. Nutritional information and % RDA per 4 oz. serving of Soy & Five Grain Tempeh. Address: San Leandro, California. Phone: 415-352-1320.

1597. Tempehworks! 1984. Surprise. It's our 5th birthday (Ad). *Soyfoods.* Summer. p. 39.
• ***Summary:*** A full-page ad. "... and to celebrate, we've designed an all new package combining the best of art and science. *Elegant design*–aimed at your target market. *New vertical shape*–takes up less precious shelf space, while offering greater consumer visibility. Easy to handle, easy to store, easy to use.

"The same quality products you've known us for–now *vacuum packed* for freshness and extended shelf life.

"Look for our new logo: Tempehworks! The market leader for 5 years." Address: Greenfield, Massachusetts.

1598. Nordquist, Ted. 1984. Re: New developments with tofu at Aros in Sweden. Letter to William Shurtleff at Soyfoods Center, Sept. 6. 1 p. Typed, with signature on letterhead.
• ***Summary:*** "The company continues to expand, sales have doubled each year since we started in 1980. We now have steam injected cooking and pasteurization with a 30 day shelflife on all six products: Tofu (12% protein, made with nigari), tofu (8% protein, made with calcium sulfate), tofuburgers, tofulindstrom (red beets), Indian curry and marinated tofu. We will soon introduce tempeh, deep fried and marinated. We also plan to introduce a sandwich spread much like liverwurst in consistency before the end of this year.

"We produce about 108 kg of tofu per hour now and between 1.5 and 2 tons of products per week. I will be

attending the first European Soyfoods Workshop, Sept. 27-28 in Amsterdam...

"Would you please write a short resume about your work so I can submit it to the right people for the Alternative Nobel Prize" [Right Livelihood award].

Across the top of this handsome letterhead are three logos: (1) Left: aros sojaprodukter örsundsbro shows a little blue Viking with a horned helmet and big red heart. (2) Center: Aros. (3) Right: A Soyfoods Center, Sweden, with the California Soyfoods Center logo in all blue.

Enclosed with the letter: (1) Eight-panel brochure of "What is tofu?" and tofu recipes. (2) Aros mail order catalog (1 sheet, 8½ x 12 inches, blue on beige, 3 panels each side), with 8 books, a tofu kit, nigari, tempeh starter, and koji for making miso or amazake. Address: President, Aros Sojaprodukter, Bergsvagen 1, S-190 63 Orsundsbro, Sweden. Phone: 0171-604 56.

1599. Yap, Bwee Hwa Flora. 1984. Re: Current work with tempeh. Letter to William Shurtleff at Soyfoods Center, Sept. 10. 1 p. Typed, with signature.
• ***Summary:*** Flora is busy translating the chapter on biochemistry ad microbiology from The Book of Tempeh into German for the German edition of this book. Mrs. Kuby approved her trail translation. Since she is a trained microbiologist, the biochemistry portions are difficult. She plans to check the microbiological terminology with Mr. Ko Swan Djien, who she knows from Indonesia. He is now living in Wageningen, Holland. Address: Am Muehlenwaeldchen 1A, D-6670 St. Ingbert-Rohrbach, West Germany.

1600. Ohta, Teruo. 1984. Nihon yori Amerika de kanshin ga takai tenpe [From Japan to America interest in tempeh is high]. *Toyo Shinpo* (*Soyfoods News*). Sept. 21. [Jap] Address: National Food Research Inst., Tsukuba, Japan.

1601. Ohta, Teruo. 1984. Atarashii daizu hakkô shokuhin: Tenpe, onchom no shiyô [New fermented soyfoods: Use of Tempeh and onchom]. *Toyo Shinpo* (*Soyfoods News*). Sept. 21. [Jap; eng+]
• ***Summary:*** A basic introduction.

1602. Troy, John. 1984. American Natural Foods, Elf Works, and work with miso (Interview). *SoyaScan Notes.* Sept. 26. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** American Natural Foods (ANF) was formed in Jan. 1984 as its own company with its own investors; in March 1984 it acquired Elf Works, Ltd. Miso Mustard, BeeNut Butter, and Smoky Mountain Sizzlin' were all introduced formally for delivery in Sept. 1984. ANF had a private stock offering in May 1984 in North Carolina; the proceeds ($150,000) from 25 shareholders will be used mainly to develop new products. Some of the shareholders (such as John Fogg, marketing and design) are working with the company. Barry Evans, owner of American Miso Co. in North Carolina, is the company's miso supplier. The packer is also a shareholder. Hot Stuff is John's only commercial miso product with a sales record to date. The Works will be out in about 2 weeks. He expects big revenues from it because people use much more per serving–dink dink vs. glug glug. Smoky Mountain Sizzlin' is getting rave reviews. It's super with tempeh. They are sampling it on grilled skewered tempeh and pineapple.

John's first commercial miso product, Hot Stuff, was first put on the market in early 1981 [about April]. John is trying to use miso to create natural foods for Americans. To date John has sold exclusively to U.S. Naturals, his distributor, run by Jeffrey Hilbert and Jimmy Silver. But he has had bad service and many problems from them, so he is considering a new distribution system. He may get regional warehouses and sell from there to distributors like K&L [Kahan & Lessin], cutting out any master distributors. Address: Suite 21, The Courtyard, Chapel Hill, North Carolina 27514.

1603. Berry, Linden. 1984. The soy of cooking. *Women's Sports* 6:40-41. Sept.
• ***Summary:*** A brief introduction, without recipes, to tofu, tempeh, miso, and shoyu. "You don't have to be a vegetarian to eat and enjoy soy foods... Look for cookbooks with recipes for using these soy foods at your local bookstore. There are lots of delicious and healthful alternatives to meat that await you."

1604. **Product Name:** [Fresh Tempeh].
Foreign Name: Frisches Tempeh.
Manufacturer's Name: Byodo Naturkost.
Manufacturer's Address: Thalkirchenstr. 57, D-8000 Munich, West Germany. Phone: (089) 16 85 70.
Date of Introduction: 1984. September.
Ingredients: Organically grown soybeans, water, vinegar, beneficial mold culture (Edelpilzkultur) Rhizopus oligosporus.
Wt/Vol., Packaging, Price: 200 gm plastic bag.
How Stored: Refrigerated.
Nutrition: Per 100 gm.: Protein 19.5 gm, fat 7.5 gm, carbohydrates 9.9 gm, calories 157, vitamin B-12 5 mcg.
New Product–Documentation: Die Geschaeftsidee. 1989. Dec. p. 32. The third tofu maker in Munich, Byodo, was founded in 1985. The present owners, Bernd Steyers [sic, actually Steyer] and Michael Biedenbach. They also make tempeh.

Letter from Anthony Marrese. 1990. March 22. Based on a March 21 interview with Bernd Steyer, tempeh production manager and builder of their first tempeh incubator in 1984. The company started in 1984, when they started to make their own tempeh. Present production is said

to be 50 kg/week of tempeh plus 500 burgers/week.

Bernd Drosihn. 1989. Tempeh: Ein traditionelles Nahrungsmittel mit Zukunft [Tempeh: A traditional food with a future]. p. 38. Says the company makes fresh tempeh from whole soybeans, tempeh burgers, and tempeh chips. A source of tempeh starter.

Letters (faxes) from Harry Whitford. 1990. May 11 and June 9. "Byodo Naturkost was founded in the summer of 1984 by Lukas Kelterborn (whose idea it was), Hermann Konrad, and myself. I contributed the name–Byodo is the Japanese Buddhist term meaning "eternity," or with extended vowels (Byôdô) "equality" as implied in the perfection of indifference. The full original name was "Byodo Naturkost, Lukas Kelterborn, Hermann Konrad & Harry Whitford." It's legal status was a "GbR" ("Gesselschaft buergerlichen Rechts"–a "Personen Gesellschaft"), that is, a company made up of individuals who carry full personal responsibility for the debts and assets of the company. In Germany, such a company must include the names of all owners in the company name. Hermann and I were both cooking at Keyno Vegetarian Restaurant, where I was in charge of soyfoods production and quality. We made our own tofu and tempeh at the restaurant.

"Byodo started as a tempeh company. The first product was Frisches Tempeh (Fresh Tempeh, in English). Production started in about Sept. 1984. Originally we were located at Thalkirchenerstr. 50, D-8000 Munich, in a former bakery together with the Italian Aikido-teacher and Tofu maker Georgio Sapia. We started making a Tempeh Burger (Tempehburger) later that fall after we realized we couldn't keep the company going only on tempeh. A Tofu Burger (Tofuburger) followed shortly afterwards that fall and Lukas' last service to the company was to establish the tie to Soyastern, which was unable to fry burgers due to complaints by the neighbors. We started buying tofu from Soyastern in Cologne to make burgers for them–at a distance of 400 miles!"

Label sent by Anthony Marrese. 1990. April 15. 4 by 6 inches. Purple on white, printed on a 5.25 by 8.75 inch outer plastic bag. "Occasional gray to black spots are a sign of full ripeness. The fresh soy specialty product. Rich in protein. Free of cholesterol. Low in calories.

Letter from Bernd Steyer to Anthony Marrese. 1990. March 23. Bottom of letterhead lists the company owners as Bernd Steyer, Gert Borst (crossed out in pen), and Michael Biedenbach. They will start a new tempeh plant in August. Phone: 0 88 06/5 09.

1605. **Product Name:** [Tempeh Burger–Deep-fried].
Foreign Name: Tempeh-Burger–Frittiert.
Manufacturer's Name: Byodo Naturkost.
Manufacturer's Address: Thalkirchenstr. 57, D-8000 Munich, West Germany. Phone: (089) 16 85 70.
Date of Introduction: 1984. September.
Ingredients: Soybeans, water, vegetables (Carrots, zucchini, soy sprouts) in varying proportions by weight, whole oats, whole wheat, brown rice, sesame seeds, sunflower seeds, spices, soy sauce (shoyu), sea salt, vinegar, beneficial mold culture (Edelpilzkultur) Rhizopus oligosporus. Ingredients predominantly organically grown.
Wt/Vol., Packaging, Price: 130 gm plastic bag.
How Stored: Refrigerated.
New Product–Documentation: Letter from Anthony Marrese. 1990. March 22. Based on a March 21 interview with Bernd Steyer, tempeh production manager and builder of their first tempeh incubator in 1984, when they started to make their own tempeh. Present production is said to be 50 kg/week of tempeh plus 500 burgers/week.

Bernd Drosihn. 1989. Tempeh: Ein traditionelles Nahrungsmittel mit Zukunft [Tempeh: A traditional food with a future]. p. 38. Says the company makes fresh tempeh from whole soybeans, tempeh burgers, and tempeh chips. A source of tempeh starter.

Letter (fax) from Harry Whitford. 1990. May 11. "We started making Tempeh Burgers (Tempehburgers) later that fall (1984) after we realized we couldn't keep the company going only on tempeh."

Label sent by Anthony Marrese. 1990. April 15. 5 by 2.25 inches. Green on yellow, printed on front and back of plastic bag. "A nutritional soya specialty (Eine vollwertige Soja-Spezialität). Store at 4-8ºC."

1606. Chen, Steve. 1984. Soyfoods in the Far East and USA: Products, markets, trends. In: American Soybean Assoc., ed. 1984. First European Soyfoods Workshop, Proceedings. Brussels, Belgium: ASA. 36 p. See p. C1-C38. Held Sept. 27-28 at Amsterdam, Netherlands. [11 ref]
• ***Summary:*** Contents: Summary. 1. Introduction: Ten reasons why soybeans will be a key protein source for the future. 1. Soyfood products. A. Non-fermented soyfoods: Fresh green soybeans, soybean sprouts, soynuts, soymilk, soy flour, yuba or soy protein film, tofu. B. Fermented soyfoods: Soy sauce, miso, tempeh, natto, fermented tofu, soy nuggets (tou-shih, hamanatto). 3. Soyfoods markets and trends in the Far East: Taiwan, China, Japan, South Korea, Indonesia, Malaysia, Singapore, Thailand, Philippines. 4. Soyfoods markets and trends in the U.S. 5. References. Plus 15 tables and 8 figures.

"It is our [American Soybean Association's] strong intention that marketing and consumption of soy protein should not in any way deter the expansion of the production and sale of as much animal protein as the world can be expected to produce in the years ahead. Soy protein foods are being intentionally brought to the market to complement and not necessarily to replace animal protein products."

"Taiwan imported 1.41 million tonnes (metric tons) of soybeans in 1983 and used about 250,000 tonnes as soyfoods for direct human consumption, which made Taiwan one of

the highest in per capita consumption of soyfoods (13.2 kg or 29 lb) in the world. In the past 10 years (1974-1983), the consumption of traditional soyfoods showed an average increase of 3% per year as compared to 12% and 8.1% for poultry and soy oil, respectively. The market for packaged soymilk, soy pudding and tofu has also been expanding rapidly in recent years in Taiwan." Table 7 shows the production of soymilk in Taiwan, which grew from 103,600 tonnes in 1974 to 210,000 tonnes in 1983, for an average growth rate of 8.2% a year.

China produces about 9 million tones of soybeans a year, and about half of these are consumed as soyfoods, giving a per capita consumption of 4.5 kg of soyfoods. "An improvement in the general economy and soyfood technology and equipment will bring a sharp increase in soybean demand and more soyfoods consumption."

In South Korea soymilk consumption has increased more than seven-fold in the last 4 years. Currently about 10,000 tonnes of soybeans are used to make 70,000 tonnes of soymilk. "It is projected that soymilk production in Korea will double in 1984 as compared to the previous year."

Indonesia continues to be Southeast Asia's largest consumer of soybeans as food. In 1982/83 soybean consumption was 6.7 kg per capita. Indonesia consumes about 1 million tonnes of soybeans annually, 60-65% of them in the form of tofu and 35 to 40% as tempeh.

Malaysia consumes only about 30,000 tonnes of soybeans per year as food. In Singapore, more than 75% of the population of 2.5 million are Chinese. Therefore tofu, soysauce, and soymilk are the predominant traditional soyfoods consumed.

Thailand consumes about 40,000 tonnes of soybeans a year as food, mainly in the form of tofu. The Philippines uses only 5,000 tonnes of soybeans annually for food, mainly as tofu.

To summarize (Table 6), annual per capita consumption of soybeans in various East Asian countries, in descending order of the amount consumed, is as follows: Taiwan 13.2 kg (population 19 million); Japan 8.3 kg (population 120 million); South Korea 7.5 kg (population 40 million); Indonesia 6.7 kg (population 150 million); Singapore 6.25 kg (population 2.4 million); China 4.5 kg (population 1,000 million); Malaysia 2.1 kg (population 14 million); Thailand 0.8 kg (population 50 million); Philippines 0.3 kg (population 15 million). Address: Director, American Soybean Assoc., Room 603, Kwang-Wu Building, No. 386, Tun Hua South Road, Taipei, Taiwan.

1607. Cusumano, Camille. 1984. Discovering tempeh. *Vegetarian Times.* Sept. p. 38-41.
• ***Summary:*** "In the colorful marketplaces of Bali, tempeh cakes wrapped in banana leaves are a common sight. Indonesians have long savored fragrant cakes of tempeh, with its rich, meatlike flavor and unique, chewy but tender texture. Westerners are just beginning to discover this delicious fermented food that originated in Indonesia centuries ago."

Contains a good introduction to tempeh, including information about buying and storing tempeh, and preparing tempeh recipes–plus 6 recipes starting with Pumpkin-tempeh bread.

1608. Kooij, J.A. van; de Boer, E. 1984. Microbiological aspects of soyfoods. In: American Soybean Assoc., ed. 1984. First European Soyfoods Workshop, Proceedings. Brussels, Belgium: ASA. 131 p. See p. I1-I15. Held Sept. 27-28 at Amsterdam, Netherlands. [20 ref]
• ***Summary:*** "To learn more about the microbiological quality and safety of tempeh and tofu a survey was carried out by the working party 'Fungi in Foods' in the summer and autumn of 1983. The products were sampled in stores, restaurants and production places throughout the Netherlands and analyzed by using standard microbiological procedures...

In 110 samples of tempeh: "About 10% of the samples contained *Staphylococcus aureus* and *Bacillus cereus* in numbers which may cause food intoxication. However, the *S. aureus* strains isolated in this survey proved to be non-enterotoxigenic. *Yersinia enterocolitica* (non-pathogenic serotypes) was found in 6 samples. *Salmonella* was not isolated from any of the samples tested...

"In 154 samples of tofu: 2.1% had more than 100 counts/gm of *Staphylococcus aureus;* 11.2% had more than 100 counts/gm of *Bacillus cereus*. And 36.3% had more than 100 counts/gm of *Escherichia coli.* "About 95% of the samples appeared to have an aerobic count over 1,000,000 colony forming units (cfu) per gram. This means that there is a very great proliferation of bacteria after the production, for immediately after the production the aerobic plate count is usually below 10,000 cfu/g. This indicates that the tofu had been stored improperly or for too long. The average pH of tofu immediately after production was about 6.5, but at the time of sampling it averaged 5.2. But 5% of the samples had a pH of less than 4.5, and 16% has a pH of 4.5 to 4.9. These low pH values indicate sour/acidic products caused by large numbers of lactic acid bacteria. "In 0.7% of the tofu samples *Bacillus cereus* and *Staphylococcus aureus* were present in numbers that may cause food intoxication. The presence of *B. cereus* was probably caused by an outgrowth of the spores which survived the heat treatment. This indicates that the tofu must have been stored at too high a temperature during a long period (12–48 hours).

"The presence of *S. aureus* can be explained by a bad hygienic practice during production, after the heat treatment step. *Salmonella* was not found in any of the tofu samples." Address: Food Inspection Services, Netherlands.

1609. Mandoe, Bonnie. 1984. Tempeh: An Indonesian superfood. *Bestways.* Sept. p. 50-51, 60.

• ***Summary:*** About four years ago Bonnie came across an unfamiliar item–a "tempeh kit" in her natural foods store. Although she had no idea what tempeh was, the label assured her that this delicious fermented soyfood was easy to make. She bought the kit, which contained hulled, cracked soybeans and a small packet of tempeh starter. She followed the instructions and "got an extraordinary surprise."

This is a good basic introduction to tempeh, with Bonnie's list of nine benefits of tempeh. Contains 5 recipes. Photos show: (1) Bonnie Mandoe. (2) A plate of four thin squares of fried tempeh surrounded by vegetables.

1610. Martin, Michael. 1984. World supply and demand for soybeans with special reference to soyfoods. In: American Soybean Assoc., ed. 1984. First European Soyfoods Workshop, Proceedings. Brussels, Belgium: ASA. 131 p. See p. B1-B32. Held Sept. 27-28 at Amsterdam, Netherlands.
• ***Summary:*** The author estimates that European soymilk consumption is about 9-10 million liters / year, which is very small compared to European cow's milk consumption of 22,000 million liters/year. European tofu consumption is estimated at 5-6 million kg/year, which is about one-fourth of U.S. tofu consumption. Other estimates for Europe consumption are: Miso 250,000 to 300,000 kg/year; Soy protein products (probably mostly isolates and concentrates) 40,000,000 kg/year; soy oil 1,700,000 tonnes/year. Europe has a fairly small ethnic population, about 1,000,000 people compared to 3,500,000 in the USA. Europe presently has some 20-25 tempeh companies producing an estimated 400,000 to 500,000 kg/year compared to 900,000 kg/year in the USA. Europe, and especially the Netherlands, are moving ahead quickly with tempeh.

The European food market is more fragmented, diverse, and conservative than its American counterpart. "The European consumer expects freshness and quality as a matter of course, and does not expect to pay a premium for these."

"It is well known that the European healthy foods market is booming. It is part of a much wider social trend which involves ecology and politics, real environmental concerns, alternative medicine and coping with unemployment, an aging population, and a minimum growth economy. It places emphasis on quality of life, individualism and cooperation. It does not exclude any age group.

"Soyfoods will increasingly find a place in our daily diets, but not without significant changes in the existing soyfoods industry, with above all greater attention to product quality and product marketing."

Appendix 1 (p. B-12) lists 9 U.S. "suppliers of food-grade soybeans in small quantities suitable for" tofu manufacturers.

Pages B15 to B32 contain numerous other tables, 8 of them reprinted without permission from *Soyfoods Industry and Market: Directory and Databook,* by Shurtleff & Aoyagi. Address: American Soybean Assoc., Centre International Rogier, Bte 521, 1000 Brussels, Belgium.

1611. Mwangi, -. 1984. The Jamaica nutrition project. *Yard Roots Reports* (*Oakland, California*). Sept. p. 4-5.
• ***Summary:*** The author is working to raise $100,000 to develop a soy dairy in Jamaica to make tofu, soy-burgers, tempeh, soy milk, ice cream, mayonnaise and other products from soy beans. The Afrobean Foundation in Kingston is also interested in this idea. Two groups in Jamaica will find soy products useful in their diet. First, the more than 100,000 Rastafarians, most of whom are attempting to pursue a vegetarian diet. Second, Jamaicans of Chinese descent who have traditionally used soy products. "Most of the imported soybeans today are mainly used for making oil and for poultry and pig feed." Readers are asked to send donations to Caribbean Media and Community Resources, Inc. in Oakland, California. Address: Caribbean Media and Community Resources, Inc., 314 17th Street #188, Oakland, California 94612. Phone: (415) 536-3031.

1612. Ohta, Teruo. 1984. Kongetsu no kotoba: Muen daizu shokuhin tempe kaihatsu ni omou [Words for this month: Development of tempeh, an unsalted fermented soyfood]. *Daizu Geppo* (*Soybean Monthly News*). Sept. p. 2-3. [Jap]
• ***Summary:*** "In Feb. 1982, as a part of the International Scientific Technology Cooperative Research Project of the Science and Technology Administration (Kagaku Gijutsu-cho), the Agricultural University (Bogor, Indonesia) and the National Food Research Inst. (Japan) decided to do cooperative research on the development of technology for making practical use of microorganisms. As part of the negotiations and field research, I got the opportunity to study the actual situation of tempeh production and consumption in various areas of Indonesia." A photo shows Ohta sensei. Address: Norin Suisan-sho Shokuhin Sogo Kenkyu-jo, Oyo Biseibutsu Bucho [Tsukuba, Ibaraki-ken, Japan].

1613. Samson, Robert A. 1984. Tempeh: Production in moderate climates. In: American Soybean Assoc., ed. 1984. First European Soyfoods Workshop, Proceedings. Brussels, Belgium: ASA. 131 p. See p. G1-G11. Held Sept. 27-28 at Amsterdam, Netherlands. [8 ref]
• ***Summary:*** Contents: Introduction. Traditional tempeh fermentation. Tempeh production in temperate climates: Preparation of soybeans, starter culture, temperature, humidity and aeration, preservation and storage life. Table 1 lists 8 molds found in a recent microbiological survey of tempeh sold in the Netherlands. Table 2 lists 16 yeasts found in tempeh sold in the Netherlands.

"Be aware that refrigeration may not necessarily stop fermentation, since the mould may produce heat, which may not be dissipated. This sometimes happens when tempeh is stacked too closely in the refrigerator... If tempeh is stored in a freezer, the cake usually loses its typical texture and

appearance, and when thawed it may crumble because the mould threads no longer bind the soybeans." Address: Centraalbureau voor Schimmelcultures, POB 273, 3740 AG Baarn, Netherlands.

1614. *Soyanews* (*Sri Lanka*).1984. Wider sales network for soya. 7(1):1. Sept.
• ***Summary:*** "A regular supply of soya products will be ensured to residents of Colombo and the suburbs beginning from this month. This service will be provided by Forbes Distributors (Pvt) Ltd., a subsidiary of Forbes and Walker, which as been retailing soya products at its shop Lankasoy in Darley Road, Colombo, for some time now.

"The chairman of Forbes Distributors is Mr. R.S. Wijesekara who has been keenly interested in the popularisation of soya foods. Mr. Wijesekara took the initiative to introduce Sri Lankans to soya meat [soyameat] which is now a popular item of food in many homes. He is chairman of the Raja Rata Food Grains Processing Co., makers of Raja Soya, now widely used as a substitute for coconut milk.

"Forbes Distributors have two vans at their disposal and these will serve many retail points in the city and suburbs. Among the items that are available for distribution are Soyabev, a substitute for coffee and the first of the soya products that Mr. Wijesekara introduced to the public, Raja Soya and soya noodles which has been found to be better than ordinary noodles."

Also: Soya sauce, soya flakes, soya devilled nuts, soya oil, soya meat, and "a new product–Mealmaker, which is a spiced and flavoured soya meat." This company will soon be distributing dried tempeh.

"Forbes Distributors have their office at 29 Braybrooke Place and their stores at 40 First Cross Street, Borupana, Ratmalana."

Photos show: (1) A F&W Lankasoy van. (2) Front panel of a package of Mealmaker.

1615. *WomenSports*.1984. The soy of cooking. 6:40-41. Sept. *

1616. Vaidehi, M.P. 1984. Re: Request for tempeh culture and studies on tempeh in Bangalore. Letter to William Shurtleff at Soyfoods Center, Oct. 5. 1 p. Typed, with signature on letterhead.
• ***Summary:*** She requests a packet of tempeh starter culture for some consumer acceptability studies. "I was one of your students at M.F.M." [Meals for Millions, in Santa Monica, California] and hope you will help me in encouraging tempeh use in Indian villages.

"In one of my studies I found that when tempeh curry and chips were served to 100 villagers and 100 urban consumers in India, the results were very promising. The consumers liked tempeh, tofu, and nutri nuggets (TVP); they liked soya curds the least." Address: Assoc. Prof. & Head, Dep. of Rural Home Science, The Univ. of Agricultural Sciences, Hebbal, Bangalore–560 024, India.

1617. Joyce, Michael. 1984. Re: Work with tempeh in Australia. Letter to William Shurtleff at Soyfoods Center, Oct. 7. 4 p. Handwritten.
• ***Summary:*** "My wife and I have been fungi farming for over 18 months now and without being boastful are the growers of Australia's finest tempeh (soy only at present). We are very interested in keeping touch with what is happening world wide with soyfoods as this helps to expand our vision and encourages us... Although Indonesia is our neighbour most Australians are still very English diet conscious and Australia is a 'big beefer.

"Through our association with soyfoods we realised the basic drawback in marketing is people's ignorance and general lack of knowledge. We are finding more and more that marketing soyfoods becomes an education program."

He then asks four questions about making tempeh. Address: Mighty Bean Soyfoods, M.S. Cooloolabin via Yandia 4561, Sunshine Coast, QLD 4558, Australia. Phone: 071-46-7342.

1618. Torii, Yasuko. 1984. Re: New developments with tempeh in Japan. Letter to William Shurtleff at Soyfoods Center, Oct. 16. 2 p. transcript. Handwritten on lined paper. [Jap; eng+]
• ***Summary:*** Mrs. Torii thinks that tempeh will spread and become popular in Japan. It is now rapidly growing in popularity.

Mr. Kanasugi's restaurant Mame-no-ko opened in March 1976. He makes the tempeh in a walled-off room in his natto factory.

Takashin tempeh is served as tempeh cutlets at Alicia's in Shimokitazawa, where it is a popular entree.

The first tempeh discussion group (*Danwa-kai*) in Japan was at Kyushu University, Fukuoka, on 30 July 1984. The Japanese-language program is enclosed. The next will be in Tokyo on 9 Nov. 1984. The one after that will be in Osaka. At the first discussion group (as the program shows) the activities were speeches, discussion of winged bean tempeh, tempeh cookery, tempeh in Indonesia, and future activities. Membership is ¥3,000. Watanabe Tadao is in charge.

Preparations are now underway for the international tempeh and natto symposium (Non-Salted Soybean Foods).

Natural House sells tempeh in four places: Aoyama, Shimokitazawa, Kichijoji & Akasaka. The tempeh is made by Kanehara Shoten. Natural House also sells nigari tofu.

Mr. Kanasugi's method makes good, firm, tasty tempeh, with no dewatering. Prof. Watanabe and Mrs. Torii have both visited him and both praised the method. His tempeh miso is very delicious. She gives the recipe. Like Namé Miso it is good on sliced cucumber or with ginger. Address:

Kamitsuchidana 324, Ayase-shi, Kanagawa-ken 252, Japan. Phone: 0467-76-0811.

1619. Flinders, Carol. 1984. Laurel's Kitchen. *Washington Post.* Oct. 17. p. E6. [1 ref]
• ***Summary:*** "Bill Shurtleff and his wife, Akiko Aoyagi, have probably done more than any other individuals in this country to popularize soyfoods and encourage their commercial production." Contains two tempeh recipes.

1620. Flinders, Carol. 1984. Soy food business grows in U.S., Japan *Hartford Courant* (*Connecticut*). Oct. 17. p. E11. [3 ref]
• ***Summary:*** "I first met Bill Shurtleff 16 years ago at the Tassajara Zen Center in Big Sur, California. Clear-eyed, slender and very thoughtful, he struck me as one of the most self-disciplined and idealistic people I'd ever met."

"And he hasn't changed a bit.

"Bill and his wife Akiko Aoyagi wrote 'The Book of Tofu' in 1979 [sic, 1975], and followed it up with 'The Book of Tempeh,' 'The Book of Miso,' and a spate of books for people in the soy foods business, the most recent being a yearly update called 'The Soyfoods Industry and Market: Directory and Databook.'

"Shurtleff and Aoyagi have probably done more than anyone in this country to popularize soyfoods and encourage their commercial production.

"I called them recently and they had nothing but good news. The soy foods industry has greatly benefited from the concern with too much cholesterol, and business is booming, not only in the country, but also in the part of the world where the soybean has long been king.

"Last January, the couple traveled to East Asia, where they discovered that demand for soy milk is growing faster in every country there than for any other food product. In Japan, production has doubled annually for the past five years. All the major milk companies in Japan have begun to market soy milk. They are convinced it doesn't interfere with dairy sales, that in fact it expands their overall market 'reach' and enhances their corporate image by giving the impression of being up to date and health-conscious.

"The term vegetable protein apparently has extremely positive connotations for the modern Japanese. Beef and dairy product consumption has risen enormously since World War II, but so has incidence of cardiovascular disease and cancer. The term plant protein is associated with the traditional, grain-based diet that prevailed when such ailments were rarer.

"The real driving force of the soymilk takeoff, says Bill, has to do with the technological breakthroughs made at Cornell University [Geneva, New York] and the University of Illinois that have made it possible to produce soy milk that does not taste 'beany.' Popularity of this soy milk is not confined to Japan or Indonesia, Bill's itinerary last winter included visits to four provinces in the People's Republic of China, where he gave intensive workshops in soy milk manufacturing. In the United States, seven companies have introduced it this past year, each with major promotional campaigns."

Includes a recipe for tempeh rice salad. Address: Petaluma, California.

1621. *Yomiuri Shinbun* (*Yomiuri Daily News, Tokyo*).1984. Nattô, sekai ni shinshutsu [Natto-tempeh is marching into the world]. Oct. 24. [Jap]
• ***Summary:*** This article is entirely about tempeh, yet it is called natto!

1622. *Yomiuri Shinbun* (*Yomiuri Daily News, Tokyo*).1984. Nattô sekai ni [Natto is marching into the world]. Oct. 24. [Jap]
• ***Summary:*** This article is about tempeh in general and about the world conference on Asian non-salted fermented foods in July 1985 in Tsukuba, Ibaragi prefecture, Japan.

Prof. Watanabe Tadao (Kyushu University) is the head of the conference. They are planning to invite specialists from Thailand, Indonesia, Nepal, China, Korea, USA, Holland, and Denmark.

The wife of Mr. Kawashima (of Tsukuba University) has been developing tempeh recipes suited to Japanese tastes. This subject was on HNK TV on the 6:30 p.m. "News Center 630," on Oct. 17, 1984. Mrs. Kawashima got interested in tempeh when she was living in Indonesia with her husband (a food researcher); the lived there for a long time.

Photos show: (1) A traditional Indonesian tempeh maker in his shop. (2) Mrs. Kawashima holding a plate of prepared tempeh.

1623. Welters, Sjon. 1984. Early history of tempeh in the Netherlands. *SoyaScan Notes.* Oct. 25. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Cees van Rest, a friend of Sjon's and the owner and president of Wittewonder, visited Mrs. Duson, owner of ENTI, and asked her the list of questions Shurtleff had written her twice but she did not answer.

Note: Firma ENTI was founded in about 1946-1948.

A Dutch couple whose last name was Wedding lived in Indonesia and made tempeh there. They took a 100 year old culture to Holland in a wooden box, along with their tempeh recipe. In Holland they started to make tempeh on a home scale for friends and relatives. They kept the culture going and used it to inoculate Indonesian soybeans with the help of blankets and lamps. It gradually grew into a commercial operation.

The business did well and by the early 1970s they were making 2,000 lb/day of tempeh. Mrs. Duson bought the company in about 1974, Apparently (?) the couple was growing old.

ENTI went out of business in January 1984 and the original Indonesian culture was deliberately destroyed. They sold all the equipment to a used equipment dealer, rather than to a person to continue the business.

Firma Lembeker is now the oldest existing tempeh company in Holland–approximately 25 years old.

Prospects for the future of tempeh in Holland look bad. Mrs. Duson felt extremely sad; she didn't think the health food industry would take over sales of the tempeh for lack of tradition and craftsmanship. She is older. Sjon says the Indonesians in Holland are no longer prospering. After World War II they were prospering with tofu and tempeh. But that stopped in the 1970s, in part because of cultural assimilation. Their population in Holland is diminishing, as some went back to independent Indonesia. Ketjap is still very popular in Holland.

Sjon knows another company that has just started to make tempeh, and is now making 1,500 lb/week. He thinks it is the best quality he has seen. It is sponsored by a multinational–but Sjon cannot say who it is. Address: Netherlands.

1624. **Product Name:** [Aros Tempeh].
Foreign Name: Aros Tempeh.
Manufacturer's Name: Aros Sojaprodukter KB.
Manufacturer's Address: Bergsvagen 1, Orsundsbro S19063, Sweden. Phone: 017-160-456.
Date of Introduction: 1984. October.
Wt/Vol., Packaging, Price: 200 gm.
New Product–Documentation: Talk with Ted Nordquist. 1985. Jan. 7. Tim Ohlund started making tempeh commercially at Aros in Oct. 1984. He makes 100 x 200 gm packages once every two weeks. But note that there is a listing in the Soyfoods Center Computerized Mailing List. 1982. July 23. Owners: Ted Nordquist & Tim Ohlund.

Letter (fax) from Ted Nordquist. 1990. June 28. Aros does not presently make tempeh. They sell tempeh starter, instructions, and recipes. Talk with Tim Ohlund. 1991. May 31. He made the tempeh at Aros as Ted described, but it was Aros's product, not Tim's. It was named Aros Tempeh on the label.

1625. **Product Name:** Tempeh.
Manufacturer's Name: Frank Barker Tempeh Co.
Manufacturer's Address: c/o Post Office Cowarumup 6284, Western Australia.
Date of Introduction: 1984. October.
New Product–Documentation: Letter (4 p., handwritten) from Frank Barker, 1985. Feb. 25. Has been making tempeh commercially for 4 months.

Talk with (call from) Frank Barker of Tally-Ho Farm. 1994. June 15. A disastrous fire has just burned down his tempeh plant and his offices. He is thinking of re-locating in Perth.

Form filled out by (fax from) Frank Barker. 2001. July 2. Tallyho Farm is making tempeh. Located at 3 Cullen St., Bayswater, Western Australia 6053. Phone: 08 9371-9840. Persons in charge: Frank Barker and C.T. Cheong.

1626. *J. of the American Oil Chemists' Society.*1984. New soy crushing facility [in Indonesia]. 61(10):1521, 1523. Oct.
• ***Summary:*** "Indonesia's first soybean crushing facility is expected to be operational in late 1985 or early 1986, reducing that nation's dependence on imported soybean meal for its poultry industry and increasing the volume of soybean imports.

"The plant capacity is estimated at 300,000 tonnes annually, which should produce about 240,000 tonnes of meal. That is about the volume of soybean meal imported from the U.S. during 1984. Domestically produced soybeans are used almost exclusively for human foods such as tempeh and tofu.

"Oil palm and coconut are the major sources of vegetable oil in Indonesia, with palm, palm kernel and coconut oils accounting for 99% of Indonesia's 1.8 million tonne production."

1627. **Product Name:** Grain Tempeh (With Okara, Brown Rice & Sunflower Seeds).
Manufacturer's Name: Soy City Foods.
Manufacturer's Address: 2847 Dundas St. West, Toronto, ONT, M6P 1Y6, Canada. Phone: 416-762-1257.
Date of Introduction: 1984. October.
Ingredients: Soy mash [okara], brown rice, sunflower seeds, vinegar, Rhizopus oligosporus.
Wt/Vol., Packaging, Price: 250 gm plastic bag.
How Stored: Refrigerated.
Nutrition: Per 100 gm: Protein 7.9gm, fat 9.76 gm, carbohydrate 12.0 gm, calories 167.4 gm.
New Product–Documentation: Label. Received 1988, Aug. 7 inches square. Printed on plastic bag. Orange, white, green, yellow and blue. Illustration of a sunflower and a field at the base of high mountains. Text and recipes in English and French. "150 g of tempeh provides a good source of protein. Keep refrigerated. Always cook thoroughly." On back panel: "Health is the most precious thing you have. Sustain it by eating good food." Recipe for Soy City Bake. "Tempeh naturally changes color from white through grey to black. These colouration changes improve the tempeh's quality and flavour." Letter from Jon Cloud: Introduced in the fall of 1984. Later he said spring 1984.

1628. *Trinidad and Tobago Review.*1984. The "noble bean" in the Caribbean. Oct. p. 27.
• ***Summary:*** "On the main road about 1 mile south of the heart of Roseau between Dominica's western slopes and the shoreline is the Plenty Canada Soya Shop (a photo of which is shown). After only a week opening in Newtown,

this unusual take-away outlet sells out of accras and [soy] ice-cream nearly every day." Each morning the staff prepares batches of soyamilk. which is "used to make ice-cream and Tofu (soyabean cheese) and some is reserved to be sold as milk while the presscake [okara] is combined with tofu, wholewheat flour and seasonings to prepare the delicious and popular fried accras. The shop opens at one o'clock and serves a steady stream of customers until eight, unless stocks run out."

Plenty Canada's representatives arrived on Dominica in response to requests from local people. "With the co-operation of the government they have demonstrated simple home-scale soyafoods preparation in local areas and conducted soyabean seed trials. The initial interest in soyafoods was enough to encourage them to set up shop in central Roseau, grinding the beans at first by hand in a cocoa mill. As the business grew they needed more production space and more contact with local people on a 'grass roots' level as the shop was intended primarily as a training situation. Since the move to Newtown a Dominican couple are planning to re-open the original premises as a second soya shop, Creole-style.

"Plenty's soya project is staffed by three volunteers from Canada and the USA, who receive only subsistence, and five wage-earning Dominicans who are learning to manage the shop. They have requests for soya shops in other parts of the island...

"Plenty brought in an initial supply of soyabeans from North America and are now supplying seed to two groups of local farmers who are keen to grow for the shop... The shop is beginning production of Tempeh, a cultured soya food from Indonesia."

Note 1. This is the earliest English-language document seen (Feb. 2004) that uses the term "soyabean cheese" to refer to tofu.

Note 2. This is the earliest English-language document seen (Aug. 2002) that uses the term "Noble Bean" in the title to refer to the soybean.

1629. Watanabe, Tadao. 1984. Daizu to tenpe–Indonesia tenbyô [Soybeans and tempeh–A sketch of Indonesia]. *Daizu Geppo* (*Soybean Monthly News*). Oct. p. 1-5. [Jap] Address: Torigoe Seifun K.K. Komon; Kyushu Daigaku, Meiyo Kyoju.

1630. Florida, Nancy K. 1984. Re: Early reference to tempeh in the *Serat Centhini.* Letter to William Shurtleff at Soyfoods Center, Nov. 26. 5 p. Typed, with signature. [5 ref. Eng]
• ***Summary:*** Contains a summary and historical overview of the *Serat Centhini,* a transliteration and a translation of Canto XXXI of the Javanese script by Ms. Florida in the poetic metre, a list of 5 references consulted, and 3 manuscript sources. The 2 abbreviations used are: LOr = Leiden Oriental Collection, Leiden University Library. SP = Sasono Poestoko, Karaton Surakarta, Surakarta, Central Java, Indonesia.

Note: Nancy is preparing a 4-volume work titled *Javanese Language Manuscripts of Surakarta, Central Java: A Preliminary Catalog,* to be published in 4 volumes by Cornell Univ. Southeast Asia program. Address: Dalem Joyoksuman, Gajahan RT 9/ RK I, Solo, Jateng 57115, Indonesia.

1631. Soyfoods Center. 1984. Early reference to tempeh discovered in Javanese literature of 1815 (News release). P.O. Box 234, Lafayette, CA 94549. 2 p. Nov. 28. [3 ref]
• ***Summary:*** Prior to 1984, the earliest document seen worldwide that mentioned tempeh (a fermented soyfood that originated in Indonesia) was an 1895 article by a Dutch scientist and microbiologist, H.C. Prinsen Geerligs. It was generally thought that tempeh had originated in Java long before this time but there was no proof.

In July of 1984 William Shurtleff, with help from Amin Sweeney, Prof. of Malay and Indonesian Literature and Languages at the Univ. of California at Berkeley, pushed the date of the earliest document seen that mentions back to 1875, with the discovery of a reference to tempeh (actually *tempe*) in a Javanese-Dutch dictionary, the *Javaansch-Nederduitsch Handwoordenboek* by the Dutch scholars J.F.C. Gericke and T. Roorda.

Now Shurtleff, with the help of Prof. Sweeney, Eric Oey (one of his students), and Nancy Florida (an American living in Solo, Indonesia, cataloging ancient Javanese texts) has found an earlier reference to tempeh in the *Serat Centini* [also spelled *Serat Centhini*] which was written in about A.D. 1815 on the orders of Sunan Sugih, then Crown Prince and later Pakubuwana V of Surakarta, in today's eastern Central Java. The main author was probably Rangga Sutrasna. This classic work of Modern Javanese literature contains a line mentioning "onions and uncooked *tempe."*

Although the *Serat Centini* was written in about 1815, it is quite possibly based on much older sources. Address: Lafayette, California.

1632. *New Chronicle. The Conscience of the Nation* (*Dominica, West Indies*).1984. Soy foods available. Nov. 30.
• ***Summary:*** Today Nathalie Andrew is opening "Soy Kweyol," a take away health oriented catering service in the heart of Roseau, Dominica. All of her foods are made from soybeans, and are homemade. A photo shows Nathalie serving a beverage from her shop window. "Soy beans, it has been discovered, can now be grown locally. Farmers in areas like La Plaine have successfully produced their first crop of beans and have already begun preparations for planting a second crop. The seeds which take three months to grow can be obtained from the 'Plenty' Office in Victoria Street, New Town." Address: Dominica.

1633. Bates, Cynthia. 1984. Re: History of The Farm's work with tempeh. Letter to William Shurtleff at Soyfoods Center, undated. 3 p.
• ***Summary:*** "At long last, here are the last of the changes–none of them too radical."

Note: For our complete history of The Farm's pioneering work with tempeh please see: *History of Tempeh, a Fermented Soyfood from Indonesia,* by Shurtleff and Aoyagi (1985, p. 42-46). Address: The Tempeh Lab., P.O. Box 208, Summertown, Tennessee 38483. Phone: 615/964-2286.

1634. **Product Name:** 3-Bean 3-Grain Tempeh (With Pinto Beans & Wheat & Corn).
Manufacturer's Name: Cricklewood Soyfoods.
Manufacturer's Address: Route 1, Mertztown, PA 19539.
Date of Introduction: 1984. November.
New Product–Documentation: Ad in CRC Reports. 1984. Oct.; 1987. Fall. p. 15.

1635. **Product Name:** Tempeh.
Manufacturer's Name: Nutrisoy Pty. Ltd.
Manufacturer's Address: 255 Forest Road, Arncliffe 2205, NSW, Australia.
Date of Introduction: 1984. November.
Ingredients: Organic soybeans, water, cider vinegar, and culture (*Rhizopus oligosporus*).
Wt/Vol., Packaging, Price: 250 gm in plastic bag.
How Stored: Refrigerated.
New Product–Documentation: Label with date sent by Tony Wondal of Nutrisoy. 2005. April 26. He started making and selling this product in Nov. 1984. Red, green and white on yellow. Front panel: "Nutritious. Cholesterol free. Frozen fresh natural. Fitness food. Fry, bake, grill or steam for a quick and easy meal. Fitness food. Bermutu Tinggi."

1636. *Soya Foods* (*ASA, Europe*).1984. The Soyafoods Interview: Henk P.M. Rigter, Consuma B.V., Netherlands. Nov. p. 6.
• ***Summary:*** Consuma B.V. is a 100% subsidiary of Chemex B.V., a company trading soy proteins. Consuma started on 15 Aug. 1983 with the production of tempeh. The company presently employs 4 people and Righter is the director. The tempeh is made in the standard way except the *Rhizopus* inoculum has been specially developed for Consuma. The product is marketed to health food stores, and to the wholesale trade for Indonesia "toko" restaurants. Later they hope to sell to normal food retail outlets. The company is trying to develop a throw-away package that will give the tempeh a longer shelf life. Address: Christiaan Huygensstraat 10, 2665 KX Bleiswijk, Netherlands.

1637. **Product Name:** Lightlife Meatless Fakin' Bacon (Made from Tempeh). Renamed Marinated Smoky Tempeh Strips by about April 1997.
Manufacturer's Name: Tempehworks, Inc.
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01302.
Date of Introduction: 1984. November.
Wt/Vol., Packaging, Price: 6 oz 170 gm in plastic bag.
Nutrition: Per 2 oz.: Calories 79.4, Protein 8.4 gm, carbohydrates 5.6 gm, fat 2.6 gm, sodium 233 mg.
New Product–Documentation: Food Report (Lehmann). 1984. Nov. Label. 1985, undated. 4 by 9.5 inches. Brown and orange on yellow. "100% Natural. Cholesterol free. Delicious and nutritious." Package changed so that Fakin' Bacon is one of three types of Meatless Deli Slices. Red and brown on white. "Ready to eat. Ready to heat. Delicious and Nutritious." Layton. 1988. Greenfield Recorder. May 20. p. 25. Fakin' Bacon retails for $1.75 a pound, roughly the same as pork bacon.

1638. **Product Name:** Lightlife Meatless Deli Slices (Made from Tempeh) [New York Style 'Strami, or Kansas City B.B.Q.].
Manufacturer's Name: Tempehworks, Inc.
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01302.
Date of Introduction: 1984. November.
Wt/Vol., Packaging, Price: Vacuum packed in 6 oz poly bag. Retail for under $2.00.
How Stored: Refrigerated, 40 day shelf life. Or frozen.
Nutrition: Per 2 oz.: Calories 79.4, protein 8.4 gm, carbohydrates 5.6 gm, fat 2.6 gm, sodium 152 mg.
New Product–Documentation: Label. 1985, undated. 4 by 9.5 inches. Red and brown on white. "Ready to eat. Ready to heat. Delicious and Nutritious."

1639. *Vegetarian Times.*1984. People who have popularized vegetarianism. Nov. p. 28-29, 58-60.
• ***Summary:*** Introduces each person with a brief biography (those followed by an * also contain a photo of the person): Paavo Airola*, Mollie Katzen*, Jay* & Freya Dinshah, Alex Hershaft, Andreas Cahling*, Nellie Shriver, Peter Singer, Herman & Cornellia Aihara, Michio Kushi*, Gary Null*, Dick Gregory, the Seventh-day Adventists, Michael Jacobson, Nikki & David Goldbeck*, The Farm (Summertown, Tennessee; Margaret Dotzler*, Louise Hagler*, and Cynthia Bates*), Jim Mason*, Francis Moore Lappé*, Paul Obis, Laurel Robertson, Carol Flinders & Bronwyn Godfrey, Bill Shurtleff & Akiko Aoyagi*.

1640. Kronenberg, Hananya J. 1984. Reduction of incubation time for tempeh fermentation by use of pregerminated inoculum. *Economic Botany* 38(4):433-38. Dec. [17 ref]
• ***Summary:*** Spores of *Rhizopus oligosporus,* pregerminated 8-12 hours on cooked white rice, were used to inoculate cooked soybeans, reducing the incubation time of the tempeh fermentation by up to 4 hours. A potato extract-yeast extract-

1984

NOW SHOWING

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said Doris Flynn of New Jersey

Lightlife line introduced by Tempehworks to rave reviews

ATLANTA, July 22 - Tempehworks, Inc. introduced it's new product line at the NNFA show here. The new members of the Tempehworks troupe are Fakin' Bacon breakfast strips, New York 'Strami and Kansas City B•B•Q deli slices. Perfectly typecast to appear in breakfast, lunch and dinner performances, the entire Lightlife line boasts authentic texture and flavor while offering low calories, high protein, and absolutely no cholesterol. The new stars were only in town for a four day engagement, but left a trail of loyal fans from coast to coast.

Scientists praise nutritional value and of meatless

Lightlife™ MEATLESS
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Don't miss the chance to start your own local fan club!

Vacuum packed and pasteurized — 40 day refrigerated shelf life

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glucose broth containing germinated spores as inoculum for tempeh reduced incubation time by 4-5 hours. Reduction of up to 17% of the tempeh fermentation time using spores pregerminated in a solid substrate may be of considerable economic value to soyfoods manufacturers. Address: Dep. of Food Science, Cornell Univ., Ithaca, New York 14853. Present address: Soy Systems, 1418 N.W. 179th St., Ridgefield, Washington 98642.

1641. Medwid, Richard D.; Grant, Dale W. 1984. Germination of *Rhizopus oligosporus* sporangiospores. *Applied and Environmental Microbiology* 48(6):1067-71. Dec. [9 ref]
• ***Summary:*** "The morphology of *Rhizopus oligosporus* (NRRL 2710) sporangiospores and their physiological requirements for germination were studied. Germination proceeded in two separable phases; phase I (swelling) and phase II (germ tube protrusion). The optimal conditions for germination were 42ºC and pH 4.0." Address: Dep. of Microbiology and Environmental Health, Colorado State Univ., Ft. Collins.

1642. Murakami, H.; Asakawa, T.; Terao, J.; Matsushita, S. 1984. Antioxidative stability of tempeh and liberation of isoflavones by fermentation. *Agricultural and Biological Chemistry* 48(12):2971-75. Dec. [16 ref]
• ***Summary:*** The main isoflavones responsible for the antioxidative activity in tempeh were deduced to be daidzein and genistein. Address: 1&3. Research Inst. for Food Science, Kyoto Univ., Uji, Kyoto 611, Japan; 2. Doshisha Women's College, Imadegawa, Kamigyo-ku, Kyoto 602, Japan.

1643. **Product Name:** Tempeh.
Manufacturer's Name: Sooke Soy Foods Ltd.
Manufacturer's Address: 2625 Otter Point Rd., R.R. 2, Sooke, Vancouver Island, BC, V0S 1N0, Canada. Phone: 642-3263.
Date of Introduction: 1984. December.
Ingredients: Organic soybeans, water, and culture (Rhizopus oligosporus).
Wt/Vol., Packaging, Price: 8 oz (227 gm).
How Stored: Refrigerated or frozen.
Nutrition: Per 100 gm: Calories 163, protein 19 gm, carbohydrates 13 gm, fat 5 gm.
New Product–Documentation: Label. 1988, received. 6 inches square plastic bag. Blue, white, green, and yellow on clear film. "An excellent source of protein. Soy. Organic. No preservatives. On Back: Quick and Easy Recipes for Saucy Tempeh, and Sweet and Sour Tempeh. If you like our tofu–you'll love our tempeh! * Tempeh, like tofu, is so versatile it adapts itself to any cooking method and all types of cuisine. * Tempeh is terrific in stir frys, soups, stews, and sandwich spreads. * Tempeh is delicious deep-fried like fish sticks, broiled as cutlets, or barbecued. * Invent your own dishes; great in Mexican and Italian foods! Grey or black areas on tempeh are due to normal sporulation, and do not indicate spoilage." Letter from Wayne Fatt. 1988. Sept. 29. The product was introduced in Dec. 1984.

1644. *SoyaScan Notes.* 1984. Chronology of events during 1984 concerning *Soyfoods* magazine, Doug Fiske, Richard Leviton, and William Shurtleff (Overview). Compiled by William Shurtleff of Soyfoods Center.
• ***Summary:*** Jan. 30–Fiske, owner of *Soyfoods* magazine in Encinitas, California, writes William Shurtleff of Soyfoods Center. This letter is written on a new *Soyfoods* letterhead with a new matching envelope.

Feb. 15–Fiske mails a letter to "Dear Reader," the many people receiving *Soyfoods* magazine free of charge. "In the face of the economic realities of magazine publishing, *Soyfoods* is converting its circulation from mostly free to mostly paid... On January 1, 1984 a one-year subscription to soyfoods went from $15 to $20." But, by responding now, you can save $5.00 on your subscription. A coupon is enclosed.

April 13–Leviton writes Fiske to explain that he does not want to continue working with *Soyfoods* magazine. He finds his soy sauce book project stimulating.

March–Fisk writes subscribers apologizing for the delay in publishing. Issue No. 10 is scheduled to be published June 29, 1984.

April 17–Gary Barat, president of the Soyfoods Association, writes a letter on his Legume letterhead to all Soyfoods Association members, urging them to take advantage (as he plans to) "of the Ad / Cover Proposal / Editorial proposal which Doug Fiske of *Soyfoods Magazine* outlines in his enclosed letter... Six of our members have already committed to the cover;..."

April 19–Fiske sends a letter to soyfoods producers asking for help with the magazine, and a sheet of mechanical specs and advertising rates.

May 7–Fiske sends Shurtleff a check to cover the cost of making 422 ads, changes, and deletes to the magazine's mailing list. Also his edited version of an article on tempeh in Japan.

June 11–Shurtleff writes Leviton in Glastonbury / Avalon, England, asking if he would be willing (as a consultant) to visit a tofu plant near London.

Aug. 17–Fiske writes Shurtleff 2 letters concerning details of publishing *Soyfoods* magazine, and responding to Shurtleff's comments on the last issue (full-color cover published summer 1984).

Sept. 5–Leviton writes Shurtleff from Somerset, England; responds to questions written him by Mark Fruin concerning the seriousness of his commitment to writing the soy sauce book with Shurtleff and Fruin. He will honor his agreement but is disappointed that a publisher for the book

has not yet been found.

Oct.–Fiske writes a letter to readers (300-350 domestic producers), encouraging them to advertise and enclosing rates. Sends a personal, handwritten letter to Shurtleff with the form letter.

Oct. 21–Shurtleff writes Fiske concerning the annual Soyfoods Year in Review he has written jointly with Leviton for the past 3 years.

Nov. 4–Fiske writes Shurtleff. A small publishing company nearby has shown interest in *Soyfoods* magazine. They want numbers. Doug is cautiously optimistic.

Nov. 28–Leviton writes Shurtleff from Massachusetts. He is back in the USA for a few months and will be in California to visit in December and January. He has finished his book (not related to soy), 1250 pages. He is pleased with it, and will send the manuscript to a literary agent in New York City next week. He will pick up his boxes of personal belongings in the Shurtleffs' garage when he visits.

1645. Ahmad, Syahrial; Roestamsjah, -. 1984. Aktivitas air dari tempe kering dan perkiraan masa simpannya dalam pengemas plastik [Water activity of dried tempeh and the its estimated durability in plastic wrappers]. Bandung: Lembaga Kimia Nasional–LIPI. 19 p. Research report. [Ind]*
• ***Summary:*** Preservation of tempeh. Address: Bandung, Indonesia.

1646. Greenburg, Don. 1984. List of articles containing information on onchom (oncom, ontjom), okara tempeh, or peanut tempeh. 4 p. Unpublished manuscript.

1647. Herbert, Victor; Drivas, G.; Manusellis, C.; Mackler, B.; Eng, J.; Schwartz, E. 1984. Are colon bacteria a major source of cobalamin analogues in human tissues? 24-hour human stool contains only about 5 µg of cobalamin but about 100 µg of apparent analogue (and 200 µg of folate). *Transations of the Association of American Physicians* 97:161-71. *
Address: New York.

1648. **Product Name:** Tempeh.
Manufacturer's Name: Light Wave Wholefood.
Manufacturer's Address: 21 Gilbert St., Newton, Adeliade, SA 5074, Australia.
Date of Introduction: 1984.
New Product–Documentation: Letter from Dominic Anfiteatro of Light Wave Whole Foods, Adelaide. 1983? (undated). He has been a vegan for 8 years. He learned about tempeh during a 7½-week grape and water fast from *The Book of Tempeh,* by Shurtleff and Aoyagi. Then he traveled to Indonesia to learn more about making tempeh. He was there just after Mt. Galungung in West Java erupted for the first time (about 1982?). He smuggled some indigenous mixed-culture tempeh starter (*biang ragi*) into Australia and "made hundreds of batches of tempeh for myself and for Adelaide." He ran a vegetarian restaurant and juice bar from which he introduced tempeh to many people. He orders a copy of the book *Tempeh Production.* He also made tapeh using organic brown rice, or cassava.

Label. 1984, undated. 4.5 by 5 inches. Red and black on white. "A Cultured Soyabean Food." 250 gm. Letter from Dominic Anfiteatro. 1985. May 2.

1649. **Product Name:** Tofu, Tempeh, and Soya Milk.
Manufacturer's Name: Molly Turner Tofu & Tempeh.
Manufacturer's Address: Malahide, County Dublin, Ireland. Phone: 01-8453853.
Date of Introduction: 1984.
New Product–Documentation: Letter concerning an interview with Molly Turner and her mother and helper (Laura Turner) conducted by Anthony Marrese. 1993. March. Molly is the owner of this small company. She started selling commercially in 1984. She started because of her interest in diet and in supplying other interested people. She is macrobiotic. Although they have sold in various ways (through private sales, health shops, etc.) now they sell only through the local whole-food co-op once every 2 weeks. Presently tempeh sales are 3-5 kg every 2 weeks and tofu sales are 5-10 kg every two weeks. They also sell a small quantity of soya milk (3 liters every 2 weeks). They make their own tempeh starter. They also supply fresh herbs and plants, and books about macrobiotics and gardening at the co-op. They have no present plans for changes except to meet the growth in demand at the food co-op.

1650. **Product Name:** [Tempeh Rice Crackers].
Foreign Name: Tenpe Senbei.
Manufacturer's Name: Morita Beika Honpo.
Manufacturer's Address: Morita Masao, Dote-cho 3-256, Omiya-shi, Saitama-ken, Japan.
Date of Introduction: 1984.
New Product–Documentation: Label. 1984, undated. 1.5 by 3 inches on a 6 by 10 inch cellophane bag. Dark green on light green. "Teyaki senbei" [Hand-baked rice crackers].

1651. **Product Name:** Mu Tempeh.
Manufacturer's Name: MU Tofu Shop.
Manufacturer's Address: 1735 W. Greenleaf, Chicago, IL 60626. Phone: 312-743-1339.
Date of Introduction: 1984.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Talk with Rebecca Uchida. 1990. May 14. They have been making tempeh since 1984.

Label for MU Tempeh sent by MU Tofu Shop. 1998. July 2. They still make tempeh. 4 inches square. Brown on orange. "Keep refrigerated or frozen. 8 oz. 1735 Greenleaf, Chicago, Illinois 60626."

Talk with Terry, who runs the business side of MU Tofu. 2001. June 19. Yoshi still makes tempeh. He makes all the soyfoods; the production is a one-man show. The company is doing well.

1652. Mulyati, Yetti; Tanuwidjaja, Lindajati; Roestamsjah, -. 1984. Pembuatan tempe dengan beberapa macam kacang [Preparation of tempeh using different types of beans]. Bandung: Lembaga Kikia Nasional LIPI. 12 p. Research report. [Ind]*
Address: Bandung, Indonesia.

1653. **Product Name:** [Soy & Rice Tempeh Patty].
Foreign Name: Soja-Reis Laibchen.
Manufacturer's Name: Natuerliche Lebensmittel. Paul Stuart Zacharowicz.
Manufacturer's Address: Staudgasse 70, A-1180 Vienna, Austria. Phone: 0222/48 50 03.
Date of Introduction: 1984.
Ingredients: Tempeh (cultured fresh soy product), natural rice (organically grown; biologischer Landbau), vegetables, sea salt, spices/seasonings, sesame.
How Stored: Refrigerated.
New Product–Documentation: Label. 1987. 5.5 x 4 inches. Black, gold, and orange on white card stock. "Natur. Ready to serve, cold as a light meal or snack or warm as a main course. Contains no chemical colorings or preservatives."

1654. **Product Name:** [Tempeh Spread with Garlic].
Foreign Name: Tartiner au Tempeh (Ail).
Manufacturer's Name: Noble Bean.
Manufacturer's Address: Toronto, ONT, Canada.
Date of Introduction: 1984.
Ingredients: Organic soy tempeh, tamari, spring water, garlic, chives, soy oil.
Wt/Vol., Packaging, Price: 227 gm.
How Stored: Refrigerated.
New Product–Documentation: Label. 1985, undated. 3.5 inches in diameter. Orange and green on white. "Fresh-Delicious-Nutritious. Great for sandwiches or on crackers. All natural. Ready to eat." Letter from Allan Brown. 1985. Aug. 7. 8 oz for $1.95. Letter (fax) from Allan Brown. 1998. Jan. 21. This Garlic Tempeh Spread was first sold in 1984, and continued being sold until 1986.

1655. **Product Name:** Tempeh, Soysage, and Soymilk.
Manufacturer's Name: Oryana Soy Shop.
Manufacturer's Address: 16591 Cherry Bend Rd., Traverse City, MI 49684. Phone: 616-941-0254.
Date of Introduction: 1984.
New Product–Documentation: Talk with Tom Slater (nicknamed Tom Tofu). 1988. Sept. 7. The company started making these three products in about 1984, as part of the Oryana Food Co-op, Inc. Today Oryana Soy Shop makes 35-50 lb/week of tempeh, and that is increasing. They make 2-3 gallons/week of soymilk, mostly by special request.

1656. **Product Name:** Soymilk, Tofu, Soy Ice Cream, Fried Accras, or Tempeh.
Manufacturer's Name: Plenty Canada Soya Shop. Renamed Soy Development Center by 1987.
Manufacturer's Address: Roseau, Dominica.
Date of Introduction: 1984.
How Stored: Frozen.
New Product–Documentation: Trinidad and Tobago Review. 1984. Oct. p. 27. "The 'noble bean' in the Caribbean. Accras (fritters), a traditional local food, are now made by mixing tofu and okara with wholewheat flour and seasonings, then frying.

Plenty Bulletin. 1987. Fall. p. 4. Note: This is the earliest known commercial soy product made in Dominica.

1657. Pramono, -. 1984. Tempe dalam kehidupan masyarakat umum [Tempeh in the public life]. District of Karang, Trenggalek, Central Java. Ministry of Education and Culture. Unpublished manuscript. Third prize winner, popular writing contest. [Ind]*

1658. Puslitbang Gizi. 1984. Bahan makanan campuran dengan tempe [Mixing ingredients with tempeh]. Unpublished manuscript. [Ind]*
• ***Summary:*** Puslitbang Gizi is an abbreviation for Pusat Penelitian dan Pengembangan Gizi, the Nutrition Research and Development Center.

1659. Sambas, Ikeu Yatmika. 1984. Telaahan hubungan penjatahan kedelai dari kopti dengan perkiraan harga pokok dan titik impas (Studi kasus di Sentra Industri Kecil tahu Kelurahan Babakan, Kecamatan Babakan, Ciparay,

Kotamadya Bandung) [Correlation study between soybean allocation from KOPTI (Tofu-Tempeh Cooperative) with the price estimation and the breakeven point (A case study at the Center for Small Industry in Babakan, Ciparay, Bandung)]. Sarjana thesis, Bogor Agricultural University. [Ind]*

1660. Slamet, Dewi Sabita. 1984. Penelitian pengaruh pemberian bahan makanan campuran (BMC) kedele terhadap absorpsi besi [Research on the effects on iron absorption of consuming foods made of soybeans]. Bogor: Pusat Penelitian dan Pengembangan Gizi. 28 p. Research report. [Ind]*
Address: Bogor, Indonesia.

1661. Soebagio, Lanita S. 1984. Laporan penelitian pengaruh pemakaian air tercemar dalam proses pembuatan tempe [Research report on the effects of using contaminated water in tempeh processing]. Jakarta: Akademi Gizi. 66 p. [Ind]*
Address: Jakarta, Indonesia.

1662. **Product Name:** Tempeh Specialties [Soy/Rice, Italian Tempeh, Soy/Peanut, or Tempeh Burgers].
Manufacturer's Name: Soy Shop.
Manufacturer's Address: 1863 Memorial Dr. S.E., Atlanta, GA 30317.
Date of Introduction: 1984.
Ingredients: Burgers: Organically grown soybeans, natural apple cider vinegar, nutritional yeast, herbs & spices, organic whole wheat flour, tempeh cultures.
Wt/Vol., Packaging, Price: 8 oz. Retails for $1.29.
New Product–Documentation: Label. 1985, dated. 4.5 inches square. Green and white on yellow. Four labels in one. Very creative and economical.

1663. Subowo, Tutu; Suharto, -; Kurniati, -. 1984. Penelitian kerusakan dan korosi kaleng pada makanan kaleng tempe dan tahu [Research on tin can damage and corrosion effects in canned tempeh and tofu]. Bandung: Lembaga Kesehatan Nasional, LIPI. 26 p. Research report. [Ind]*
Address: Bandung, Indonesia.

1664. **Product Name:** Tempeh Burger/Cutlet, Mild Italian Soysage.
Manufacturer's Name: Swan Gardens, Inc.
Manufacturer's Address: 1111 N.W. 22nd., Miami, FL 33127.
Date of Introduction: 1984.
Ingredients: Tempeh (cultured soybeans), purified water, soy sauce, herbs.
Wt/Vol., Packaging, Price: 8 oz. Burger/Cutlet retails for $1.11. Soysage retails for $0.79.
How Stored: Refrigerated or frozen.
New Product–Documentation: Labels. 1984, undated. 3 by 4 inches. Red, white, blue, yellow, and black. "Fast food. Easily cooked. No preservatives. All natural."

1665. Tanuwidjaja, Lindajati. 1984. Bench scale powder from tempe inoculum production. Bandung: Lembaga Kimia Nasional–LIPI. 3 p. Research report. [Eng]*
Address: Bandung, Indonesia.

1666. **Product Name:** Tempeh Starter & Instructions (Vacuum Dried & Powdered).
Manufacturer's Name: Tempeh Lab.
Manufacturer's Address: P.O. Box 208, Summertown, TN 38483. Phone: 615/964-3574.
Date of Introduction: 1984.
Ingredients: Dry Rhizopus oligosporus culture, wheat starch.
Wt/Vol., Packaging, Price: 7.5 gm.
New Product–Documentation: Label. 1984, dated. 4 by 6.5 inches. Black on white. Makes 6 lb. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center.

Note: This company was reported to be out of business in Aug. 1992, but they were back in business by Jan. 1993.

Order form sent by Cynthia Bates of The Tempeh Lab. 1993. Jan. 27. The company now carries 4 product lines: 1. Tempeh starter in 4 weights from 250 gm to 4 kg (250 gm, which costs $35 + postage, will inoculate 500 lb cooked beans). 2. Tempeh spore powder in 4 weights from 50 gm to 800 gm (50 gm, which costs $32.50 + postage, will inoculate 500 lb cooked beans). 3. Two types of tempeh kits. A book titled *Tempeh Cookery.* With each product one must pay, in addition to the product price, the shipping plus a COD fee of $2.20 (USA only). The order form states that "Volunteers at the Institute world only for necessary subsistence and inoculum is sold at production cost, without profit. It is our goal to foster the widespread use of tempeh and other healthful; soy products in order to help humans live lightly on the Earth." The "Institute" referred to above is the "Global Village Institute of Appropriate Technology," a non-profit tax-exempt corporation which was founded in 1984 but is apparently now defunct since information about it on the Order form is crossed out. This form is written in a typeface that is so small it is very difficult to read.

1667. **Product Name:** [Tempeh Spread (Vegetable)].
Foreign Name: Tempeh Spread (Groenten).
Manufacturer's Name: Witte Wonder.
Manufacturer's Address: Slachthuiskade 10–2685 Poeldijk, Netherlands.
Date of Introduction: 1984.
Ingredients: Paprika: Soybeans*, water, Rhizopus oryzae, apple vinegar*, olive oil, sunflowerseed oil*, sea salt, barley malt syrup, paprika, tomato puree. * = Organically grown (van biologiese teelt).
Wt/Vol., Packaging, Price: 350 gm jar.
How Stored: Shelf stable; refrigerate after opening.
New Product–Documentation: Label. 1986? 6 by 1.5

inches. red or green, tan, and white. Use for bread, crackers or toast, or in sauces.

1668. Bhumiratana, Amara. 1984. ASEAN Protein Project, 1974-1984. Bangkok, Thailand: ASEAN Subcommittee on Protein. 111 p. Illust. 29 cm. [Eng]
• ***Summary:*** The ASEAN nations are Indonesia, Malaysia, the Philippines, Singapore, and Thailand. Contents: 1. Malnutrition problems in ASEAN countries (incl. Soy-based products as a solution to malnutrition). 2. Administration of the ASEAN Protein Project. 3. Objectives. 4. Methodology. 5. Results of ASEAN member country research: Soy products developed (high-protein, low-cost foods for infants and children, soy milk and soy milk powder, full-fat soy flour), fermentation products developed (tempe: from shophouse business to modern factory, oncom chips and flour, soy sauce, the ASEAN culture collection), other related projects, exchange of information (incl. details on the 15 ASEAN protein workshops held between July 1975 and Oct. 1984, and the publications resulting from each). 6. New ASEAN projects. 7. Conclusion.

This book, which contains many color photos and focuses on soybeans, describes one of the most successful ASEAN programs, emphasizing cooperation among the ASEAN nations in an attempt to solve the problem of malnutrition common to the region. The project, conceived in Aug. 1971, receives major funding and technical assistance from the Australian government. In May 1978 the ASEAN Full-Fat Soy Flour (FFSF) Factory in Chiang Rai, Thailand, was completely installed and has been producing continuously since then. It has a capacity of 100 tons/month. Numerous photos of the facility are shown. A pilot plant has produced up to 50 tons/month of Kaset Infant Food, which has been well accepted in 573 health centers throughout Thailand and is being evaluated in other ASEAN countries. A photo of the package (plastic bag) is shown. Address: Bangkok, Thailand.

1669. Bloodroot Collective; Beaven, Betsey; Furie, Noel; Miriam, Selma. 1984. The second seasonal political palate: A feminist vegetarian cookbook. Bridgeport, Connecticut: Sanguinara Publishing. xli + 242 p. Illust. Index. 23 cm. [35 ref]
• ***Summary:*** An excellent book and cookbook with a crystal clear explanation of why feminists should also be ethical vegetarians. The "Prefatory material" includes sections on "Feminism in the eighties," "Ethical vegetarianism," "Soyfoods," and "On collectivity and work."

The glossary includes brown rice, hoisin, koji, queso blanco, shiro miso, shoyu (correct name for tamari), tahini, and tofu.

The index contains 27 entries for tofu, 19 for miso, 10 for tempeh, 4 for soymilk, and 1 each for okara and soysage. Address: 85 Ferris St., Bridgeport, Connecticut 06605. Phone: 203-576-9168.

1670. Clergeaud, Chantal; Clergeaud, Lionel. 1984. Mystères et secrets du soja [Mysteries and secrets of soya]. Paris: Editions La Vie Claire. 134 p. Illust. 21 cm. [Fre]
• ***Summary:*** Contents: 1. A little history, the properties of soya, soybean culture, soya and animal feeding, recipes based on whole soybeans (*fèves de soja*). 2. Soy flour, soy proteins, recipes based on soy flour and soy proteins. 3. Soy sprouts, recipes based on soy sprouts. 4. Soy oil, recipes based on soy oil. 5. Soymilk, recipes based on soymilk. 6. Tofu, recipes based on tofu. 7. Fermented soy products: miso, recipes based on miso, tamari, tamari-shoyu, recipes based on tamari and tamari shoyu, tempeh, recipes based on tempeh. 8. Other [fermented] soy-based products consumed in the world: Chee fan (fermented tofu), Hamanatto, ketjap (Indonesian soy sauce), Meitauza (fermented okara tempeh), Sufu (fermented tofu). Address: Naturopathes–Ostéopathes, France.

1671. GEM Cultures. 1984. Food cultures from around the world / and more [Mail order catalog]. 30301 Sherwood Rd., Fort Bragg, CA 95437. 4 p. [4 ref]
• ***Summary:*** Contents: 1. Powdered cultures for soycrafters: Powdered starter cultures for tempeh, miso, amazake, shoyu, and tamari. In home and commercial sizes. Rice koji. 2. Koji starter kits. 2. Fresh self-renewing cultures: Viili starter, sourdough starter, kefir grains, natto starter, living tempeh starter. 3. Coagulants for tofu making (nigari, Terra Alba calcium sulfate in 1 lb or 5 lb bags).

4. Some helpful books. 5. Sea vegetables from the Mendocino Sea Vegetable Co. Our purpose. How to order. Address: Fort Bragg, California. Phone: 707-964-2922.

1672. Gerras, Charles. ed. 1984. Rodale's basic natural foods cookbook. Emmaus, Pennsylvania: Rodale Press. xi + 899 p. Illust. Index. 24 x 20 cm.
• ***Summary:*** This book, containing over 1,500 recipes, does not use salt or white sugar, but does use meats, poultry, and fish. It was also published by Simon & Schuster as "A Fireside Book." It contains extensive information on and many recipes for soyfoods, including whole dry soybeans, tofu, soy ice cream, soy flour and grits, miso, soymilk, soy oil, okara (soy pulp), soy sauce, tamari, and soy sprouts. Address: Pennsylvania.

1673. Ko Swan Djien. 1984. Fermentation of foods by moulds. In: Robert A. Samson, Ellen S. Hoekstra, and C.A.N. van Oorschot, eds. 1984. Introduction to Food-Borne Fungi. 2nd ed. Baarn, Netherlands: Centraalbureau voor Schimmelcultures. 248 p. See p. 236-42. [47 ref]
• ***Summary:*** Contents: Introduction. Species used for fermentation. Natural inoculation. Traditional starters: Chinese yeast, tane koji, tempe inoculum. Fermented foods

and mycotoxins. Roles of the moulds: Synthesis of enzymes, mould growth, synthesis of colouring compounds, protection of the product. Conclusion. Address: Bandung Inst. of Technology, Indonesia, and Agricultural Univ., Wageningen, Netherlands. Present address: Tarthorst 333, 6708 HL Wageningen, The Netherlands.

1674. Kronenberg, H.J. 1984. Mycological and biochemical characterization of meitauza, an indigenous Chinese fermented food. MS thesis, Cornell University, Ithaca, New York. *
Address: Cornell Univ., Ithaca, New York.

1675. Marusan-Ai Co., Ltd. 1984. Myônichi no shoku seikatsu o ninau. Atarashii daizu tanpaku shokuhin. Marusan sukoyaka tenpe [A new soy protein food for tomorrow. Marusan's healthful tempeh]. Okazaki city, Aichi prefecture, Japan: Marusan-Ai. 27 p. [Jap]
• ***Summary:*** Contains 7 recipes.

1676. Medwid, Richard Daniel. 1984. Survival and germination of *Rhizopus oligosporus* sporangiospores. PhD thesis, Colorado State University. 190 p. Page 1384 in volume 45/05-B of Dissertation Abstracts International. *
Address: Colorado State Univ.

1677. Photographs of the Arcata Tofu Shop in Arcata, California (1980-1984). 1984. Arcata, California.
• ***Summary:*** Twenty-two color photos (most 4 by 5 inches), numbered with captions, were sent to Soyfoods Center on 24 Sept. 2002 by Matthew Schmit, founder and owner of the Arcata Tofu Shop. They were taken in Arcata between 1980 and 1984. Nos. 3-12 were taken in Dec. 1980. They show: (1) Oct. 1980–Inside of building in Arcata during complete remodeling of previous insurance offices (1,000 square feet). (2) Oct. 1980–Outside of same building at 768 18th St. Lease just signed. Newspapers in windows in preparation for remodeling. (3) Open for business. Large wooden sign above door reads "The Tofu Shop: Soy Deli and Whole Grain Bakery." (4) Putting up sign over door. All people standing on sidewalk or ladder have their backs to the camera. Bottom left (standing on sidewalk): Paul Kusterman, who loaned money to help shop open; a truck driver for United Naturals, he had been selling tempeh burgers at local fairs since 1978. On ladder: Matthew Schmit. Bottom right (standing on sidewalk): Jackson Hollomon and wife Valerie. Jackson gave Matthew Schmit his first taste of tofu in the winter of 1973-74. In 2001 Jackson finished 3-year Buddhist retreat. On roof holding sign–On left: Man who created the sign. On right: Daniel Schmit (Matthew's brother). (5) Grocery section inside The Tofu Shop, with bottles of sauces, packages of Miso Cup, and an issue of *Soyfoods* magazine on wooden shelves, with a "What is Tofu?" pamphlet on the wall. (6) Suzanne Kosciolek Schmit stocking specialty grocery shelves. A Learning Tree Tofu Kit is now visible. (7) Suzanne Kosciolek Schmit holding The Tofu Shop's tiled logo (a writhing blue dragon on four white tiles in a wooden frame) next to the first shipment from United Naturals: Soybeans (from Arrowhead Mills), nigari, barley malt, natto miso, sea vegetables, etc. (8) Looking in the front door of The Tofu Shop; six shelves of special groceries, tempeh kits, etc. (9) Matthew Schmit dressed in white apron with "first batch grin." Deli store front counter area is in the background. (10) Back wall of shop with supplies and custom forming box table with adapted "load bar" presses (idea from *Soyfoods* magazine). (11) Cutting first batch of tofu in stainless steel sink. (12) Close-up of The Tofu Shop's first printed tofu labels in Arcata atop a deli take-out carton. Color and design are similar to those from Telluride–Blue on white, with a dragon in a circle. (13) 1981–Steve Rhine setting presses on metal forming boxes. (14) 1981–Matthew Schmit ladling *gô* from cooking pots to hand-screw apple-cider press used as a soymilk press. (15) 1982–Workers sitting on brick bench in front of shop. Left to right: Matthew Schmit. Stephen Lyons, tofu maker. Amy Pujanawski, deli worker. Tom Nawrocki, maker of tofu and tempeh. Rob Earhardt, tofu maker. John Hendricks, tofu maker. (16) 1982–Matthew Schmit packing tofu in take-out boxes on shelf of shop's back wall. (17) 1983–Linda Redfield behind Tofu Shop table, promoting soyfoods at Arcata Co-op event. (18) 1983–Deli worker Jeannie Penn behind Tofu Shop table World Food Day at Arcata Co-op. Jeannie was one of the few female tofu makers ever employed by the shop. (19) 1982–Tofu Shop booth at Gemini Distributors Food Show, Fortuna, California (in the middle of cow country), attended by Matthew Schmit and Linda Redfield. Prepared dishes with signs on red checkerboard tablecloth: Creamy herb & onion tofu dressing. Marinated and baked tofu cutlets. Most early labels were rubber stamped on pre-printed generic Tofu Shop adhesive labels. (20) Soyfoods books and magazines on tablecloth at Gemini Food Show. Two signs: Introducing tofu, and The Tofu Shop. (21) Different view of table, with sign: "The Tofu Shop Specialty Foods, Arcata, CA. We specialize in freshmade soyfoods." (22) 1984–Shawn White at food demo in a store. Address: Arcata, California.

1678. PUSKOPTI (Pusat Koperasi Produsen Tempe Tahu Indonesia). 1984. The planning programmes of PUSKOPTI 1983–1984. Jalan Falatehan I/6–8 Kebayoran Baru, Jakarta Selatan, Indonesia. 18 p. 29 cm. [Eng]
• ***Summary:*** Contents: Introduction. Policy and steps of realization. Planning programmes: The Division of Organization, Div. of Effort and Production, Div. of Finance. Target indication of programmes 1983/1984. Budget 1983/1984.

KOPTI is the Production Cooperative of Tempeh and Tofu Producers of Indonesia. PRIMKOPTI and PUSKOPTI work together for the prosperity and profitability of its

members. Address: South Jakarta, Indonesia. Phone: 733083–733230.

1679. Rosengarten, Frederic, Jr. 1984. The book of edible nuts. New York, NY: Walker and Company. xxv + 384 p. See p. 324-27. Illust. Index. 26 cm. [330* ref]
• ***Summary:*** The chapter titled "Soybeans" (p. 324-27) contains a brief discussion of soybean oil, soybean meal, tofu, miso, tempeh, and soy sauce, plus more detailed information on soynuts, which are attractive nut substitutes. Soynuts are whole soybeans that have been processed to look and taste like nuts, and be used like nuts. With a crunchy texture and no cholesterol, they have more than twice the protein content of most tree nuts and are relatively inexpensive. The author explains that large-seeded vegetable-type soybeans are used for soynuts. He describes how they are processed and the different flavors and brands that are available.

One major reason for the vast increase in soybean production in the USA is the ease with which the crop can be fully mechanized. Address: Associate in Economic Botany, Botanical Museum, Harvard Univ. [Massachusetts].

1680. Samson, Robert A.; Hoekstra, E.S.; Oorschot, C.A.N. eds. 1984. Introduction to food-borne fungi. 2nd ed. Baarn, Netherlands: Centraalbureau voor Schimmelcultures. 248 p. Index. 30 cm. [164* ref]
• ***Summary:*** Contents: Introduction. 1. Identification: Zygomycetes, Ascomycetes (Aspergillus), Deuteromycetes (Monascus, Mucor, Rhizopus), Yeasts, References. 2. The detection and quantification of fungi in food, by B.J. Hartog. 3. Fungal growth on foodstuffs related to mycotoxin contamination, by M.D. Northolt & P.S.S. Soentoro. 4. Mycotoxins, sampling and chemical detection, by H.P. Van Egmond. 5. Heat resistance of yeast cells and fungal spores, by W.I. Baggerman. 6. Food preservatives, by E. De Boer. 7. Fermentation of foods by moulds, by Ko Swan Djien. Appendix. Glossary of used mycological terms. Special literature on food mycology. Index of the taxa described in chapter 1. In the Identification chapter, details and good illustrations (line drawings) and photos are given for the genera of molds used with soyfoods mentioned above. Address: Netherlands.

1681. Shurtleff, William; Aoyagi, Akiko. comps. 1984. Soyfoods labels, posters & other graphics: 3. Tempeh and tempeh products. Lafayette, California: Soyfoods Center. 115 p. No index. 28 cm.
• ***Summary:*** This book is a collection of black-and-white photocopies of materials ranging in date from 1976 to 1984. The books in this series, each a unique collection of graphic materials, are designed for a number of purposes: (1) To serve as a source of ideas, ingredients, inspiration, legal specifications, and basic guidelines for companies in the process of developing their own products, designing their own graphic materials, and conceiving their own marketing strategies. (2) To document the tremendous diversity of soyfoods products and the way that each is presented and marketed. (3) By arranging the materials in chronological sequence, to help document the development and history of new product categories and soyfood types, and with them the rise of the soyfoods industry and market in the Western World. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1682. Steinkraus, K.H. 1984. Solid-state (solid-substrate) food/beverage fermentations involving fungi. *Acta Biotechnologica* 4(2):83-88. [13 ref]
• ***Summary:*** Contents: Summary. Introduction. Oriental food fermentation: Tempeh, miso, soy sauce, tape ketan. Address: Inst. of Food Science, Cornell Univ., Geneva, New York 14456.

1683. Suparmo, -. 1984. Evaluation of tempeh prepared from germinated soybeans. MSc thesis, Michigan State University. 81 p. Page 97 in volume 23/01 of Masters Abstracts. * Address: Michigan State Univ.

1684. Wood, B.J.B. 1984. Progress in soy sauce and related fermentations. *Progress in Industrial Microbiology* 19:373-409. M.E. Bushell, ed. Modern Applications for Traditional Biotechnologies. [100 ref]
• ***Summary:*** Contents: Introduction. Soy sauce: Introduction, raw materials and koji, the *unami* taste, defatted soybean meal, microbiological considerations, moromi stage of fermentation, refining of and properties of shoyu, patents, work with Japan. Miso. Tempeh. Conclusions.

Tables show: (1) Glossary of terms used in soy sauce and similar fermentations: *Koji, miso* (*hatcho, mame, mugi, genmai, kome*)*, moromi, shoyu* (*koikuchi, usukuchi, tamari, shiro, saishikomi*)*, tamari, teriyaki.* (2) Recently published national standards for soy sauce, miso, etc. (cites 8 standards, 5 from Taiwan and 1 each from Thailand, Malaysia and USA). (3) Recent patents relating to shoyu and miso production and processing: Japanese 1980 shoyu (13 patents), Japanese 1981 shoyu (11), USA 1979 (2), USA 1980 (2), Japanese 1979-1981 miso (8), USA tempeh 1979-1980 (3 patents). (4) Japanese journal titles and their English translations (11 journal frequently cited in FSTA–Food Science and Technology Abstracts). Address: Applied Microbiology Div., Dep. of Bioscience and Biotechnol, Univ. of Strathclyde, Glasgow, G1 1XW, Scotland.

1685. *Caribbean Contact.*1984? Canadians experiment with soybean in Jamaica.
• ***Summary:*** In Jamaica, Plenty Canada is "conducting an integrated soy foods programme involving the growing of soybeans and other food crops and the introduction of

soyfoods such tofu, soy milk, and tempeh to householders. The project, which began in Sept. 1983, is currently assisting over 40 farmers in the growing of soybeans... and has produced soy foods at nearly 30 demonstrations to well over a thousand Jamaicans." Plenty has conducted variety trials for over 200 varieties of soybeans with the Hillside Farmers Association. "Plenty is working with six schools in St. Ann parish to supply materials and training for establishing school gardens. The produce from these gardens will be used in the school lunch programmes...

"Generally, two types of demonstrations are provided. First the people are shown how to cook with tofu and soy milk and are given samples of the foods prepared. In the second demonstration, the actual production of these products is shown, and instruction sheets provided...

"Plenty Canada is currently seeking funding from the Canadian International Development Agency for a three year extension of the project in Jamaica. During this time, a small production facility for soy foods will be set up, nutritional study and training undertaken, and further school lunch programmes developed...

"Plenty Canada is also conducting projects in Antigua, Dominica, St. Lucia, and St. Vincent in the Caribbean and Lesotho in Southern Africa."

1686. Thomas, Patrick. 1984? Early work with soyfoods on The Farm in Summertown, Tennessee (Interview). *SoyaScan Notes.* Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Patrick founded the milling operations on The Farm in the spring of 1972. He made various types of flour, including soy flour, which was used to make soymilk and tofu. His mill was a large, commercial steel-roller corn mill driven by a 7.5–10 horsepower motor. In about 1977 The Farm started to sell its soy flour and split soybeans that could be used for making tempeh. Address: Historian, The Farm, Summertown, Tennessee.

1687. Sierra, Edward. 1985. Re: Plenty's work with soybeans in the Caribbean. Letter to William Shurtleff & Akiko Aoyagi at Soyfoods Center, Jan. 11. 2 p. Typed, without signature on Plenty letterhead.
• ***Summary:*** Thanks for joining Plenty with a kind donation. Plenty was founded in Oct. 1974. PAS stands for Plenty Ambulance Service.

On page 8 of the Tenth Anniversary Newsletter [about Oct. 1984] the top photo shows our soy tech and a rasta friend looking over *The Book of Tofu.* We have taken to heart your suggestion for spelling "soyfoods" as one word–an appropriate industry standard.

Plenty's work with soybeans and soyfoods in the Caribbean is going well. On Jamaica, Plenty Canada is funding some agricultural work with variety trials of soybeans and other vegetables.

"On St. Lucia, as a result of our work last year, there are 135 farmers now growing soybeans and plans call for setting up a "Soy Shop" [to sell soyfoods] there soon. The first Soy Shop is on the island of Dominica where Plenty volunteers Sara [sic, Sarah] & Norman Ayerst have launched an integrated soy program (agriculture, variety trials, soy demonstrations, etc.) which, last year, flowered into the Soy Shop. Sara, who did the soy demonstrations on Dominica, found that there was a popular and tasty food called "rootis" (pronounced 'roadie'), which are sauce & meat wrapped in dough and fried. She whipped together a tasty tofu recipe and popped that in, and they're a great success! I quote to you from Norman's most recent letter:

"'The soya shop is still doing quite well. We sell about 800 accras (fritters) per day (25 cents ea.). We're open Mon. thru Fri.–can't handle the weekends yet. Ice cream is also a big seller and when we get our own machine we have requests for wholesale lots of the ice cream. We recently put tempeh on the market and it sells slowly (but steadily), at this point–along with the tofu and bottled soymilk. We are planning for some promotion of these last three products–milkshakes, sandwiches, etc. Once the folks taste some appetizing dishes they're much more willing to take the product home in its raw form. There are a lot of vegetarians here and people interested in health, and everyone seems to have a great love of good food.

"'We're operating out of a big house in the Newton district of Roseau... A friend of ours has reopened our old shop under the name of "Soy Kweyole". The new shop is its own entity [self owned by the local folks, which was one of our original goals for the project... ed.] but we have provided backup in many ways and we supply the basic raw materials for the soyfoods they sell. They're going into baked goods–high protein breads, cakes, pies, etc. It looks like they are going to do very well.

"'We are just gearing up to go into soyflour production and sales–it's probably going to be a big seller, judging from our initial marketing survey. Soy fever has definitely hit these parts...It seems as though people are starting to see the economic benefits to soy (not to mention nutritional value) and our project has gotten its feet on the ground. People want to help move things in a positive direction.'

"One of the heart connections that has come of our work with soy in the Caribbean, is with the rastas. Many of them have long ago vowed to "not eat no flesh mon!" stick with "Ital"–godfood, pure stuff. Many were into soy but had none. One fellow, Ras Bongo on St. Vincent, had been given four soybean seeds by one on another island. Ras Bonga planted them, and carefully saved the seed each year, until he could afford to try some. Meanwhile, he asked around for soy, how to use it, recipes, ideas for growing them, but found little. When we showed up we were able to supply him with more seeds and show him how to cook soyfoods. This is one of the intangible rewards that come with the work." Address: Plenty USA, P.O. Box 90, Summertown, Tennessee 38483.

Phone: (615) 964-3992.

1688. Harayama, Fuminori; Yasuhira, Hitomi. 1985. Rhizopus-zoku ni yoru miso jôzô ni tsuite. I. [Application of the genus *Rhizopus* for miso manufacturing. I. Studies on fermented soybean food manufacture using various molds]. *Nippon Jozo Kyokai Zasshi* (*J. of the Brewing Society of Japan*) 80(4):281-86. [17 ref. Jap; eng]
• ***Summary:*** Two strains of *Rhizopus* with high protease activity and low spore-forming capacity, *R. oryzae* IFO 5418 and *R. japanicus* IAM 6002 were used instead of *Aspergillus oryzae.* Miso obtained had more lactic acid and lower pyroglutamic acid contents, less creaminess, harder consistency, more clear color, and flavor with unique aroma compared with ordinary miso. Address: Shinshu-Miso Research Inst., 469-6 Nakagosho, Nagano-shi, Nagano-ken 380, Japan.

1689. Jayawardene, Ellen. 1985. Soyabean recipes and preparatory techniques developed for use in Sri Lanka. In: 1985. Sri Lanka Soybean Utilization Training Program and Workshop: Proceedings. See p. 422-52.
• ***Summary:*** Recipes use soy flour, whole or split soybeans, soymilk, tofu, tempeh, okara ("soya milk residue"), and soynuts. Address: Instructress, Soybean Foods Research Center.

1690. Mwale, J.M.; Luhgu, E.M.; Mutinta, M.; Mabusya, S. 1985. The state of soyabean utilization in Zambia: A brief summary. In: 1985. Sri Lanka Soybean Utilization Training Program and Workshop: Proceedings. See p. 458.
• ***Summary:*** "Soyabean Utilization in Zambia dates back to 1971 when a Netherlands team conducted seminars in various provinces in the country to demonstrate and popularise the various products that can be made from Soyabeans. Agriculture production started around 1975 when about 500 tons of soyabeans were grown." Since then soyabean "growing has increased steadily and at present 1984/85 projected yields are estimated at 15–20,000 tonnes."

In recent years soyabeans are "reported to be used in bread, and breakfast and cereal preparations. At the National Council for Scientific Research (NCSR), it is used in experimental formulations in preparation of weaning foods in which maize flour, full fat soya flour and other nutrients are incorporated... It is also used in the preparation of biscuits by the country's Dairy Product Board (DPB)."

"Although traditional dishes do not normally incorporate soyabeans there is sufficient justification to believe... that dishes such as soyamilk, tofu, tempeh, etc., would find acceptability in the country..." Address: Zambia.

1691. **Product Name:** Tofu, Tofu Products, and Tempeh.
Manufacturer's Name: Nutrisoy Pty. Ltd.
Manufacturer's Address: 255 Forest Road, Arncliffe 2205, NSW, Australia. Phone: +61 2 597-4120.
Date of Introduction: 1985. January.
New Product–Documentation: Communication from Tony Wondal of Nutrisoy. 1987. May. He started Jan. 1985. Total production is 900 lb/week.

Soya Bluebook '94. p. 66. Contact Tony Wondal, managing director. The company makes simulated meat products (analogs); soyfoods, tempeh, tofu & tofu products, other soy-based foods. Exporter: Whole soybeans; split, dehulled. Importer: Organic soybeans.

1692. Hermana, -. 1985. Pengaruh konsumsi bahan makanan campuran dengan kedelai atau tempe terhadap anak balita penderita kurang kalori-protein [Effect of the consumption of food mixtures containing soybeans or tempeh on children under the age of 5 suffering from protein-calorie malnutrition]. Presented at Seminar Nasional Hasil Penelitian Perguruan. Held on 25-28 Feb. 1985 in Bandung, Indonesia. [Ind]*
• ***Summary:*** Based on Hermana's 1983 PhD thesis.

1693. Kawashima, Noriko. 1985. Tenpe ryôri no are kore [Various aspects of tempeh cookery]. *Daizu Geppo* (*Soybean Monthly News*). Feb. p. 32-35; March. p. 40-43; May. p. 36-41. [Jap]
• ***Summary:*** This 3-part article contains numerous tempeh recipes (Japanese-, Indonesian-, and Western style) and black-and-white photos of them. Address: Tenpe Ryori Kenkyuka (Wife of Kawashima sensei).

1694. Langley-Danysz, Pernette. 1985. L'entrée discrète du soja en Europe [The discreet / cautious entry of soya into Europe]. *Revue Laitiere Francaise* No. 438. p. 16-20. Feb. [Fre]
• ***Summary:*** An illustration on the cover shows an American cowboy-like man, wearing a cowboy hat and cowboy boots, smoking a cigarette, and carrying a briefcase on which is written ASA. He appears to be emerging from a garbage can labeled "soya" and from his briefcase are flying several cartons of soymilk. The article begins: "Two soy products, milk and tofu, were at the center of a conference organized in September 1984 at Amsterdam [Netherlands] by the American Soybean Association (ASA)."

Gives data on the chemical composition and nutritive value of soy beverages, soymilks, and tofu. Discusses the products recently introduced in Europe. Consumption of soy products in the E.E.C., principally as soy protein concentrates or isolates, has never exceeded 40,000 tonnes/year. Consumption of traditional East Asian soyfoods such as tempeh, miso, sufu, and soy sauce, is still low in Europe, but consumption of tofu and soymilk is growing significantly. Nutritional composition of cow's milk and soymilk are compared, and various commercial soy products are discussed.

Soy ice creams (including Ice Bean and Tofutti) are discussed in detail on page 19, col. 1. The pioneer of these soy ice creams (*ces ice cream au soja*), named Ice Bean, was developed by Farm Foods in Tennessee. Today there are a dozen other brands of tofu ice cream (*glaces au tofu*). One of these ice creames (*ces crèmes glacées*), Tofutti, made by the company Tofu Time and presented at SIAL in 1984, took the first place last fall on the hit parade of dairy products from the United States." Note: This is the earliest French-language document seen (March 2007) that mentions soy ice cream which it calls *ice cream au soja,* or *glaces au tofu,* or *crèmes glacées.*

Photos show the following products, each in a Tetra Brik carton: Nestle Bonus Soya Bean Milk, Plamil Soya Milk Concentrated, Morinaga Ever-Fresh Silken Tofu, Yeo's Soya Bean Drink, Alpro Soya Drink. Address: France.

1695. MacDonald, Sandy. 1985. Designer beans: Soybeans aren't stuck down on the farm anymore. High-protein, low-calorie soyfoods have gone gourmet. *New Age Journal* (*Boston, Massachusetts*). Feb. p. 53-59. [2 ref]
• ***Summary:*** An excellent introduction to soyfoods and soyfoods companies in America today. Photos show Chandri and Gary Barat of Legume, Akiko Aoyagi and William Shurtleff "parents of the soy boom," and Tom Timmins president of Tomsun Foods.

Note: This is the earliest document seen (April 2011) that contains the term "designer beans." Though this interesting term is used in the title of this article, it does not appear in the body of the article itself. The author appears to mean that the soybean can be made into hundreds of "ingenious" and imaginative (often delicious) foods from ice cream to lasagna, from burgers to creamy dips and dressings–and industrial products, including spun soy protein fibers invented by Robert Boyer, a Ford Motor Company employee, and first put to use in the upholstery of Ford cars; they were later used to make bacon bits and meat alternatives. Address: Brighton, Massachusetts.

1696. Shurtleff, William; Aoyagi, Akiko. 1985. Brief history of Imagine Foods (Arkansas) and Rice Dream non-dairy frozen dessert (Document part). In: Shurtleff and Aoyagi. 1985. Tofutti & Other Soy Ice Creams: The Non-Dairy Frozen Dessert Industry and Market. Vol. 1. 145 p. See p. 88-89.
• ***Summary:*** "In June 1984 Robert Nissenbaum and David Carlson of Imagine Foods, a small rural Missouri company that also made tempeh and miso, introduced Rice Dream, one of the most creative non-dairy frozen desserts to appear in America in decades. It was based on *amazake* (literally "sweet sake") a creamy-thick, subtly-sweet, low-alcohol precursor of Japanese sake, made by fermentation of rice koji in water. Koji, used to make rice miso, is made by fermenting rice with the koji mold (*Aspergillus oryzae*) (Shurtleff and Aoyagi 1983). The company made its own koji and amazake. Unlike most other non-dairy ice creams, Rice Dream was extremely low in calories, since it originally contained no added oil or fat. Most of the product's sweetness came from the natural sweetness of amazake, but small amounts of Grade A maple syrup were also used. A nutritionist's dream, containing only 132 calories and 18 mg of sodium per ½ cup serving, Rice Dream was advertised with a lovely full-page color ad in various natural foods magazines. As demand grew, production of the amazake was moved to California and the hard-pack frozen dessert was made at Peninsula Creamery in Palo Alto, California. Thereafter a small amount of safflower oil had to be added for functional reasons, and Chico-San's rice syrup replaced the prohibitively expensive maple syrup. The only soy in the product was soy lecithin. By January 1985 there were 16 distributors for the product nationwide. Originally made in hard pack, it was also sold as a soft-serve mix starting in early 1985."

Note: At the time of this writing, the author was not aware that Rice Dream was no longer being made from koji, and that commercial enzymes were being used instead of the enzymes from koji. Address: Lafayette, California.

1697. Sutardi, -; Buckle, K.A. 1985. Reduction in phytic acid levels in soybeans during tempeh production, storage and frying. *J. of Food Science* 50(1):260-61, 263. Jan/Feb. [18 ref]
• ***Summary:*** Less than 10% of the phytic acid originally found in the soybeans remained after tempeh fermentation, storage for 72 hours, and deep-frying. Address: 1. Faculty of Agricultural Technology Gadjah Mada Univ., Yogyakarta, Indonesia; 1-2. School of Food Technology, Univ. of New South Wales, P.O. Box 1, Kensington, NSW 2033, Australia.

1698. Tokai, Akinori. 1985. Nebari mo nioi mo nai nattô: Tenpe [The natto that has neither stickiness nor smell: Tempeh]. *Yomiuri Shinbun* (*Yomiuri Daily News, Tokyo, Evening ed.*). March 19. p. 3. [Jap]
• ***Summary:*** A photo shows trays of tempeh being made by a Marusan worker. Address: Japan.

1699. Kawamura, Noriko. 1985. Dai san kai tenpei ryôri kyôshitsu [Tempeh cooking class number 3: recipes]. Tokyo: Unpublished manuscript. 6 p. March 27. Unpublished manuscript. [Jap]

1700. Birch, Renee E.W.; Swanson, B.G. 1985. Tempeh fermentation and protein quality of beans (*Phaseolus vulgaris*). *Annual Report of the Bean Improvement Cooperative* 28:72-73. March. [2 ref]
• ***Summary:*** The authors made soy tempeh, soy-corn tempeh (using 3 ratios of soy:corn), small red bean (SRB, *Phaseolus vulgaris*) tempeh, and SRB-corn tempeh (3 ratios). The soy-corn tempeh (1:1) had the highest protein quality as

measured by PER (3.11), followed by soy-corn tempeh (2:1) with a PER of 3.03. Casein, by comparison, had a PER of 2.59. SRB tempeh had the lowest PER, 1.69. Address: Dep. of Food Science & Human Nutrition, Pullman, Washington 99164-6330.

1701. Byrne, Maureen. 1985. The future for soyfoods. The first European Soyfoods Workshop was held in Amsterdam by the American Soybean Association, and papers covered subjects from marketing to microbiological standards. *Food Manufacture* (*London*) 60(3):49, 51, 53. March.
• ***Summary:*** Contains an interesting full-page table in which Oriental soyfoods are classified into two types: Non-fermented and fermented. The non-fermented soyfoods are: Fresh green soybeans, soybean sprouts, soynuts, soymilk, soy flour, soy protein-lipid film (yuba, tou-fu-pi), soybean curd (tofu). For each food is given the local names, description, and uses.

The fermented soyfoods are: Soy sauce, miso, tempeh, natto, fermented tofu, and soy nuggets. For each fermented soyfood is given the local names, organisms used, description, and uses.

Soy sauce includes chiang-yu from China, shoyu from Japan, ketjap from Indonesia, kanjang from Korea, toyo and see-ieu from Southeast Asia.

Soy nuggets include tau-shih from China, tao-si from the Philippines, tau-cheo from Malaysia, tauco from Indonesia, and Hamanatto from Japan.

1702. Kawashima, Noriko. 1985. Indonesia no nattô "tenpe" no tabekata [How to eat tempeh, Indonesia's natto]. *Shin Eiyo* (*New Nutrition*). March. p. 55-59. [Jap]

1703. **Product Name:** Garlic Tempeh.
Manufacturer's Name: Nectar Tempeh. Later? changed to Nectar Soy Products.
Manufacturer's Address: 4/13 Glamis St. (P.O. Box 969), Geelong, VIC, 3220, Australia. Phone: 05-221-4458.
Date of Introduction: 1985. March.
New Product–Documentation: Letter (fax) from Ross Hamilton and Mike Manser. 1990. Sept. 13. This was the company's second product, introduced in March 1985.

1704. Nout, M.J.R.; Bonants-Van Laarhoven, T.M.G.; Dreu, R. de; Gerats, I.A.G.M. 1985. The influence of some process variables and storage conditions on the quality and shelf-life of soybean tempeh. *Antonie van Leeuwenhoek* 51(5/6):532-34. March. [2 ref]
• ***Summary:*** Tempeh is made commercially in the Netherlands by Dutch makers, but its popularity is hindered by its limited shelf life. Address: Dep. of Food Science, Agricultural Univ., De Dreijen 12, 6703 BC Wageningen, Netherlands.

1705. Okada, Noriyuki; Hadioetomo, R.S.; Nikkuni, S.; Itoh, H. 1985. Isolation of bacteria producing vitamin B-12 from fermented soybean tempeh from Indonesia. *Shokuhin Sogo Kenkyujo Kenkyu Hokoku* (*Report of the National Food Research Institute*) No. 46. p. 15-20. March. [20 ref. Eng; jap]
• ***Summary:*** Eighteen samples of tempeh were gathered various from places in Indonesia: Bogor, Ciomas, Cisarua, Pacet Cianjur, Cicurug, Kedunghalang, and Semplak. Bacteria isolated from these tempeh samples were identified. 13 of 33 isolates were identified as *Klebsiella pneumoniae*– which is known to produce vitamin B-12. Address: National Food Research Inst. (Shokuhin Sogo Kenkyujo), Kannon-dai 2-1-2, Yatabe-machi, Tsukuba-gun, Ibaraki-ken 305, Japan.

1706. Public Sector Consultants, Inc. 1985. The potential for expanding the Michigan soyfoods industry. In: 1985. The Potential of Food Processing for Economic Development in Michigan. PCS, Knapp's Centre, 300 S. Washington Square #401, Lansing, MI 48933. See p. III-45 to III-67. 28 cm. [47 ref]
• ***Summary:*** Michigan soyfoods manufacturers include Michigan Soy Products (Royal Oak; Tofu, soymilk; 1,650 lb/week of tofu), Oryana Soy Shop (Traverse City; Cooperative. Tofu, tempeh, soysage; 275 lb/week of tofu), The Soyplant (Ann Arbor; Cooperative. Tofu, tempeh, tempeh burgers, soymilk, dofugan, soysage; 7,500 to 10,000 lb/week of tofu), INARI Ltd. (Mason; Soynuts), Michigan Farm (Bitely; Miso), Hercules, Inc. (Harbor Beach; HVP), Eden Foods (soymilk importer, which hopes to build a soymilk plant in Michigan), and Midwest Natural Foods (Ann Arbor).

"Hercules produces nonfermented soy sauce and sells its product to large final producers, such as La Choy and Beatrice Foods, located outside Michigan for sale under their labels." This report was prepared for the Michigan Dept. of Agriculture. March 15. Address: Lansing, Michigan.

1707. Rabie, C.J.; Lubben, A.; Schipper, M.A.A.; Heerden, F.R. van; Fincham, J.E. 1985. Toxigenicity of *Rhizopus* species. *International J. of Food Microbiology* 1(5):263-70. March. [21 ref]
• ***Summary:*** *Rhizopus* species are among the most common fungal contaminants in high-moisture grains. The toxigenicity of 14 isolates representing 14 species of *Rhizopus* isolated from sorghum malt, fermented foods and various other foodstuffs were evaluated in ducklings and rats. The mold was grown for 21 days at 25 and 37ºC. The molded product constituted 50% of the test diet. Toxigenic strains of the following species were isolated: *R. chinensis, R. formosanesis, R. japonicus, R. javanicus. R. microsporus, R. nigricans, R. oryzae, R. rhizopodiformis and R. tonkinensis. R. oryzae* and *R. japonicus* were much more toxic when cultured on maize than on soy-beans. Tempeh is mentioned only in passing. Address: 1,2&5. National

Research Inst. for Nutritional Deseases, South African Medical Research Council, P.O. Box 70, Tygerberg 7505, South Africa; 3. National Chemical Research Lab., CSIR, P.O. Box 395, Pretoria 0001, South Africa; 4. Centraalbureau voor Schimmelcultures, Baarn, The Netherlands.

1708. Roozen, J.P.; Groot, J. de. 1985. Electrophoresis and assay of trypsin inhibitors in different stages of tempe production. *J. of Food Biochemistry* 9(1):37-48. March. [21 ref]
• ***Summary:*** "The way of extraction has a tremendous influence on the trypsin inhibitor activity determined for the different stages in tempe fermentation. The endproduct contains about 5% residual trypsin inhibitor activity of different origins." Address: Dep. of Food Science, Agricultural Univ., Wageningen, Netherlands.

1709. Shurtleff, William; Aoyagi, Akiko. 1985. The book of tempeh: The delicious, cholesterol-free protein. 2nd ed., revised & updated. New York, NY: Harper & Row. 175 p. March. Illust. by Akiko Aoyagi Shurtleff. Index. 28 cm. [374 ref]
• ***Summary:*** Contains 130 Western-style and Indonesian recipes. Appendix A: "A brief history East and West," is extensively revised from the earlier Professional Edition, and discusses the world's earliest known reference to tempeh in the *Serat Centini* manuscript, which was probably written in about A.D. 1815. The history of tempeh in the Europe, Australasia, in the United States has also been updated and expanded.

Appendix B: "Tempeh makers in the West" has also been updated and expanded. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549 USA.

1710. Tanuwidjaja, Lindayati; Roestamsjah, -. 1985. Preparation and utilization of powder form inoculum for tempeh fermentation. *ASEAN Food Journal* (*Malaysia*) 1(1):22-24. March. [4 ref]
• ***Summary:*** Studies on the preparation of powder form inoculum utilizing *Rhizopus oligosporus* ITB L36 (obtained from the Bandung Institute of Technology) and various substrates (white polished rice, tapioca waste, mixture of tapioca waste and soybean flour) showed that rice inoculum produced more spores and had a longer shelf-life. Further studies utilizing the rice inoculum in tempe fermentation indicated that the inoculum concentration affected the texture, appearance, soluble solid, soluble nitrogen as well as ammonia content of the tempe produced. Address: National Inst. for Chemistry, Indonesian Inst. of Sciences, Bandung.

1711. Vaidehi, M.P.; Annapurna, M.L.; Vishwanath, N.R. 1985. Nutritional and sensory evaluation of tempeh products made with soybean, ground-nut, and sunflower-seed combinations. *Food and Nutrition Bulletin* (*United Nations Univ.*) 7(1):54-57. March. [15 ref]
• ***Summary:*** 100% soy tempeh was not favored by the taste panel. The sunflower-soy combination in tempeh curry and fried chips was highly acceptable. The cost of preparing 1.5 kg of tempeh was less than 1 U.S. dollar. Therefore it is a very economical and nutritious plant food.

In addition, tempeh was prepared with and without the addition of bakla (*Vicia faba*) to soybeans in various ratios to obtain a tempeh of acceptable quality and nutritional value. Bakla tempeh at a 1:1 ratio was found to be crisper and more palatable than plain soybean tempeh, but at 3:1 the tempeh had a mushroom odour. Address: Dep. of Rural Home Science & Dep. of Agricultural Microbiology, Univ. of Agricultural Sciences, Hebbal, Bangalore 560 024, India.

1712. Flinders, Carol. 1985. Tempeh replace meat in tasty way: Laurel's Kitchen, vegetarian cookery. *Mercury News* (*San Jose, California*). April 3. [3 ref]
• ***Summary:*** Contains an introduction to tempeh and vegetarianism, with two recipes: Tempeh a la king, and Tempeh cacciatore. Address: Co-author of 'Laurel's Kitchen,' a vegetarian cookbook, Petaluma, California.

1713. Nabben, Alexander. 1985. Re: New soy dairy making tofu and tempeh about to open at Dornhausen, West Germany. Letter to William Shurtleff at Soyfoods Center, April 3. 2 p. Typed, with signature. [Eng]
• ***Summary:*** Alexander and friends have moved from Munich 150 miles to the north of Bavaria and rented a farm in a small village. From the cow stable they are making a nice soy dairy. Very soon they will be "offering tofu, tempeh, and soy sprouts in different recipes and ways." An enclosed leaflet (single sided, in German) shows that he and friends are organizing a meeting for soyfoods makers. "In the last two years they went up to 10 or more, from around 4-5." Their idea is to cooperate more with one another "so that the soy-boom can get through easier." In Sept. of this year a good book publishing company will bring out Alexander's book about soyfoods.

The leaflet titled "Invitation" bears the logo of The Farm in Tennessee, and the organization in Dornhausen is named "Farm-Gemeinschaft e.V." (The Farm Community). The get-together is scheduled for 1-2 June 1985. There is an agenda of 11 items for the meeting. At the bottom of the leaflet is a list of the companies and individuals to whom the invitation is being sent: Sojafoederring, Sojaquelle, Sojastern, Svadesha, Jamato [Yamato]–Tofu-Haus, Garten Eden, Atlantis, Lukas Kelterborn, Rolf Badhoff, Albert Hess, Fa. [Firma] Byodo, Fa. Morgenland, Hamburger Tofu-Manufaktur, Verein Freunde der Erde e.V., and Naturkost e.V. Address: Morgenland-Naturkost/Farm-Gemeinschaft e.V., 8821 Dornhausen 29, W. Germany.

1714. Soyfoods Center. 1985. Catalog: Publications &

materials by William Shurtleff & Akiko Aoyagi [mail order]. P.O. Box 234, Lafayette, CA 94549. 20 panels. April 3.
• ***Summary:*** This catalog, folded like a road map, is printed with brown and rust (brownish pink) light blue ink on white paper. 10,000 copies were printed by Hunza in Berkeley. Address: Lafayette, California. Phone: 415-283-3161.

1715. Stechmeyer, Betty. 1985. Re: Thanks for book. New developments. Letter to William Shurtleff at Soyfoods Center, April 11. 1 p. Typed, with signature on letterhead. [2 ref]
• ***Summary:*** "Thanks so much for the new edition *Book of Tempeh...* Things are quiet here. Gordon is teaching microbiology at College of the Redwoods and we hope to teach the Soyfoods Workshop next semester. Penny Billiter of Star Soyfoods, Sandpoint, Idaho, was our student. Before the Workshop she hadn't even heard of tempeh, just tofu. She came over just before leaving town to spend a day of intense note taking and talking and a month later was selling tofu pudding to Safeway!

"I've enclosed our most recent catalog. Since we have 20+ of the first Book of Tempeh we'll keep with it for now.

"I'm now selling tempeh on a special order basis to local restaurants. Koji, rice and barley, goes to coops on the same basis. I even had a special order for natto!

"Hope all is well with you. You've obviously been very busy as always! Best regards,..." Address: GEM Cultures, 30301 Sherwood Rd., Fort Bragg, California 95437. Phone: 707-964-2922.

1716. Praskin, Laurie Sythe. 1985. New developments at The Farm and with Plenty (Interview). Conducted by William Shurtleff of Soyfoods Center, April 15. 3 p. transcript.
• ***Summary:*** Laurie has just returned from a Plenty Board of Directors meeting at The Farm in Tennessee. Only 300 people are living there now–it has a deserted feeling. But the Plenty meeting was good. Plenty is doing some excellent work with soyfoods in the Caribbean (especially on Dominica), and in Lesotho. There were color slides shows of each program. Their soy dairies there are selling soyfoods.

The Farm Soy Dairy in Tennessee is now run by Ron Maxen and Michael Lee. They sell 100 lb/week of tofu, half of it off The Farm in 1-gallon plastic bags that hold 5 cakes each, or in tubs. On The Farm it sells for $0.90/lb. Off The Farm it sells for $0.75/lb in bulk or $0.85 in tubs. Their yield averages 2 lb of firm tofu from 1 lb of soybeans. They do all their own distributing. They also make 150 gallons/week of soymilk sold as such plus another 4,500 to 5,000 gallons/month for ice bean (2 runs a month). Twice a month they load it into a milk truck and ship to an ice cream company near Memphis. Also 15-20 gallons/week of soy yogurt and 80-90 lb/week of tempeh is sold on The Farm.

The soy dairy in Lesotho is beautiful, housed in a traditional stone hut with a thatched roof. Inside are white walls, a concrete floor, and drains. It is making a little soymilk and soymilk ice cream. It has a nice little Okita stainless steel mill that runs off a generator and also a bicycle-powered mill. They are also growing some soybeans now. Address: 17969 Oak Dr., Los Gatos, California 95030.

1717. Estella, Mary. 1985. Natural foods cookbook: Vegetarian dairy-free cuisine. Briarcliff Manor, NY, and Tokyo: Japan Publications. 250 p. April. Color plates. Index. 26 cm. [22 ref]
• ***Summary:*** This macrobiotic cookbook, though free of dairy products, uses fish in many recipes. In the chapter titled "Getting Started" there is a section on "Soy Foods" (p. 26-27) which begins by stating that "Soybeans, the king of beans, are ironically not often eaten as whole beans, but instead are processed into miso, shoyu, tofu, tamari, and tempeh." Each of these foods are discussed briefly. Three types of soy sauce are defined: Shoyu, tamari, and commercial soy sauce (which is said to be artificially colored and processed). Chapter 7, titled "Whole grains, beans, tofu and tempeh" contains 7 tofu and 7 tempeh recipes. There are a large number of soy-related recipes throughout the book, including those using miso, black soybeans, and tamari.

1718. Hasil simposium. Daftar peserta [Recommendations of the symposium, and directory of participants]. 1985. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 8-19. Held 15-16 April 1985 in Jakarta. [Ind; Eng]
• ***Summary:*** There are 8 recommendations for policy decisions and operational action. Within the recommendations for research there are 7 for technology research, 2 for nutrition research, 5 for health research, 2 for socio-economic research, and 3 for socio-cultural research. Among the latter: "In-depth study of the history of tempeh to conserve traditional wisdom."

The directory gives the name and organization or address for 93 attendees. Address: Indonesia.

1719. Hermana, -; Karyadi, Darwin. eds. 1985. Simposium pemanfaatan tempe dalam peningkatan upaya kesehatan dan gizi [Symposium on the use of tempeh for strengthening the health and nutrition services]. Bogor, Indonesia: Departemen Kesehatan R.I., Badan Penelitian dan Pengembangan Kesehatan, Pusat Penelitian dan Penembangan Gizi, Komplek Gizi Jl. Dr. Sumeru, Bogor 16112. vi + 148 p. Held 15-16 April 1985 in Jakarta. Illust. No index. 28 cm. [Ind]
• ***Summary:*** This pioneering symposium on tempeh attempted to call attention to the many valuable aspects of this traditional Indonesian food. It was sponsored by the Ministry of Health. Some 113 people attended. Address: Bogor, West Java, Indonesia.

1720. Hermana, -. 1985. Beberapa prinsip alternatif penggunaan tempe dalam peningkatan status gizi golongan rawan gizi. 1. Tempe dalam penanggulangan keadaan gizi kurang dan manejemen dietetik diare pada anak balita [Some alternative principles in tempeh utilization for the improvement of malnutrition. 1. Tempeh in response to a state of malnutrition]. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 32-37. Held 15-16 April 1985 in Jakarta. [6 ref. Ind]
• ***Summary:*** The symposium title might also be translated: "Symposium on the use of tempeh in the effort to improve health and nutrition." Address: Pusat Penelitian dan Pengembangan Gizi, Bogor, Indonesia.

1721. Mahmud, Mien K. 1985. Beberapa prinsip alternatif penggunaan tempe dalam peningkatan status gizi golongan rawan gizi. 2. Tempe dalam peningkatan status gizi dan kesehatan Ibu Hamil [Several alternative principles in the utilization of tempeh to improve the nutritional status of those in critical nutritional condition and pregnant women]. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 38-43. Held 15-16 April 1985 in Jakarta. [3 ref. Ind]
Address: Pusat Penelitian dan Pengembangan Gizi, Bogor, Indonesia.

1722. Mangkuwidjojo, Soesanto; Pranowo, Djoko; Nitisuwirjo, Sutjipto; Noor, Zoeheid. 1985. Pengamatan daya hipokolesteremik pada tempe [Observations on the hypocholesterolemic effects of tempeh]. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 114-27. Held 15-16 April 1985 in Jakarta. [22 ref. Ind]
• ***Summary:*** This study showed that the inclusion of tempeh in the diet of hyperlipidemic patients will produce a hypocholesterolemic response, thus reducing their blood serum cholesterol level. Address: Fakultas Kedokteran Hewan–UGM.

1723. Sadli, Saparinah. 1985. Persepsi masyarakat mengenai tempe [What the people think about tempeh]. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 60-68. Held 15-16 April 1985 in Jakarta. [3 ref. Ind]
Address: Prof. Dr., Fakultas Psikologi–UI.

1724. Sayogyo (Sajogyo), -. 1985. Tempe di dalam pola makanan Indonesia tahun 1981 [Tempeh in the Indonesian dietary pattern in the year 1981]. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 85-96. Held 15-16 April 1985 in Jakarta. [3 ref. Ind]
• ***Summary:*** Figures from the Central Bureau of Statistics show the average, urban, and rural consumption level of tempeh in 13 provinces in grams/person/day. Consumption is highest in Java. Provinces with the highest average consumption are Yogyakarta (34.2 gm), Central Java (24.7), Jakarta (19.5), East Java (19.4), Lampung (16.2), East Kalimantan (11.0), West Java (9.3), and Bali (8.4). The higher consumption in urban compared with rural communities is probably due to the higher purchasing power and also the easy access to soybean supply for home industries. Tempeh is popular among people in both high- and low-income groups. Address: Fakultas Pertanian–IPB.

1725. Shurtleff, William; Aoyagi, Akiko. 1985. Soyfoods industry and market: Directory and databook 1985. 5th ed. Lafayette, California: Soyfoods Center. 220 p. Index. April. 28 cm. Updated every 1-3 years with a bibliographic supplement. [360 ref]
• ***Summary:*** Contents: 1. Introduction. 2. Directory of soyfoods manufacturers. 3. Directory of soyfoods support industry: Goods & services. 4. The many types of soyfoods. 5. Historical: Historically most important books and serials, earliest references to individual soyfoods. 6. Year in review. 7. Soyfoods industry and market in the U.S. 8. Tofu industry and market in the U.S. and Canada. 9. Soymilk industry and market: Worldwide and in the U.S. 10. Tempeh industry and market in the U.S. 11. Soy sauce industry and market in the U.S. and Japan. 12. Miso industry and market in the U.S. and Japan. 13. Soynut industry and market in the U.S. 14. Natto industry and market in Japan. 15. Statistics on fermented soyfoods in East Asia. 16. Soyfoods in restaurants, delis & cafeterias. 17. Soybean crushing industry in the U.S. 18. Soy oil industry and market in the U.S. 19. Soy flour and cereal-soy blends industry and market worldwide. 20. Modern soy protein products industry and market in the U.S. 21. Soyfoods terminology and standards. 22. Names of soyfoods in major foreign languages (incl. Chinese / pinyin; Hoisin sauce = haixian jiang). 23. Soybean production worldwide and country-by-country. 24. Key institutions working with soyfoods worldwide. 25. Measures, weights, and equivalents. 26. About the Soyfoods Center & soyfoods consulting services. 27. Bibliography.

In February 1977 a Gallup poll in America showed a remarkable shift in the public's awareness of and attitudes toward soyfoods. The sampling of 1,543 adults across the

nation found that: 33% believe that soybeans will be the most important source of protein in the future–ahead of fish at 24% and meat at 21%. 55% believe that "soy products have a nutritional value equal or superior to that of meat." 54% reported that they "had eaten foods containing soy protein as a prime ingredient within the past 12 months." Younger age groups living in large cities and those with college or university educations had the most favorable attitudes toward soy protein, indicating that support for soyfoods is likely to grow in the future. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1726. Shurtleff, William; Aoyagi, Akiko. 1985. The tempeh industry and market in the USA. In: William Shurtleff and Akiko Aoyagi. 1985. Soyfoods Industry and Market: Directory and Databook 1985. 5th ed. Lafayette, California: Soyfoods Center. 220 p. See p. 86-95A.
• ***Summary:*** All statistics in this chapter (see next 3 pages) are based on original Soyfoods Center surveys of the tempeh industry. Contents: 1. Introduction. Historical. Market size and growth rate. Tables: (1) Number of tempeh companies by major countries and regions (1975-1985; not including Indonesia, Malaysia, and Singapore). In Europe and the United States, the number increased from 7 in 1975 to 93 in 1985, with 55 of the latter in the USA, 21 in Western Europe, and 4 in Canada.

(2) Largest tempeh manufacturers in the United States. The columns are: Rank in 1984. Tank in 1983. Company name & state. Year started making tempeh. Average weekly production (lb/week) in May 1982, May 1983, and Jan. 1984. Of the 18 manufacturers listed, the top 5 are:

(2a) Quong Hop / Pacific Tempeh, CA, started 1980, 7,000 lb/week in Jan. 1984

(2b) White Wave, CO, started 1979, 5,850 lb/week.

(2c) Soyfoods Unlimited, CA, started 1981, 5,800 lb/week.

(2d) The Tempeh Works, MA, started 1979, 5,500 lb/week.

(2e) Appropriate Foods, NY, started 1981, 2,000 lb/week.

Largest tempeh manufacturers in Canada. Only one company, Thistledown Soyfoods, BC, is listed. They make 200 lb/week.

Detailed yearly analysis of the tempeh industry in the United States (1981, 1982, 1983).

Graph of number of tempeh manufacturers in the USA and the Western World.

Major market segments and retailing outlets. Varieties of tempeh and amounts produced: Regular soy tempeh, soy & grain tempehs, second generation tempeh products. Tempeh starter. Pricing. Packaging and refrigeration. Popular uses and recipes. Special distribution arrangements. Outlook and forecast: Second generation products, mainstream marketing with nutritional emphasis, institutions before supermarkets, watch Japan, with the Netherlands. Books on tempeh published in the United States (10 books from 1979-1984). U.S. Media coverage of tempeh (1971-1984). Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1727. Siagian, Uhum L.; Sofia, Gustina. comp. 1985. Tempe: Bibliografi beranotasi [Tempeh: An annotated bibliography]. Indonesia: Pusat Penelitian dan Pengembangan Gizi; Badan Penelitian dan Penembangan Kesehatan; Departemen Kesehatan RI. 80 p. April. Author index. 28 cm. [273 ref. Ind]
• ***Summary:*** By far the best bibliography of Indonesian-language publications on tempeh, compiled by Mr. Siagian and Ms. Sofia, and published jointly by the Nutrition Research & Development Center, The Institute for Health, Research and Development, and the Indonesian Ministry of Health. 200 copies were printed, and distributed by the Nutrition Research and Development Center (Jalan Dr. Sumeru, Bogor). The publication was sponsored by the World Health Organization (WHO), the Institute of Health, Research and Development, and the Center for Health and Medical Information Network and Scientific Documentation (Jaringan Informasi dan Dokumentasi Ilmiah bidang Kesehatan Kedokteran, Pusat). All entries have an Indonesian summary / abstract.

Contents: Preface by Dr. Darwin Karyadi (1 April 1985). Directions for use of the book. Abbreviations. 1. Preparation of tempeh from peanut presscake (onchom), velvet beans (*benguk*), rubber seeds (*biji karet*), coconut presscake (*bongkrek*), mixed ingredients (*campuran*), okara or soy pulp (*gembus*), Cajanus cajan (*Kacang gude*), Vigna radiata (*Kacang hijau* [mung bean]), winged bean (*kecipir*), soybean (*kedelai*), Canavalia ensiformis (*Koro pedang;* [jack bean]). Leucaena leucocephala (*lamtoro*), Lupinus angustofolius (*Lupinus*), and soy flour (*Tepung*). 2. Tempeh microorganisms and inocula. 3. Nutritional value: Iron, lipids, protein, vitamins, tempeh formula (Vitempo). 4. Toxins: Aflatoxin, cyanide, bongkrek toxins, others. 5. Preservation. 6. Inhibitors: Phytic acid, antioxidant, trypsin inhibitors. 7. History. 8. Standards. 9. Consumption. 10. Author index. 11. Names and addresses of major tempeh-related research organizations in Indonesia.

This bibliography contains references for 85 Indonesian-language documents relating to soybean tempeh, from 1962 to 1985; some 43 of these were published after 1979.

Page 80 lists 17 Indonesian libraries in six cities (Bandung, Bogor, Jakarta, Semarang [Central Java], Surabaya, Yogyakarta) that contributed to this bibliography of tempeh.

Note: We are indebted to this fine bibliography for many of our Indonesian language tempeh records. Our thanks to Peter Ananda of the University of California, Berkeley, South & Southeast Asia Library. Address: Bogor, Indonesia.

NUMBER OF TEMPEH COMPANIES BY MAJOR COUNTRIES AND REGIONS

Year January	Total West*	USA	West Europe	Latin Americ	Canada	Austral NewZeal	Indian subcon	Africa	Middle East	Other
1975	7	3	4							
1976										
1977										
1978										
1979	19	13	4		1					
1980	24	18	4		1					
1981	42	32	6	0	1	2				
1982	58	44	8	0	2	3				
1983	79	56	15	0	4	3				
1984	82	53	18	0	4	5	0	0	0	1
1985	93	55	21	0	4	9	0	0	0	4

* Not including Indonesia, Malaysia, and Singapore.
But including all other countries worldwide, such as Japan, etc.
"Other" are all Japan.

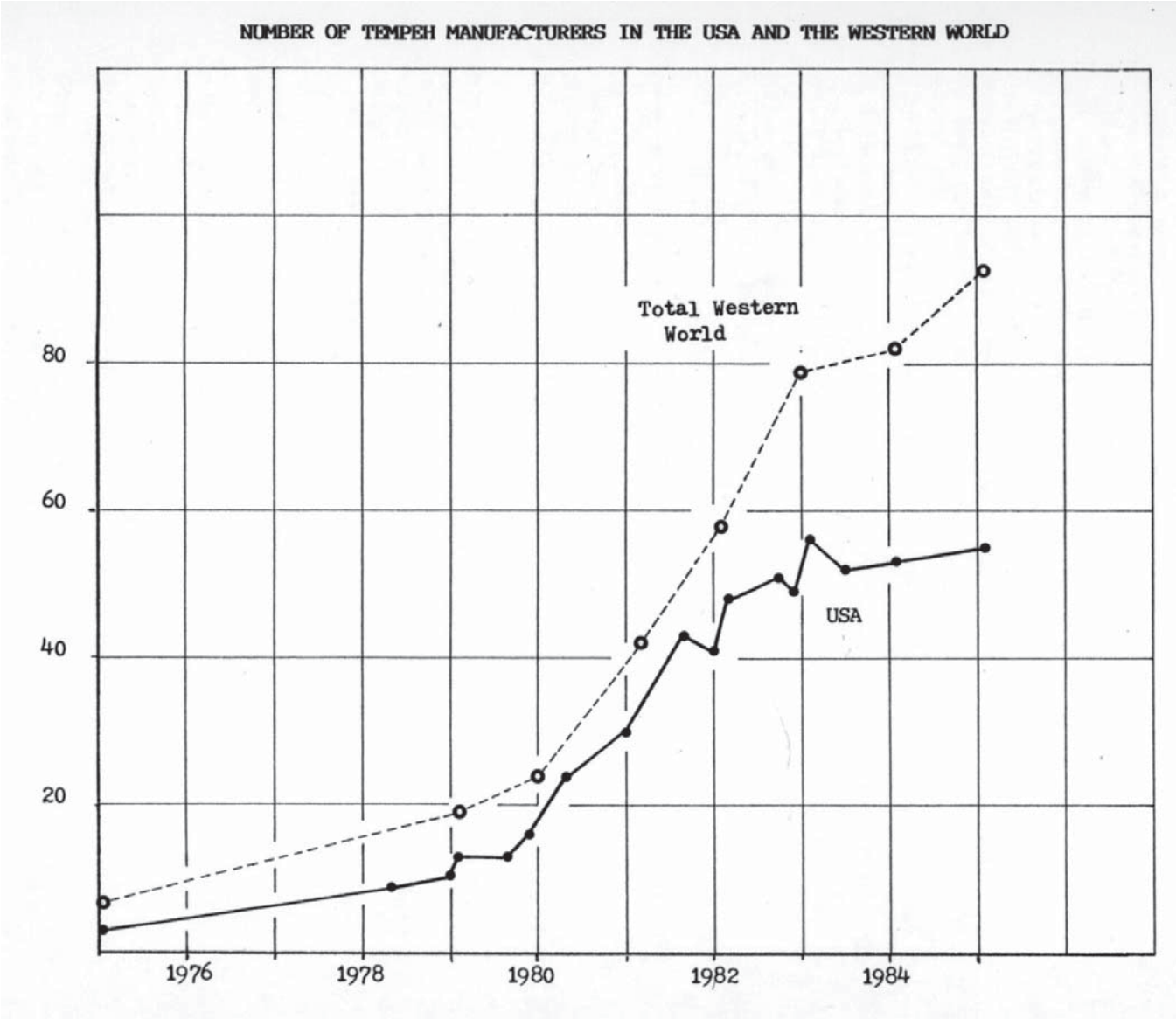
LARGEST TEMPEH MANUFACTURERS IN THE UNITED STATES

Rank 1984	Rank 1983	Company Name & State	Year Started	Average Weekly Production (lb/week) 1982 May**	1983 May**	1984 Jan**
1	1	Quong Hop/Pacific Tempeh, CA	1980	5,000	4,500	7,000
2	4	White Wave, CO	1979	1,900	4,750	5,850
3	3	Soyfoods Unlimited, CA*	1981	3,000	5,000	5,800
4	2	The Tempeh Works, MA*	1979	4,250	5,000	5,500
5	7	Appropriate Foods, NY*	1981	500	1,200	2,000
6	6	Higher Ground, Inc., WI*	1980	700	1,200	1,600
7	16	21st Century Soyfoods, MA*	1981	150	250	1,050
8	NL	Panda Foods, NY	1983			1,000
9	8	Cricklewood Soyfoods, PA	1981	500	550	900
10	9	Northern Soy, NY	1979	500	500	700
11	5	The Farm, TN***	1972	800	750	700
12	13	Turtle Isl. Soy Dairy, WA*	1981	350	450	600
13	14	Kingdom Foods, VA*	1981	350	450	500
14	12	Surata Soyfoods, OR	1979	375	315	405
15	15	The Soy Plant, MI	1979	200	300	345
16	NL	Swan Gardens, FL	1983			300
17	17	The Soy Shop, GA	1979	100	200	300
18	11	Island Spring, WA	1979	380	175	125
Total lbs made per week				19,055	25,590	34,675

DETAILED YEARLY ANALYSIS OF THE TEMPEH INDUSTRY IN THE USA

	1981	1982	1983
Number of tempeh mfgrs. in the US at end of year	44	56	53
Number of larger manufacturers	15	16	18
Thousand pounds of tempeh made per week by larger mfgrs. (chart)	19.06	25.59	34.68
Number of smaller manufacturers	29	40	35
Avg. weekly prod per small mfgr (lb)	90	98	100
Thousand pounds of tempeh made per week by smaller manufacturers	2.61	3.9	3.5
Thousand pounds of tempeh made per week by all US manufacturers	21.67	29.59	38.18
Million pounds of tempeh made during year by all US manufacturers	1.127	1.533	1.985
Metric tons of tempeh made during year by all US manufacturers	511.2	695.3	900.4
Production growth rate during year		36%	29%
Yield: pounds of tempeh from one pound of soybeans	1.75	1.75	1.75
Metric tons of soybeans used during year by all US tempeh makers	292.1	397.3	514.5
Avg price per pound, ex-factory ($)	1.06	1.20	1.30
Avg price per pound, wholesale ($)	1.39	1.56	1.70
Avg price per pound, retail ($)	2.04	2.30	2.50
Lowest price per pound retail ($)	1.60	1.65	1.70
Yearly value (million $), ex-factory	1.19	1.84	2.58
Yearly value (million $), retail	2.30	3.52	4.96
Avg. no. of employees, larger mfgr.	5	6	7
Avg. no. of employees, smaller mfgr.	1	1.5	2
Total number of employees	94	161	196
Market share of top four manufacturers	65%	64%	63%
Market share of top eight manufacturers	76%	77%	78%
Market share of "larger" manufacturers	87%	86%	91%

Source: Soyfoods Center Surveys of the Tempeh Industry, 1982-84



1728. Soetrisno, Uken S.S. 1985. Beberapa prinsip alternatif penggunaan tempe dalam peningkatan status gizi golongan rawan gizi. 3. Tempe dalam pemenuhan kebutuhan gizi ibu menyusi [Several alternative principles in the utilization of tempeh to improve the nutritional status of the malnourished / those in critical nutritional condition. 3. Tempeh in fulfilling the nutritional needs of breastfeeding mothers]. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 44-52. Held 15-16 April 1985 in Jakarta. [8 ref. Ind]
Address: Pusat Penelitian dan Pengembangan Gizi, Bogor, Indonesia.

1729. **Product Name:** Soy Tempeh, and Tempeh Bits.
Manufacturer's Name: Soy Feliz.
Manufacturer's Address: 17802 N.E. 21st St., Gainesville, FL 32609. Phone: 904-485-1527.
Date of Introduction: 1985. April.
New Product–Documentation: Talk with Jose Caraballo. 1990. July 27. He started making these tempeh products at his home in May 1990 and selling them locally. In Spanish "Soy Feliz" means "I am happy."

Talk with Jose Caraballo. 2001. July 23. In April 1982 he started making tempeh at home and selling it to his local friends. In April 1985 he started selling tempeh and tempeh bits to a local co-op distributor, who distributed them to retail co-ops.

1730. **Product Name:** Tofu, Soymilk, Tempeh.
Manufacturer's Name: Soy Shop, Inc.
Manufacturer's Address: 210 Laredo Dr., Decatur, GA 30030. Phone: 404-377-8433.
Date of Introduction: 1985. April.
New Product–Documentation: Talk with Mr. Kich Lam. 1989. Nov. 8. He bought this business from Steve and Sarah Yurman in April 1985, and moved it to Decatur. He now makes tofu, soymilk, and tempeh. He is Chinese.

1731. Steinkraus, K.H. 1985. Trends and current knowledge in tempe research. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 138-48. Held 15-16 April 1985 in Jakarta. [20 ref. Eng]
• ***Summary:*** Contents: Introduction. Indonesian tempe kedelai (with 10 essential steps for tempe production). Traditional tempe fermentation (the basic traditional process). Industrial production of tempe (details of the commercial process and improvements made during the past 25 years, many originating in the USA by Steinkraus, Martenelli and Hesseltine, plus Gandjar, etc. Summary of the tempeh industry and market in the USA {Shurtleff & Aoyagi 1984}. Summary of the tempeh industry and market in Indonesia, with Table 1 {Winarno 1976}). Acidification–An essential step in the tempe fermentation (without this step, tempe makers in temperate climates are taking a risk of food spoilage and/or toxin development). Research needs (study differences between traditional acidified and non-traditional non-acidified tempeh fermentation processes). Address: New York State Agric. Exp. Station, Geneva, New York 14456.

1732. Sumantri (Soemantri), Ag.; Sudigbia, I. 1985. Upaya penanggulangan diare kronik dengan mempergunakan formula makanan dengan tempe [Management of chronic diarrhea with a tempe-based formula]. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 128-33. Held 15-16 April 1985 in Jakarta. [5 ref. Ind]
• ***Summary:*** Tempeh was shown to be effective in controlling diarrhea. Address: 1. Lembaga Penelitian–UNDIP; 2. Rumah Sakit Dr. Karyadi–UNDIP.

1733. Surjaningrat, Suwardjono. 1985. Sambutan menteri kesehatan Republik Indonesia [Opening remarks by the Minister of Health, Republic of Indonesia]. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 3-5. Held 15-16 April 1985 in Jakarta. [Ind]
• ***Summary:*** Surjaningrat noted that this Symposium on Tempe, which he inaugurated, was an important historical event in the progress of research and development of tempeh. Address: Minister of Health, Indonesia.

1734. Tarwotjo, -; Suaspendi, -; Martini, -. 1985. Tempe dalam program kesehatan dan gizi nasional [Tempeh in the national health and nutrition program]. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 53-59. Held 15-16 April 1985 in Jakarta. [7 ref. Ind]
Address: Direktorat Bina Gizi Masyarakat.

1735. Tjiptoherijanto, Prijono. 1985. Aspek ekonomi dari usaha tempe tradisional: Pendekatan usaha tani kedelai [Economic aspects of the traditional tempeh producer: An appraisal from the soybean producer]. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 97-113. Held 15-16 April 1985 in Jakarta. [7 ref. Ind]

• ***Summary:*** This article contains the following graphs: Soybean exports from Indonesia (1977-82); Soybean imports to Indonesia (1978-82); Production and consumption of soybeans and soyfoods in Indonesia (1971-82; soyfoods given for only 1978 and 1980); Per-capita consumption of soybeans, tofu, tempeh, and soy sauce (kecap) by province and total, 1978 and 1980. In 1980 the figures for Indonesia as a whole were soybeans 0.16 kg per capita, tofu 4.66 kg, tempeh 4.87 kg, soy sauce 1.61 bottles. The average consumption of tempeh for Indonesia as a whole was 11.6 grams/person/day in 1978 and 13.3 gm in 1980. Source: Central Bureau of Statistics. Address: Dr., Lembaga Demografi–UI.

1736. Watanabe, Tadao. 1985. The tempe technology in Japan. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 134-37. Held 15-16 April 1985 in Jakarta. [2 ref. Eng]
• ***Summary:*** Contents: The tempe industry in Japan (no statistics or details are given). The manufacture of tempe in Japan. Cooking of tempe for marketable products (sold in blocks, minced, or sliced and flavored). Some biochemical properties of tempe: Antioxidative activities, volatile compounds in tempe, triglyceride profiles of Tempe Chips (from Indonesia). Address: Kyushu Univ., Japan.

1737. Winarno, F.G. 1985. Tempe–Peningkatan mutu dan statusnya di masyarakat [Tempeh–Improvements in quality and in its public status]. In: Hermana and Karyadi, eds. 1985. Simposium Pemanfaatan Tempe Dalam Peningkatan Upaya Kesehatan dan Gizi [Symposium on Tempeh Utilization in Efforts for Improving Health and Nutrition]. 148 p. See p. 69-84. Held 15-16 April 1985 in Jakarta. [23 ref. Ind] Address: Prof. Dr., Pusat Penelitian dan Pengembangan Teknologi Pangan–IPB.

1738. *Toyo Shinpo* (*Soyfoods News*).1985. Sukoyaka Tenpe kôhyô. Marusan-Ai [Marusan-Ai's "healthy tempeh" gets good acceptance]. May 1. p. 4. [Jap; eng+]
• ***Summary:*** This tempeh is being sold at the Seibu Department Store in Ikebukuro (Tokyo), and at Mitsukoshi Department Stores in Nihonbashi (Tokyo).

1739. Siriwardena, T.D.W. 1985. Re: Requesting visit. Letter to William Shurtleff at Soyfoods Center, May 9. 1 p. Typed, with signature on letterhead.
• ***Summary:*** Mrs. F. Hwavitharana, a research worker attached to his center, expects to visit Canada in early July, 1985. She holds B.Sc. and M.Sc. degrees and is a research bio-chemist who has 3 years experience as a research worker at the Soybean Center.

He is writing to Shurtleff to expedite possibilities for her to visit Soyfoods Center to learn about making tempeh, tofu, and soy beverage. He proposes that she spend about 2 weeks at Soyfoods Center. A few visits to tofu and tempeh manufacturing centers in California would also be useful. Address: Sri Lanka Soybean Project, Dep. of Agriculture, Soybean Foods Research Centre, Gannoruwa, Peradeniya, Sri Lanka.

1740. Kushi, Michio; Kushi, Aveline. 1985. Re: Thank you for sending *The Book of Tempeh.* Letter to William Shurtleff at Soyfoods Center, May 10. 1 p. Typed, with Michio's signature on letterhead. [Eng]
• ***Summary:*** "Dear Bill and Akiko, Thank you for sharing the new edition of the *Book of Tempeh* with us. It should be of great benefit in spreading the use of tempeh both among individual families and in the health food market.

"Thank you for this significant contribution to one peaceful world.

"We send you our best regards and warmest wishes for your continued health and happiness. Sincerely,..." Address: 62 Buckminster Rd., Brookline, MA [Massachusetts] 02146. Phone: (617) 232-6869.

1741. Murata, Kiku. 1985. Re: Thank you for sending *The Book of Tempeh.* Letter to William Shurtleff at Soyfoods Center, May 17. 1 p. Typed, with signature on letterhead. [Eng]
• ***Summary:*** "Many thanks for sending to me a copy of the new second edition of 'The Book of Tempeh,' which includes A Brief History of Tempeh in an Appendix A.

"'History of Tempeh,' you had kindly sent to me last year and this edition (easy to read) have gave me much knowledge of tempeh and people in the past and present.

"I have greatly impressed your energy to devote your life for soybean products, especially for tempeh from various stand points.

"I am sorry that we could not able to invite you to attend 'Non-salted Soybean Fermentation' to be held July 15-17, 1985. The financial situation is very difficult.

"If possible and if you don't mind, I would like to advertise the new second edition of 'The Book of Tempeh.'

"People who attend the Symposium will also [want] the knowledge of History of Tempeh.

Thank you again for your kindness to send me the results of your energetic, useful and wonderful work.

"With very best wishes to you. Sincerely yours,..." Address: Teikoku Women's Univ., 173-6 Thodacho, Moriguchi City, Osaka, Japan. Phone: 06-902-0791.

1742. Shurtleff, William; Aoyagi, Akiko. 1985. History of tempeh: A fermented soyfood from Indonesia. 2nd ed. Lafayette, California: Soyfoods Center. 91 p. May. 28 cm. [402 ref]
• ***Summary:*** A slightly revised and updated version of the

July 1984 edition.

This book is now (as of April 2011) available free of charge on Google Books, in full view. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1743. Shurtleff, William; Aoyagi, Akiko. 1985. History of tempeh in Europe (Document part). In: W. Shurtleff and A. Aoyagi, Akiko. 1985. History of Tempeh: A Fermented Soyfood from Indonesia. 2nd ed. Lafayette, California: Soyfoods Center. 91 p. See p. 27-31. [402 ref]

• ***Summary:*** "As noted previously, all of the references to and articles about tempeh written between 1875 and the early 1950s were written by Europeans, most of them Dutchmen. Senior authors of references prior to 1940 included Gericke and Roorda (1875, 1901), Prinsen Geerligs (1895, 1896), Boorsma (1900), Vorderman (1902), Heyne (1913), Jansen (1923, 1924), Ochse (1931), van Veen (1932, 1933, 1934, 1935, 1936, 1938), Mertens (1933), Amar and Grevenstuk (1935), and Burkill (1935).

"Yet, perhaps because Dutch was not a widely read or spoken language and tempeh was not known in countries more famous for soyfoods such as Japan and China, tempeh was rarely mentioned in the numerous articles about soyfoods published in French, German, and English prior to the 1950s. Nor are there records of tempeh being made in Europe during this time. The only two European works in English that mentioned tempeh during this period were those by Ochse (1931) and Burkill (1935), and both were encyclopedic works about the foods and plants of Malaysia and Indonesia; Ochse's work was originally published in Dutch.

"Relatively little was published about tempeh in Europe between 1940 and 1959, and most articles focused on its role in prisoner of war camps in Southeast Asia. There were articles by van Veen (1946, in Dutch), Roelofsen (1946, in Dutch), de Bruyn et al. (1947, in Dutch), Tammes (1950, in Dutch), van Veen and Schaefer (1950), Smith and Woodruff (1951), Grant (1951), Dupont (1954), and Autret and van Veen (1955); the latter five articles were all in English. Most of these have been discussed earlier at Indonesia. Boedijn (1958) reported that Rhizopus oligosporus can always be isolated from tempeh, implying that it is the primary organism in tempeh.

"All of the first tempeh companies in Europe were started in the Netherlands by immigrants from Indonesia. The earliest of these, called ENTI, was founded in April 1946 by a Dutch couple whose last name was Wedding. They had learned to make tempeh while living in Indonesia. Bringing their starter culture and tempeh culture to the Netherlands, they began to make Europe's earliest known tempeh on a home scale for friends and relatives. Gradually ENTI grew and become a commercial operation, making 2,000 lb of tempeh a day by the early 1970s. In about 1974 the Weddings sold the company (located in Zevenhuizen) to Mrs. L.J. Duson, who ran it until January 1984, when she closed it. Firma E.S. Lembekker, founded in January 1959 in Amsterdam, then became Europe's oldest existing tempeh company.

"Interest in tempeh in Europe began to increase starting in the 1960s. Articles were published by Roelofsen and Thalens (1964; changes in B vitamins), Stanton and Wallbridge (1969; a tempeh-like product made from cassava but with improved nutritional value), Thio (1972, 1975, small scale production and recipes), Jensen and Djurtoft (1976; a large report from Denmark on legume and cereal grain tempehs), Djurtoft and Jensen (1977, tempeh from various African grains and beans), Andersson (1977, volatile components and yellow pea tempeh, from Sweden), and Bahi El-Din et al. (1977; Sudanese researchers at Wageningen, Netherlands). Among these researchers, Thio Goan Loo fron Indonesia was especially active in teaching people in Third World countries about tempeh. In 1972 he wrote about tempeh for use in Zambia (Africa) and spent three months in 1979 teaching tempeh production and recipes in Sri Lanka.

"The earliest known popular article on tempeh was an excellent 7-page feature story with nine photographs published in 1982 in *Le Compas* in French. In 1982 *Soja Total,* a translation of *The Farm Vegetarian Cookbook* (Hagler 1978), containing 13 pages of information on tempeh, was published in Germany. In 1985 *Das Tempeh Buch,* an updated and expanded translation of *The Book of Tempeh* (Shurtleff and Aoyagi 1979), will be published in Germany. Thus by 1984 there was more information on tempeh available in German than in any other continental European language, including Dutch. However the absence of a center of focused research efforts and a good source of tempeh cultures, such as the centers at Geneva and Peoria in the US, restricted the development of widespread popular interest in tempeh in Europe.

"Europe's largest tempeh company, Tempe Production Inc. (called *Handelsonderneming van Dappern* until 1983) was founded in 1969 by Robert van Dappern, with the help of his Dutch father (Herman), his Indonesian mother (Aveline), and his Dutch-Indonesian wife. He paid the Dutch-Indonesian sailor (who had founded Firma ENTI) a substantial sum of money to teach him how to make tempeh. By 1970 they were making tempeh in a small warehouse in Rotterdam. Initially they sold all of their tempeh to a couple of Holland's many Indonesian stores, but then they hired his wife's father, a well-known Indonesian, to deliver to the wider Indonesian community. The company began to grow, but all of the tempeh was being consumed by Indonesians living in the Netherlands.

"In about 1972 or 1973 they moved the thriving company to Kerkrade, in southern Holland near the family home in Heerlen, rented a bigger building, and started mass production. Ed van Dappern, the second brother, joined the company as an equal partner. In 1979 Robert sent his

wife's brother, Ike van Gessel, to Los Angeles to set up a tempeh plant there. Ike rented a building but, because of the European recession during the early 1980s and the need for capital to expand the business in the Netherlands, he had to cancel the lease and call off the project, at a substantial financial loss.

"In about 1980 or 1981 the company bought a $1 million modern factory in Kerkrade and expanded again. By mid-1982 Tempe Production Inc. was producing 6,000 to 8,000 pounds of tempeh a week, making it the largest tempeh company in the world. By early 1984 production had increased to 13,200 pounds a week, and an estimated 10% of this was consumed by non-Indonesians. The family developed their own proprietary method for making tempeh starter culture. They developed a leaflet on tempeh, gave demonstrations on making and cooking with tempeh, and got tempeh to be sold at the Central Market, with the result that more and more of the greengrocers, who buy their vegetables there early each morning, started selling tempeh (and tofu). The company exported tempeh and tempeh products to England, Germany, Belgium, and Luxembourg via a major distributor. Robert's Indonesian mother, Aveline, was in charge of preparing these (van Gessel 1982; Welters 1982; van Dappern 1984, each personal communications). By 1984 Tempe Production Inc. was the world's second largest tempeh manufacturer, after Marusan-Ai in Japan.

"Prior to early 1981 all of Europe's tempeh companies were located in the Netherlands and run by older Dutchmen catering largely to an Indonesian clientele. Europe's first generation of "New Age" tempeh shops was started from 1981 by young people interested in natural foods and/or macrobiotics. Europe's earliest known New-Age tempeh company was Paul's Tofu & Tempeh, which was in operation by January 1981 at 155 Archway Rd., Highgate, in London. JAKSO, the first New Age shop in the Netherlands, started in July 1981. By January 1982 there were 7 tempeh shops operating in Europe; by January 1984 there were 18. Of these, 7 were in the Netherlands, 3 in Austria, 2 each in England and West Germany, and 1 each in Belgium, France, Italy, and Sweden. Total tempeh production in the Netherlands was about 4,500 kg a week (10,000 cakes of 1 pound each) in 1982, rising to 12,000 kg a week in 1984.

"By 1980 another center of interest in tempeh had developed at the Department of Botany and Microbiology, University College of Wales, Aberystwyth, Wales, UK. There Dr. J. Hedger and Mr. T. Basuki (from Indonesia) were planning to start a tempeh factory, had produced a 4-page leaflet on "Tempe–An Indonesian Fermented Soybean Food," and had written a script for a BBC program "Tomorrow's World," on tempeh, which was broadcast in the summer of 1979. At that time tempeh was also occasionally sold in London, but the name of the manufacturer was not given (O'Neill 1980). In 1982 Hedger wrote a brief article on tempeh production." Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1744. Shurtleff, William; Aoyagi, Akiko. 1985. History of tempeh in Australia (Document part). In: W. Shurtleff and A. Aoyagi, Akiko. 1985. History of Tempeh: A Fermented Soyfood from Indonesia. 2nd ed. Lafayette, California: Soyfoods Center. 91 p. See p. 31-32. [402 ref]

• ***Summary:*** "Australian interest in tempeh began in about 1977, when McComb published an excellent BS thesis on the use of sweet narrow-leafed lupins to make tempeh. It contained one of the best summaries of the literature to date, plus much original research. A summary of this work was given by Kidby et al. (1977).

"The earliest known Australian tempeh companies were started in about 1980, and by March 1981 there were three small ones, all run by young 'New Age' people, interested in natural foods, meatless diets, and alternative lifestyles. The first two to start were Dharma, part of Earth Foods in Waverley, run by Swami Veetdharma, and a small shop at Bodhi Farm in Channon, New South Wales, run by John Seed. Cyril and Elly Cain founded Beancoast Soyfoods in Eumundi, Queensland, and started making tempeh in July 1982. In March 1982 *Ziruiz* magazine published a long popular article "Terrific Tempeh" by Shurtleff and Aoyagi. By early 1983 Earth Angel was making okara tempeh. By 1984 there were five tempeh companies in Australia, all quite small.

"Because of Australia's proximity to Indonesia, both countries could learn much from each other about traditional and modern tempeh making." Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1745. Shurtleff, William; Aoyagi, Akiko. 1985. Early commercial tempeh shops in the United States (Document part). In: W. Shurtleff and A. Aoyagi, Akiko. 1985. History of Tempeh: A Fermented Soyfood from Indonesia. 2nd ed. Lafayette, California: Soyfoods Center. 91 p. See p. 38-39. May. [402 ref]

• ***Summary:*** "It is not known for sure when the first commercial tempeh was made in the US. After the long and bloody war that drove the Dutch out of Indonesia and led to Indonesian independence in 1949, tens of thousands of Dutch and Dutch-Indonesian families were uprooted. Most tried to go to Holland, but the country was too small and the native Indonesians found it too cold. The United States set a quota in 1950 allowing 25,000 of these refugees to immigrate. Only about 10% were culturally native Indonesian; the rest were "Indos," i.e. Dutch-Indonesians or Chinese-Indonesians. Most went to warm areas such as California and Florida. In 1950 an estimated 500 of these settlers arrived in California. The first of these known to have started a tempeh shop was Mary Otten, who in 1961 began making tempeh in her basement on Stannage Avenue in Albany, California. She sold it to her friends and served it at parties that she catered.

For starter culture she used ragi (an Indonesian starter that comes in small cakes) flown in from Java, until she learned how to make her own in 1973. In 1967 she started Java Restaurant and served many tempeh dishes. Then in 1974 she and her daughter, Irene, started Otten's Indonesian Foods, which by 1981 was making tempeh plus a full line of Indonesian tempeh-based foods under the brand name Joy of Java. These foods included Sweet & Sour Tempeh and Sayur Lodeh Tempeh.

"The second earliest known tempeh shop in California (and in the USA) was Runnels Foods, which opened in Los Angeles, California in 1962. Also in Los Angeles, Toko Baru started in 1969 and Bali Foods started in 1975. Thus America's first generation of tempeh shops were all located in California and all run by Indonesian-Americans." Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1746. Shurtleff, William; Aoyagi, Akiko. 1985. The Americanization of tempeh (1970 to 1980s) (Document part). In: W. Shurtleff and A. Aoyagi, Akiko. 1985. History of Tempeh: A Fermented Soyfood from Indonesia. 2nd ed. Lafayette, California: Soyfoods Center. 91 p. See p. 39-43. May. [402 ref]

• ***Summary:*** "The 1960s, a decade of creative scientific research on tempeh, laid the foundation for the 1970s, when tempeh began to enter the American diet. The main forces spurring increased production and consumption of tempeh after 1970 were the three closely related movements working to popularize natural foods, meatless and vegetarian diets, and soyfoods. From the late 1970s on there was a rapid growth of interest among many Americans in health, nutrition, and fitness, in low-cost protein sources, meatless diets, and world hunger, in ecology, and simpler, more satisfying lifestyles. Specific factors popularizing tempeh were the various promotional efforts, books, media coverage, and increased availability of good fresh tempeh. By the early 1980s the growing mainstream concern with cholesterol and saturated fats, had also become a significant factor.

"During the 1960s the Cornell University group under Dr. Steinkraus and the USDA Peoria group under Dr. Hesseltine and Dr. Wang had completed most of their basic research on tempeh. But a few important discoveries remained to be made during the 1970s. At Cornell, the most important findings concerned the production of significant amounts of vitamin B-12 during tempeh fermentation. In 1977 Liem, Steinkraus and Cronk showed tempeh to be one of the best vegetarian sources of vitamin B-12. Curtis, Cullen and Steinkraus (1977) showed that the B-12 was produced by the bacterium *Klebsiella.* (Nutritional analyses of commercial tempeh done by independent scientific laboratories during the late 1970s and early 1980s showed that typical samples contained an average of 8.8 micrograms of vitamin B-12 per 100 gram portion, or 293% of the US Recommended Daily Allowance of 3 micrograms.)

"The most significant research work on tempeh done by the Peoria group during the 1970s concerned the development of improved, larger scale methods for making tempeh starter cultures. The group showed that rice or a mixture of rice and wheat bran yield the most viable spores, and they developed methods whereby individuals or tempeh manufacturers could make good quality tempeh starter by themselves.

"But much more important than the research work of these two groups during the 1970s and early 1980s was their 'extension' work. Members of both groups summarized the results of their research on tempeh in at least 35 articles, both scientific and popular. They also gave many speeches. This brought tempeh to the attention of many more scientists and lay readers. Starting with the *Mother Earth News* in May 1976, a number of major magazine articles listed the USDA NRRC at Peoria as America's only source of tempeh starter. Over the next few years the Peoria group sent out some 25,000 tempeh starter cultures and instructions for making tempeh, free of charge, to people and organizations requesting then; by 1981 the number had reached 35,000. Partly to stem the flood, in June 1977 Wang, Swain and Hesseltine wrote "Calling All Tempeh Lovers" for *Organic Gardening* magazine (circulation 1,350,000) describing an easy method for making this rice-based tempeh starter at home. Steinkraus organized a Symposium on Indigenous Fermented Foods, held in Bangkok, Thailand, in November 1977 in conjunction with the fifth United Nations-sponsored conference on the Global Impacts of Applied Microbiology (GIAM V), and attended by over 450 scientists from around the world. There 17 papers were presented on tempeh, more than any other single food. In 1983 Steinkraus edited the monumental *Handbook of Indigenous Fermented Foods,* containing 94 pages of information about tempeh, much of it from the 1977 Symposium. Hesseltine, Wang, and Steinkraus also did a great deal to help America's first generation of Caucasian tempeh manufacturers start their businesses and deal with their production problems. They patiently answered hundreds of phone calls and letters from young entrepreneurs trying to educate themselves in the basics of applied microbiology–all in the best tradition of using tax dollars to serve the people and promote American agriculture and business. For their two decades of pioneering research, more than 65 publications on tempeh, and highly effective extension work, the US tempeh industry owes the Peoria and Cornell groups an immense debt of gratitude.

"Also in America during the 1970s, many other researchers published on tempeh. Chen, Packet, and co-workers (1969-72) at the University of Kentucky published three papers on antioxidants in tempeh. In 1970 Noznick and Luksas of Beatrice Foods were granted a patent on a powdered tempeh made by liquid submerged fermentation. Kao (1974) at Kansas State University wrote his PhD dissertation on tempeh made from chick-peas (garbanzos),

horsebeans (broad beans), and soybeans. James Liggett of Foundation Foods developed a tempeh meat analog containing sesame seeds (*Soybean Digest* 1975). Jurus and Sundberg (1976) were the first to convincingly demonstrate that the tempeh mold hyphae penetrated deep into the soybeans; this helped explain the rapid physical and chemical changes during tempeh fermentation. Beuchat (1976) in Georgia, studied peanut presscake tempeh. Charles and Gavin (1977) from the Biotechnology Research Center at Lehigh University, Pennsylvania, used a creative engineering approach to investigate the microbiological, biochemical, physical, and nutritional changes occurring during tempeh fermentation. Other studies were done by Souser and Miller (1977, Rhizopus lipase), Aramaki (1978, acceptability of tempeh made from bulgur wheat, millet, and azuki beans), Zamora and Veum (1979, fermentation improved the quality of tempeh protein), Gomez and Kothary (1979, tempeh from red kidney beans), Yueh et al. (1979, patent assigned to General Mills Inc. for a process for producing a soy & potato fried tempeh snack food), Rathbun and Shuler (1982, 1983, heat and gas transfer during tempeh fermentation),

"During the early and mid-1970s, in addition to the groups at Cornell and Peoria, there were four other main groups that played leading roles in introducing tempeh to America: The Farm in Tennessee, The Soyfoods Center in California, Rodale Press in Pennsylvania, and the food- and counter-culture media.

"A great deal of the credit for introducing tempeh to the American public goes to The Farm, a large spiritual and farming community of 'long-hairs' living on 1,700 acres in Summertown, Tennessee. People at The Farm pronounced the name of this food as TEM-pi, instead of the standard TEM-pay. In late 1971 Alexander Lyon, a member of The Farm with a PhD in biochemistry, learned about tempeh while doing library research on soy-based weaning foods. In 1972 he helped The Farm to set up a small 'soy dairy.' While serving as its first manager, and using starter culture and literature supplied by Drs. Hesseltine and Wang at the USDA in Peoria, Illinois, he worked with Dianne Darling to make an occasional small batch of tempeh for the soy dairy crew. In 1972 or 1973 Dianne wrote a ten-step kitchen method for making tempeh using spore suspension for inoculum. Soon Deborah Flowers made two large batches of tempeh, incubated in the boiler room at the Canning and Freezing plant, and many Farm members had their first taste. The group developed a method for growing tempeh starter on chopped, sterilized sweet potatoes with cultures in test tubes. This was America's first Caucasian-run tempeh shop, although it was not a commercial shop. Tempeh was an immediate hit in The Farm's vegan or total vegetarian diet–a diet containing no dairy or other animal foods. In 1974 Stephen, The Farm's spiritual teacher, visited Amsterdam on a European trip and came back with a new realization of the potential of tempeh for The Farm and for a new industry in America." Continued. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1747. Shurtleff, William; Aoyagi, Akiko. 1985. The Americanization of tempeh (1970 to 1980s) (Continued–Document part II). In: W. Shurtleff and A. Aoyagi, Akiko. 1985. History of Tempeh: A Fermented Soyfood from Indonesia. 2nd ed. Lafayette, California: Soyfoods Center. 91 p. See p. 43-46. May. [402 ref]

• ***Summary:*** Continued. "In 1974 Cynthia Bates joined the Soy Dairy crew and learned the basic lab techniques for making tempeh starter from Alexander. She built a tempeh incubator out of an old refrigerator and by November 1974 was making 20-30 pound batches of okara tempeh, using the soy pulp (okara) left over after making soymilk. By January 1975 The Farm Tempeh Shop was making 80-200 pounds of tempeh a week. The incubator was expanded into a used bean dryer and sporulated okara tempeh (dried and ground) started to be used as a starter. In 1975, in order to share their discovery with people across America and around the world, the community (now having 1,100 members) featured a section on tempeh (written by Cynthia Bates) in their widely read *Farm Vegetarian Cookbook,* including the first tempeh recipes to be published in any European language (Farm 1975).

"In 1975, after Wang, Swain and Hesseltine at the NRRC published their paper on mass production of tempeh spores, Bates set up a little laboratory and began making tempeh starter for use on The Farm. The starter was grown on rice, using the syringe inoculation technique and a spore suspension of starter sent periodically and kindly by Dr. Wang. By 1976 powdered pure-culture tempeh starter, made by Bates at the Tempeh Lab, was being sent out or sold to interested people. Publications were now needed to explain how to use the starter to make tempeh, then how to cook the tempeh. In 1975 or early 1976 Alexander Lyon typed up a three-page flyer titled 'Tempeh Instructions,' which contained the first instructions in any European language for making tempeh at home, and listed The Farm as a source of tempeh starter. Bates wrote and The Farm printed a 2-page flyer titled 'Tempe,' which described how to make five pounds of tempeh and contained four recipes, including the world's first Tempeh Burger recipe. This flyer was distributed with the starter, along with 'Fermentation Funnies,' cartoons introducing tempeh. In 1976 Bates and co-workers wrote a 20-page article titled 'Beatnik Tempeh Making' (later retitled 'Utilization of Tempeh in North America') for the Symposium on Indigenous Fermented Foods in Bangkok.

By Sept. 1976 the Tennessee Farm community, with Suzie Jenkins as tempeh production manager, was making at least 60 pounds of tempeh a day, and they were using a centrifuge (Cynthia Bates' idea) to dewater the soybeans after cooking and before inoculation–a technological breakthrough that soon caught on among commercial tempeh

makers.

Also by 1976 The Farm's satellite farms had established commercial tempeh shops in San Rafael, California, and Houma, Louisiana. A number of America's early tempeh shops (such as The Tempeh Works in Massachusetts or Surata Soyfoods in Oregon) were started by people who learned the process on The Farm. America's first soy deli, set up in August 1976 at the Farm Food Company's storefront restaurant in San Rafael, featured tempeh in Tempeh Burgers, Deep-fried Tempeh Cutlets, and Tempeh with Creamy Tofu Topping, the first tempeh dishes sold in an American-style restaurant.

"The media blitz for tempeh that began in 1977 created a booming little business on The Farm for tempeh ingredients. A January 1977 article in *Organic Gardening* listed The Farm as the only known source of split, hulled soybeans. Orders began to arrive. Soon Dr. Wang at the USDA in Peoria, flooded by orders for tempeh starter, was forwarding many of then to The Farm. Then articles by The Farm (Cynthia Bates and Deborah Flowers) about tempeh in *Mother Earth News* (Sept. 1977) and *East West Journal* (July 1978) led to a surge of orders for both starter and split soy beans.

"In 1977 Farm Foods was founded; it took over marketing of the tempeh starter, together with hulled soybeans and revised editions of the tempeh instructions (1977, 1978). The three items were sold nationwide as America's first Tempeh Kit by mail order and in some natural food stores. The starter was also sold separately with the leaflet. During 1978 Farm Foods promoted its tempeh starter and tempeh kit by serving grilled tempeh at numerous natural foods trade shows. A large sidebar in the February 1978 issue of *Organic Gardening* magazine listing Farm Foods as the best source of tempeh starter and split beans, followed by letters of referral from Rodale Press thereafter, stimulated sales. Also in 1978 Hagler edited a revised edition of the *Farm Vegetarian Cookbook;* it contained 12 pages on tempeh, including many recipes. In 1982 Farm Foods began actively advertising and selling bulk, powdered tempeh starter to America's growing number of tempeh shops, and by 1984 they had captured a majority of the market. Prior to 1979 tempeh had been available on The Farm only on special occasions. In that year, however, a Tempeh Trailer, developed in Louisiana by John and Charlotte Gabriel, was brought to The Farm. The tempeh incubator was moved out of the Canning and Freezing building and made into a walk-in incubation room in the trailer. John Pielascyzk became head tempeh maker, and thereafter any Farm member could go at almost any time to the Farm store, open the freezer, and take home tempeh. In 1981 Margaret Nofziger, Farm nutritionist, wrote an article on 'Tempeh and Soy Yogurt,' with five tempeh recipes, for *Vegetarian Times.*

"In late 1983 and early 1984 The Farm underwent a major financial restructuring. Farm Foods became financially independent from The Farm and in May 1984 the Tempeh Lab (under the directorship of Cynthia Bates) became independent of Farm Foods. Both became 'for-profit' companies. In March 1984 The Farm published *Tempeh Cookery,* America's fourth popular book about tempeh and the first with full-page color photos (Pride 1984). To promote this book (and tempeh), in June 1984 Farm Foods and its sister company, The Book Publishing Company, served samples of deep-fried tempeh and several tofu dishes to 20,000 attendees of the American Booksellers Association Convention in Washington, D.C. Farm Foods was also planning to have one or more large tempeh companies (perhaps one on each coast of the USA) make private labeled tempeh, which would then be sold nationwide through the company's extensive soymilk ice cream (Ice Bean) distribution channels. Farm Foods could then also use the tempeh, the starter, and the book to promote each other." Continued. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1748. Shurtleff, William; Aoyagi, Akiko. 1985. The Americanization of tempeh (1970 to 1980s) (Continued–Document part III). In: W. Shurtleff and A. Aoyagi, Akiko. 1985. History of Tempeh: A Fermented Soyfood from Indonesia. 2nd ed. Lafayette, California: Soyfoods Center. 91 p. See p. 46-49. May. [402 ref]

• ***Summary:*** Continued. "William Shurtleff and Akiko Aoyagi of The Soyfoods Center in California were also active in helping to introduce tempeh to America. They first became aware of and interested in tempeh in March 1975 in Tokyo after reading *The Farm Vegetarian Cookbook.* In their *Book of Tofu* (1975), they included a recipe for homemade tempeh and seven Indonesian-style tempeh recipes (learned from an Indonesian tempeh maker in Tokyo), the first such recipes ever published in English. This whole section was published in *Mother Earth News* in May 1976. In late 1976, during a two-week visit to The Farm in Tennessee, they wrote (with Cynthia Bates) a 4-page pamphlet titled 'What is Tempeh?' which they enlarged and published in early 1977. In May 1977 they spent a month in Indonesia studying tempeh, and in June their article "Favorite Tempeh Recipes" was published in *Organic Gardening* magazine. In January 1978 William Shurtleff presented a paper and demonstration on how to make tempeh from winged beans at an International Seminar on Winged Beans in the Philippines.

"In July 1979 Harper & Row published their *Book of Tempeh,* the first book in the world devoted entirely on tempeh. It contained the first sizeable collection of American-style and Indonesian tempeh recipes (130 in all), the first illustrated descriptions of making tempeh, tempeh starter, and onchom (ontjom / oncom) on various scales in Indonesian tempeh shops, the first history of tempeh, detailed discussion of tempeh in Indonesian culture and of the many varieties of Indonesian tempeh, and the first

recommendations for commercial names for the more than 30 types of tempeh that could easily be made in the West. It also contained chapters and reviews of the literature on tempeh nutrition and the microbiology and biochemistry of tempeh fermentation, plus the largest bibliography on tempeh to date (including many new Indonesian references), an annotated listing of 61 people and organizations around the world connected with tempeh, and the first list of tempeh companies in the West. By early 1984 16,600 copies of the paperback edition and 960 copies of the enlarged professional hardcover edition had been sold. Between 1976 and 1982 they wrote eight articles on tempeh for popular and trade magazines.

"In March 1980 The Soyfoods Center published *Tempeh Production,* the first book describing how to start and run a commercial tempeh plant in industrialized or Third World countries. In 1981 Shurtleff and Aoyagi wrote a book on tofu, miso, and tempeh that was published in Mexico in Spanish, and in 1982 they published books containing bulk tempeh recipes and tempeh labels. Starting in 1982 Shurtleff did extensive annual surveys of the tempeh industry and market in the USA, which were published yearly by The Soyfoods Center in *Soyfoods Industry and Market: Directory and Databook.* The Center also developed and sold color slide sets on "Tempeh," "Tempeh Production in the USA," and "Tempeh Production in Indonesia." In 1985 The Book of Tempeh will be published in German as *Das Tempeh Buch.*

"Another early pioneer of tempeh in America was Rodale Press in Emmaus, Pennsylvania, best known as the publisher of *Organic Gardening* and *Prevention* magazines. In the spring of 1975 Rodale's R&D department decided to follow up on the work with tempeh done by Hesseltine and Wang at Peoria. In early 1976 R&D food technologist Mark Schwartz began to work with Dr. Wang in Peoria to develop a simple, inexpensive way to make tempeh at home. They devised a tempeh kit including an incubator made from an inexpensive Styrofoam picnic cooler heated by a light bulb. For a Reader's Research Project, they sent the kit with instructions and a questionnaire to 60 readers across the country, and asked for feedback. The unanimous response was that people found the new food easy to make and delicious (Podems 1976). This R&D work led to five major articles in 1976 and 1977. In March 1976 Brenda Bortz in 'The Joys of Soy' introduced tempeh and Rodale's tempeh research to readers of *Organic Gardening* (OG). In January 1977 *OG* ran 'Tempeh Keeps 'em Coming for More Soybeans.' Jack Ruttle, a Rodale staffer, summarized the results of Rodale's research on tempeh to date and gave detailed instructions for making tempeh at home. This was the first major popular article on tempeh published in America. In June *Prevention,* the largest health-food magazine in America, ran a cover story and editorial by Robert Rodale titled 'Tempeh, a New Health Food Opportunity.' He visited America's first Caucasian-owned tempeh shop (run by Gale Randall), encouraged others to start tempeh shops and to 'get in on the ground floor of a new industry,' and predicted that tempeh might well become America's most popular way of using soybeans as part of the 'coming soy boom.' 'Tempeh is on its way up,' he wrote. 'Before long it will be eaten widely and lovingly across this land of ours.' Also in June *OG* published Shurtleff and Aoyagi's 'Favorite Tempeh Recipes' and Wang, Swain, and Hesseltine's 'Calling all Tempeh Lovers.' In addition Rodale Press published books with extensive information on tempeh: *Home Soyfood Equipment* (Wolf 1981) and *Tofu, Tempeh, & Other Soy Delights* (Cusumano 1984). Wolf's book included a new method for making tempeh at home using unsalted soynuts, which took less time and cost only about 28% (10 cents) more per pound than the traditional method. Detailed plans for making a home tempeh incubator were given. *Organic Gardening* (March 1982) summarized Wolf's quick tempeh method.

"Starting in 1971, the American media first began to take an interest in tempeh, when Food Processing magazine, in its 'Foods of Tomorrow' section did an article on 'Specialty Fermented Foods,' discussing their potential acceptability in the American market. It concluded: 'But of all fermented foods, tempeh, with its high ratings in taste, nutritional benefits, and simple, low cost processing techniques, appears to be the most likely candidate for Americanization . . . Tempeh may be one of the next to appear in the US market place.' In May 1976 *Mother Earth News* (Issue #39) ran a long excerpt on tempeh from *The Book of Tofu* by Shurtleff and Aoyagi. Media coverage expanded significantly in 1977. First came the three major Rodale Press articles mentioned above. In September *Mother Earth News* featured 'How we Make and Eat Tempeh Down on the Farm,' and in November *Vegetarian Times* ran 'Tempeh,' In July 1978 *East West Journal* ran its first tempeh story, 'Make Your Own Soyburger' about the Farm's tempeh. These many articles contained recipes and detailed instructions for home preparation, and some gave the address of the NRRC in Peoria, Illinois as a source of free tempeh starter. In less than 18 months, over 25,000 people requested starter and began making tempeh at home. This early media coverage for tempeh was a veritable blitz for a largely unknown food, and most of the publications had large circulations. In addition descriptions of tempeh began to appear in popular books, such as Beatrice Hunter's *Fermented Foods and Beverages* (1973).

"The first commercial Caucasian American tempeh shop was started in the winter of 1975 by Mr. Gale Randall in Unadilla, Nebraska." Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1749. Tanaka, Nobumasa; Kovats, S.K.; Guggisberg, J.A.; Meske, L.M.; Doyle, M.P. 1985. Evaluation of the microbiological safety of tempeh made from unacidified

soybeans. *J. of Food Protection* 48(5):438-41. May. [10 ref]
• ***Summary:*** Pathogens were added to either the soybeans before fermentation by *Rhizopus oligosporus* or the tempeh after fermentation and steaming. In the latter method, the inoculated products were incubated at several different temperatures (5, 10, 15 and 25ºC). Describes the growth and toxins produced by *Clostridium botulinum* (types A and/or B), *Staphylococcus aureus, Salmonella typhimurium,* and *Yersinia enterocolitica.* All of the pathogens evaluated grew well and produced toxins under at least some conditions. "Results of these studies indicate the need for maintaining: (a) a high level of sanitary practices during production and (b) good refrigeration (less than or equal to 5ºC) of the product following fermentation until it is used."

Note: It is also very important to acidify the soybeans before fermentation. Address: Food Research Inst., Univ. of Wisconsin, Madsion.

1750. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Thomas Tempeh.
Manufacturer's Address: 167 Tagensvej, DK-2400 NV Copenhagen, Denmark.
Date of Introduction: 1985. May.
Ingredients: Incl. organic soybeans.
How Stored: Refrigerated.
New Product–Documentation: Talk with Thomas Andersen of Urten's Tofu. 1990. May 24. He founded this company at this address and started making tempeh in May 1985. It was Denmark's first tempeh company. The tempeh was made with organically grown soybeans from the very beginning. On 1 Jan. 1986 he moved the business to Soendergade in the city of Toelloese, Denmark. The business was still named Thomas Tempeh.

1751. Torii, Yasuko. 1985. The Book of Tôfu to no deai: Amerika no tôfu buumu no haikei [My encounter with The Book of Tofu (by Shurtleff & Aoyagi): The background of the tofu boom in America]. *Daizu Geppo* (*Soybean Monthly News*). May. p. 31-35. [Jap]
Address: Nihon Yuki Nogyo Kenkyukai Jonin Kanji.

1752. Roger, Patrick. 1985. [Re: New developments with soyfoods in France, and the Association Rurale des Travailleurs sur Soja]. Letter to William Shurtleff at Soyfoods Center, June 12. 3 p. Typed, with signature. [1 ref. Fre; eng+]
• ***Summary:*** "Many of the farmers in my region have told me that they grew soybeans during World War II. It seems that this was a sort of culture (tax or duty on which the farmers were owing/in debt), for the German occupants considered the soybean to be a strategic commodity.

"More recently, in 1974, it is under the impetus of Mr. Jean Claude Sabin, sometimes called 'Mr. Soja,' that the culture of soya has taken off again in France, starting with the Department of Tarn. Mr. Sabin is presently president of various organizations actively involved with popularizing soybean culture in France. I'd like to point out the little newsletter edited by l'ONIDOL (Office of Oilseed Development) titled *L'Inoculum.* It contains extensive useful information on the culture of soya in France. Subscriptions are free. Write: L'Inoculum, 17 rue Fleurance, 31400 Toulouse, France.

"Finally a little history of l'ARTS. Our association was officially created in December 1983 by Olivier Attie, who is today its president, by Jacques Isnard and Alain Lacombe, who manage SOJADOC, which makes tofu and tofu products, and by myself who am now director. The base of the association is now widened to include other members. Those in charge of businesses such as Mrs. Sakaguchi, Colin, Wintzer, Garcia; people working in public organizations; soy researchers; wholesalers. Presently the three of us most actively involved are (1) Olivier, who is most particularly interested in the development projects in Africa. (2) Anne Caderas de Kerleau, who is collecting important documents and writing a book on soya, and (3) me, who keeps people connected by publishing *La Lettre de l'ARTS* and does investigations as on markets, adapted varieties of soybeans, etc.

"By the way, we have a project to launch in the near future the idea of a European Soyfoods Manufacturers Assoc. (but there is no good equivalent for the word 'Soyfoods' in French). We are in the process of working out the laws but the divisive political and linguistic context in Europe makes these things very delicate. In this body we will try to work together to establish standards for production and labeling, to protect soyfoods from the attacks of the dairy lobbies, and to publish a 'Soyfoods Letter' in English and French...

"Here is a list of recent arrivals on the market in France: Sojadoc (fresh tofu and tofu cuisine), Sojagral Ouest (tofu), La Maison du Tofu (tofu), L'Athanor (tempeh), Sapov (soymilk, natural or deodorized)... It seems that 1986 will be the boom year for soy products in France...

"Our training session on tofu took place in November 1984 at Penne and Corbarieu. It has been followed by Mani Coulibali of Senegal, who has since been sent by AGROPOL [Association pour le Developpement International Agronomique et Industriel des Proteagineux et des Oléagineux] as a soya expert for Africa, and by Koffi Aquereburu, who is looking for partners/financiers for a tofu project in his country, Togo.

"I have previously set up a shorter session in the same way (at the same time) a dossier of study (in Spanish) for Hidegar Garcia of Venezuela in view of setting up an experimental shop in that country. I have had no news from him since then.

"The next stage, organized by Olivier Attie, will take place in July by a person from Burkina Faso (formerly Upper

Volta) in view of implementing a low technology shop in his country." Address: Director: 1. La Guitarde, 82370 Corbarieu, France; or 2. ARTS (Association Rurale des Travailleurs sur Soja), Presbytere de Saint-Paul-de Mamiac, 81140 Penne du Tarn, France. Phone: 63/56 34 09.

1753. Malafia Granhao, Sergio. 1985. Re: Work with soyfoods in Portugal. Letter to William Shurtleff at Soyfoods Center, June 13. 2 p. Handwritten. [Eng]
• ***Summary:*** "I am a student at the Chemical Engineering Department of the University of Porto (Porto, Portugal). "I am getting a degree in Bioengineering and I'm doing a preliminary project about soyfood."

"Here are the names and addresses of institutions in Portugal that work with soyfood: (1) Piramide, Rua do Breimer 50, 400 Porto, Portugal. Piramide already produces some kinds of soyfood but is going to start to make tempeh; (2) Suribachi, Rua do Bonfirm 136/40, 4300 Porto, Portugal; (3) Trigrama, Rua do Centro Cultural, 5-r/c, 1700 Lisboa, Portugal. Address: Rua da Cruz 111 r/c esq., 4200 Porto, Portugal.

1754. Takamine, Kazuhiro. 1985. Re: Thanks for new edition of book. Glad to see history of tempeh in Japan. Letter to William Shurtleff at Soyfoods Center, June 25. 2 p. Typed, with signature on letterhead.
• ***Summary:*** "I was delighted to hear from you and received your kind complimentary copy of new edition, *The Book of Tempeh.*

"I felt so happy to know that what I talked with you in Lafayette was introduced" in the history section of this book [p. 153-54]. That section "reminded me of the time I spent in your house and many ideas of promotion of tempeh in Japan given through Akiko-San's cooking and talks with your friends.

"I have some additional information on our tempeh factory. Torigoe started to make tempeh at new factory from July 1984. This factory has a capacity of l00 tonnes of a plain tempeh a month. Torigoe determined to build a new factory at the end of 1983 in order to meet the expectation of demand in the future. We designed the fermentation room to be controlled automatically, direct shock freezing system and also purification facility for sewerage disposal controlled under microbes and so on.

"We hope tempeh business will grow steadily year by year and your activity will spread out all over the world through tempeh.

"Please give my best regards to Akiko-San. Sincerely yours,..." Address: Torigoe Flour Milling Co., Ltd., Yoshii-machi, Fukuoka-ken 839-13, Kyushu, Japan. Phone: 094375-3121.

1755. Aoki, Sadao. 1985. Nattô oyobi tenpe no seizô ni tsuite [Natto and tempeh production]. *Daizu Geppo* (*Soybean Monthly News*). June. p. 10-18. [Jap]
Address: Hakko Shokuhin Bucho, Tochigi-ken Shokuhin Kogyo Shidosho.

1756. Hesseltine, C.W.; Featherston, C.L.; Lombard, G.L.; Dowell, V.R., Jr. 1985. Anaerobic growth of molds isolated from fermentation starters used for foods in Asian countries. *Mycologia* 77(3):390-400. May/June. [18 ref]
• ***Summary:*** Ragi (in Indonesia), murcha (in north India and Nepal), look pang (in Thailand), bubod (in the Philippines), and Chinese yeast or chiu-chu (in Taiwan and China) are used as starters for a number of fermentations based on rice and cassava in the Orient. The starter consists regularly of certain species of *Mucor, Rhizopus,* and *Amylomyces* and not of other molds, even though the production of starters is often made under unsanitary conditions. The peculiar ability of these molds to grow under anaerobic conditions is found to explain why these starters can be made to be so free of contaminating molds even though the conditions under which they are made are so unsanitary. Address: 1-2. NRRC, Peoria, Illinois, 61604; 2-3. Anaerobic Baceteria Branch, Center for Infectious Diseases, Centers for Disease Control [CDC], Atlanta, Georgia, 30333.

1757. Karyadi, Darwin. 1985. Cornell menyelidiki tempe [Research on tempeh at Cornell University]. *Intisari* (*Indonesia*). June. p. 57-60. [Ind]
Address: Bogor, Indonesia.

1758. Kushi, Aveline; Jack, Alex. 1985. Aveline Kushi's complete guide to macrobiotic cooking: For health, harmony, and peace. New York, NY: Warner Books. xvii + 414 p. June. Illust. Index. 23 cm. [36 ref]
• ***Summary:*** Index entries include: Miso 61, Tofu 50, Tamari 19, Tempeh 17, Whole dry soybeans 6, Natto 3, Soymilk 3, Yuba 1. This book calls ganmodoki "Tofu Croquettes" and further states that *"Gan* means 'crane' and *modoki* means 'looks like.'" Among the 31 chapters are ones titled Beans (incl. basic black soybeans, and brown rice with black soybeans); Tofu, Tempeh, and Natto (including yuba); Sea Vegetables; Condiments and Garnishes (incl. miso), and Fish and Seafood.

Under "Black Soybeans" (p. 257) were read: "These nice shiny beans are also called Japanese black beans. They have a strong, delicious taste. Their juice is said to make the voice clear and beautiful. Throughout Japan, mothers prepare their children for music tests and singing lessons with this dish. Black soybeans are also used medicinally to help discharge animal toxins from the body." Note: This is the earliest macrobiotic cookbook seen that uses the term "Black soybeans" in a recipe title. All previous macrobiotic cookbooks called them "Black beans."

Contains recipes for homemade tofu, tempeh, and natto. Address: Brookline, Massachusetts.

1759. *Natural Foods Merchandiser.*1985. Refrigerated/ frozen foods get a blast from the past. June. p. 1, 54-59.
• ***Summary:*** Includes excellent discussions of tempeh, soymilk, and non-dairy frozen desserts including Tofutti, Ice Bean, and Rice Dream. One retailer says: "We've never had a product line like Tofutti, where customers practically tell us they'll bomb our store if we don't carry it." Tofutti continues to show strong sales, but it is facing competition from other soy-based frozen desserts (such as Ice Bean), as well as ice cream facsimiles made from fruit (such as Yodolo) or rice (such as Rice Dream).

On the same pages as the article are color ads for Rice Dream and Legume "Enlightened Entrees with Tofu."

1760. **Product Name:** Tempeh.
Manufacturer's Name: Noble Bean.
Manufacturer's Address: R.R. 1, McDonalds Corners (near Elphin), Ontario K0G 1M0, Canada. Phone: 613-278-2305.
Date of Introduction: 1985. June.
Ingredients: Soybeans, water, culture.
Wt/Vol., Packaging, Price: 12 oz perforated plastic bag (not vacuum packed).
How Stored: Frozen.
New Product–Documentation: Talk with Allan and Susan Brown of Noble Bean. 1998. June 22-24 (which see). In June 1985, after about 5 years in Toronto, they bought ten acres of land near McDonalds Corners (not far from The Farm in Lanark, Ontario), and moved Noble Bean onto that land. There, in their third location, they once again started to manufacture commercial tempeh. Remember: They began in Lanark in June 1979 and continued in Toronto in June 1980.

1761. **Product Name:** Tempeh Burgers, and Tofu Burgers.
Manufacturer's Name: Sooke Soy Foods Ltd.
Manufacturer's Address: 2625 Otter Point Rd., R.R. 2, Sooke, Vancouver Island, BC, V0S 1N0, Canada. Phone: 642-3263.
Date of Introduction: 1985. June.
Ingredients: Tofu (or tempeh), natural soy sauce, herbs and spices.
Wt/Vol., Packaging, Price: Tofu: 8 oz. Tempeh: 6 oz.
How Stored: Refrigerated.
New Product–Documentation: Labels. 1985. 3 inch diameter. Self adhesive. Brown (Tofu) or Green (Tempeh) on beige. "Ready to serve, or steam for 5 minutes. Meatless."

1762. Sutardi, -; Buckle, K.A. 1985. Phytic acid changes in soybeans fermented by traditional inoculum and six strains of *Rhizopus oligosporus. J. of Applied Bacteriology* 58(6):539-43. June. [12 ref]
• ***Summary:*** "Tempeh was prepared from Delmar variety soybeans inoculated with the traditional Indonesian inoculum (*usar*) and 6 pure culture strains of *Rhizopus oligosporus*. The strains BTU3K1 and CT11K2 produced the best quality tempeh. The phytic acid content of soybeans was reduced from 1.07% in whole dry soybeans to 0.67-0.75% in tempeh. Most mould strains did not have a significantly different effect on reducing the phytic acid content in tempeh." Address: School of Food Technology, The Univ. of New South Wales, P.O. Box 1, Kensington, NSW 2033, Australia.

1763. Tsen, Hau-Yang; Tong, Chii-Gong. 1985. [Changes in enzymatic activity and biochemical constituents during the fermentation of defatted soybean meal with *Rhizopus thailandensis*]. *Chung-Kuo Nung Yeh Hua Hsueh Hui Chih* (*J. of the Chinese Agricultural Chemical Society, Taiwan*) 23(1-2):111-18. June. [20 ref. Chi; eng]
• ***Summary:*** "After one day's fermentation with *R. thailandensis,* the phytate content in the soybean meal changed insignificantly. However, in the fermented soybean meal, the crude fiber content decreased and the contents of proteins, amino type nitrogen as well as the free amino acids increased. In addition, the oligosaccharides, such as raffinose and stachyose were removed during fermentation and the molecular weight of most proteins in the fermented product decreased to less than 10,000. Therefore, with the view point of nutrition, for example, the efficiency of its digestion, absorption and utilization in the digestive tracts of animals, the fermented soy bean meal is more nutritious than the unfermented soybean meal if the effect of phytic acid was not considered." Address: Dep. of Food Science, National Chung Hsing Univ. Taichung, Taiwan, Rebublic of China.

1764. Vaidehi, M.P.; Vijayalakshmi, D.; Annapurna, M.L. 1985. Consumer evaluation of tofu, tempeh, curd, and "Meal Maker" in urban areas. *Indian J. of Nutrition and Dietetics* 22(6):190-93. June. [15 ref]
• ***Summary:*** Rural Indian consumers (mostly housewives, predominantly of middle and low income) preferred tempeh and tofu curries to Meal-Maker (textured soy flour) in appearance, flavor, aroma, and after taste, while urban consumers preferred Meal-Maker curry, followed by tempeh and tofu curries. Soy curd (like yogurt) was least preferred by both rural and urban consumers. Address: Univ. of Agricultural Sciences, Hebbal, Bangalore 560 024, India.

1765. **Product Name:** Quinoa Tempeh.
Manufacturer's Name: White Wave, Inc.
Manufacturer's Address: 1990 North 57th Court, Boulder, CO 80301.
Date of Introduction: 1985. June.
New Product–Documentation: Label. 1985, undated. 5 by 6.5 inches. White, yellow and black on red background. Tempeh Mock Chicken Salad recipe. Quinoa is a high protein grain from the ancient Incas of Peru. Interview with Lonnie Stromnes. 1987. Aug. 31.

1766. Sheraton, Mimi. 1985. International pot luck: Variety spices the country's rich culinary life. *Time* 126(1):98-99. July 8.
• ***Summary:*** This article is part of a special issue of *Time* magazine about immigrants. It notes that as Americans learn about new ethnic cuisines, they are also "busy naturalizing foreign ingredients into native dishes: tofu, the cheeselike soybean curd, as the base for burgers and ice cream... Tempeh, the Oriental fermented soybean cake, is here formed and flavored to simulate bacon and pastrami."

"How long can it be before Benihana is joined by chains with names such as Tacorama, the Piteria, Dim-summery and even Tofusion."

A photo captioned "A sundae kind of love," notes that "there is not one drop of dairy product in the tofu-based "Ice cream." Developed for Jews who observe kosher laws and cannot combine dairy and meat products in the same meal, this creamy soybean-based frozen dessert also satisfies those on low-calorie diets."

Note: This is the earliest known article in *Time* magazine that mentions tempeh.

1767. Tsujimura, Katsura. 1985. Re: Thinking about tempeh, salted koji, and natto. Letter to William Shurtleff at Soyfoods Center, June 12. 2 p. Typed, with signature. [Eng]
• ***Summary:*** He thanks Mr. and Mrs. Shurtleff for their present of the new edition of 'The Book of Tempeh,' and makes a few observations about the symposium "Non-Salted Soybean Fermentation" to be held July 15-18 at Tsukuba Science City.

He is interested in understanding the connection between the microorganisms of kinema, thua-nao, natto, and onchom merah of Indonesia (*Neurospora*).

"You have mentioned a food named 'Tou Chiah Ping (soy bean fried cake),' reported and photographed at Beijing [China] in 1931. (p. 155)" Is its Chinese characters [three handwritten characters]?

"Unfortunately you could not get new information by asking 10 Chinese. None of them knew about it. This means that the food was lost or was eaten only by lower classes.

"You have referred to the relation of tou ching ping and tempe. I also imagine tou-chiah-ping was one of the original types of the consumption of soybean-koji, before it was used for enzyme reaction, as in the case of miso production. Salted koji (in Japan it is known variously as Tera-natto, Daitokuji-natto, Hama-natto or Shiokara-natto) is another type of consumption. It improves preservation and serves as an appetizer of boiled rice. From it miso and soya sauce were developed.

"At present grain-koji (made of rice or wheat) is usually used for miso and soya-sauce production. Soybean protein is hydrolyzed by grain-koji. Grain-koji itself is never eaten directly. It is also used as enzyme preparation to hydrolyze starch to make 'Amasake' or as the raw material for 'Sake' making. Whether grain-koji was eaten in ancient time or not, I have no information.

"Natto and 'Oncom merah' are unique products utilizing *Bacillus* and *Neurospora* respectively. I suppose both might developed from failed production of molding.

"There are two kinds of onchom, black onchom and red onchom; the former is made using *Rhizopus,* and is the analogue of tempeh. You have classified this as a type of tempe..."

"Natto resulted from the failure of soybean-koji production, I suppose. Natto developed in northeast Japan, where the climate was cooler than in southeast. One must maintain warm temperature to grow *Aspergillus* to get koji. So they packed the cooked soybean in the straw parcel, and this resulted in the growth of *Bacillus* instead of *Aspergillus*. The wet condition on the surface of boiled soybean may benefit to the Bacillus (unfortunately I have no experimental evidence).

"I am interested that the process of the development of natto and onchom (red onchom), which seem to be resemble each other. Sincerely yours,..." Address: Prof. of Nutrition, Higashi Nakano 2-5-5, Nakano-ku, Tokyo 164, Japan.

1768. *Asahi Shinbun* (*Asahi Daily News, Tokyo*).1985. "Mirai shoku"–nattô: Tsukuba de kokusai shinpojiumu [Food of the future–Natto: International symposium in Tsukuba]. July 13. [Jap]
• ***Summary:*** While focusing on the international symposium on non-salted fermented soybean foods, held in Tsukuba, Japan, this article discusses tempeh as a type of natto. A map shows the natto–kinema–thua nao–tempeh triangle joining Japan, Nepal, Thailand, and Indonesia. Address: Japan.

1769. *Toyo Shinpo* (*Soyfoods News*).1985. '85 Ajia "muen Hakko Daizu" Kaigi 7/15-16 oite Tsukuba Kenkyû Gakuen Tosh Kôryû Sentaa [1985 No-Salt Fermented Soybean Conference, July 15-16 at Tsukuba Research Center]. July 21. p. 9. [Jap; eng+]
• ***Summary:*** Representatives from 15 overseas countries attended. Natto and tempeh's "International Symposium" opens. 350 people attended; they had active discussions. Thua-nao (*chuana*) from Thailand was discussed.

1770. *Toyo Shinpo* (*Soyfoods News*).1985. Nyûjô kyaku 5,000 nin ni apuroochi [Nearly 5,000 people attended]. July 21. p. 8. [Jap; eng+]
• ***Summary:*** About the 1985 No-Salt Fermented Soybean Conference, July 15-16 at Tsukuba Research Center. Natto products were exhibited at a vegetable protein fair. It was sponsored by the Dep. of Agriculture and Forestry (*Nôsuisho*), from Aug. 26 to Sept. 7 at their building. Vegetable protein is a basic part of our daily life. At that time the Japanese Natto Association introduced tempeh, and they

took a poll of 140 people. 4.9% of women were aware of tempeh. Mr. Kanasugi introduced tempeh foods to people. Samples of tekka miso, croquettes, fried tempeh, and tempeh burger were served. People like the flavor of these.

1771. *Yomiuri Shinbun* (*Yomiuri Daily News, Tokyo, Evening ed.*).1985. "Nattô"–sekai ni shinshutsu ["Natto" is spreading out across the world]. July 24. [Jap]
• ***Summary:*** About the international symposium on non-salted fermented soybean foods held in Tsukuba, Japan. Discusses tempeh as well as natto. Photos show: (1) A man making tempeh in Indonesia. (2) A Japanese woman holding a plate of tempeh snacks. Address: Japan.

1772. Harrison, Slater. 1985. Re: The state of soybean usage in Bangladesh. Letter to William Shurtleff at Soyfoods Center, July 25. 3 p. Handwritten, with signature on two aerogrammes. [1 ref]
• ***Summary:*** There are now four MCC people working with soybeans. George Horlings is an extensionist working almost exclusively with soybean at the farm level. He has been having lots of trouble getting the seed to last from one harvest to the next time of planting. Carl and Ilean Bergan are food technologists; they recently replaced Ron Martins. Their only soyfood project is supervising the pilot soymilk plant started by Ron Martins. Slater is the fourth person working with soybeans although that is not part of his job description. He is trying to entice the Bergans with tempeh; they have never tasted it.

Slater and his wife are active food gardeners. They have grown soybeans for "edamame"–so well known in Japan–and they really love them. They have gotten hold of the very tiny seed that farmers are being encouraged to plant. There is said to be a really spectacular variety named PB (Punjab) that has tested well in Bangladesh. Address: c/o Mennonite Central Committee, Box 785, Dhaka 2, Bangladesh.

1773. Bhatnagar, P.S. 1985. Re: Thanks for 2nd edition of book. New developments with soybean in India. Letter to William Shurtleff at Soyfoods Center, July 30. 1 p. Typed, with signature on letterhead.
• ***Summary:*** "I am highly obliged for the second edition of your book 'The Book of Tempeh.' The publication is indeed of great value. I am sure my colleagues among the staff as well as students working on soybean would be greatly benefitted...

"The project on soybean utilization approved under Indo-US Sub-Commission on Agriculture, is yet to be implemented. I would keep you informed about the progress. I wish if you could come to India under the provisions made in this project. A suggestion to this effect has already been made.

"The growth of soybean in India is continuing primarily for oil extraction and export of defatted soya flour. For sustained growth we have to develop products based on defatted soya flour and create consumers awareness for increasing domestic consumption of this high protein by-product of soya oil industry. With kind regards,..." Address: Project Coordinator, All-India Coordinated Research Project on Soybean, G.B. Pant Univ. of Agriculture and Technology, Pantnagar (Uttar Pradesh), India. Phone: 291-292 Rudrapur.

1774. Asian Symposium on Non-Salted Soybean Fermentation: Tempe, Kinema, Tua-nao, Natto. The roots of biotechnology in monsoon Asia (Abstracts). 1985. Tsukuba, Japan: Tsukuba Center for Institutes. 85 p. Held 15-17 July 1985 at Tsukuba, Japan. 26 cm. [Eng]
• ***Summary:*** For each paper there is a Japanese-language abstract (p. 1-38), and an English-language abstract (p. 43-85). On pages 39-41 are full-page ads for Kume-Natto, Marusan Sukoyaka Tenpe [Tempeh], and Torigoe Tenpe. Address: Japan.

1775. Karyadi, Darwin. 1985. Nutritional implications of tempe in Indonesian rural community. Paper presented at Asian Symposium "Non Salted Soybean Fermentation." 18 p. Held 15-17 July 1985 at Tsukuba, Japan. [22 ref]
• ***Summary:*** A valuable discussion of numerous recent studies which show that tempeh consumption is increasing in Indonesia, that it lowers blood cholesterol, aids in rehabilitation and recovery from chronic diarrhea and diarrheal diseases, and has a protein complementary effect as a food supplement. The production of second generation products is encouraged to help tempeh reach more people, especially nutritional target groups, preschool children, and pregnant and lactating women. Concludes that tempeh has considerable untapped potential for developing countries.

Table 1 shows the per capita consumption of tempeh (in grams per person per day) in 13 Indonesian provinces (Source: Central Bureau of Statistics, 1981). Yogyakarta has the highest consumption (34.3 gm), followed by Central Java (27.7 gm), Jakarta (19.6), and East Java (19.4). Address: Nutritional Research & Development Centre, Ministry of Health, Indonesia.

1776. Plenty Canada. 1985. Sri Lanka Soy Utilization Project. R.R. #3, Lanark, ONT, K0G 1K0, Canada. 10 p. Unpublished manuscript.
• ***Summary:*** The 5-year project, aimed at increasing consumption of soyfoods in Sri Lanka, proposes to establish four soya nutrition centers in Kandy, Colombo, Vavuniya, and Tanamalwila. Each center will have equipment to make soymilk, tofu, soy ice cream, tempeh, and soy flour (to use to fortify wheat in rotti, pittu, etc.). Each center will conduct demonstrations and training classes to community groups. Address: Lanark, ONT, Canada. Phone: 613-278-2215.

1777. Soyfoods Unlimited, Inc. 1985. Introducing–Special

prices. Order now (Leaflet). 14670 Doolittle Dr., San Leandro, CA 94577. 1 p. Single sided. 8½ by 14 inches. July.
• ***Summary:*** This long leaflet, printed with black ink on yellowish orange paper, is offering reduced prices on two books: (1) *The Book of Tempeh,* by Shurtleff & Aoyagi. (2) *Tempeh Cookery,* by Colleen Pride. Address: San Leandro, California.

1778. Soyfoods Unlimited, Inc. 1985. Nutrition of tempeh (Leaflet). 14670 Doolittle Dr., San Leandro, CA 94577. 1 p. Single sided. 8½ by 11 inches. July.
• ***Summary:*** At the top of the letterhead is the Soyfoods Unlimited 3-leaf logo. Contains seven paragraphs, with eight footnotes, about tempeh nutrition, with emphasis on the vitamin in tempeh, and the reduction in oligosaccharides (which cause flatulence) during the tempeh fermentation. At the bottom of the leaflet, in bold white letters on a black background: "Discover the little known pleasure of Indonesian cuisine–enjoy Tempeh!" Address: San Leandro, California. Phone: 415-352-1320.

1779. Shurtleff, William. 1985. Re: Computerizing card catalog. Thank you for tempeh materials. Letter to Yasuko Torii, Kamitsuchidana 324, Ayase-shi, Kanagawa-ken 252, Japan, Aug. 1. 1 p. Typed, without signature (carbon copy).
• ***Summary:*** "Dear Torii-san. We are right in the middle of computerizing our Soyfoods Center library card catalog. Already this summer we have keyed in 7,000 cards into the computer. A very talented Stanford student is doing the actual data entry and I am preparing and then proofing every card as it is printed out. It keeps me working 12 hours a day, 7 days a week just to keep up with him. So, this will have to be brief.

"Above all I want to thank you for all of the wonderful things that you have sent me, the letters about the conference, the symposium brochures, the clippings, and your good letters. They are very, very interesting to me. I also look forward to hearing whatever tapes you send. I'll return the *Tofu-yo* [Okinawan fermented tofu] video cassette and the tapes to you by the end of September, and write more at that time when I'm a little more free. I'm also sending you $20 to (hopefully) cover expenses (postage, etc.).* You are such a *kichinto-shita hito!* [accurate, precise, punctual, neat and tidy person]. Both Akiko and I greatly appreciate this! Sincerely,...

"* To make it as easy as possible for you (though it doesn't seem as much like a real gift or money), we are deducting the $20 from your invoice. Akiko said if we sent you a $20 bill it would at be *mendokusai* [a nuisance] to go to the bank to cash it. I hope that's okay." Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1780. *Toyo Shinpo* (*Soyfoods News*).1985. [Using tempeh starter in research and development of new types of foods]. Aug. 11. p. 9. [Jap; eng+]
Address: Tochigi prefecture, Shokuhin Kogyo Shidosho.

1781. *Toyo Shinpo* (*Soyfoods News*).1985. Nisshin Shokuhin (yu) tenpe kôjô oopen. 150 nin ga kengaku, takai kanshin [Nisshin Shokuhin's new tempeh plant opens. 150 visitors attend plant tour with strong interest]. Aug. 21. p. 5. [Jap; eng+]

1782. *Toyo Shinpo* (*Soyfoods News*).1985. '85 Ajia "muen Hakko Daizu" Kaigi 7/15-16 oite Tsukuba Kenkyû Gakuen Tosh Kôryû Sentaa [1985 No-Salt Fermented Soybean Conference, July 15-16 at Tsukuba Research Center]. Aug. 21. p. 5. [Jap; eng+]
• ***Summary:*** Tempeh made from cowpeas has been introduced into Nigeria; remarks by Robert Djurtoft. Summary of the lecture, Part I.

1783. Becker, Robert. 1985. Tofu is out, tempeh is in, she says. *Progress* (*Charlottesville, Virginia*). Aug. 22.
• ***Summary:*** A photo shows Eileen Judge, whose company, Kingdom Foods, makes tempeh. For the past two years, she has been making 300 lbs/week of tempeh in her Charlottesville, Virginia, warehouse. Ms. Judge first learned about tempeh while working in Washington, DC, for an agency for the U.S. State Department. She was doing some research for the *League for International Food Education.*

1784. Mahmud, Mien K.; Hermana, -; Karyadi, D. 1985. A preliminary study on the use of tempeh-based formula in the dietary treatment of chronic diarrhea. *Majalah Kedokteran Indonesia* (*J. of the Indonesian Medical Association*) 35(8):443-46. Aug. 31. [10 ref. Eng; Ind]
• ***Summary:*** Seventy-nine children under age 5 with chronic diarrhea were treated using tempeh-based formula compared to 32 children who were treated using milk-based infant formula. The group of children fed the tempeh-based formula had were afflicted with diarrhea for a significantly shorter time than those who were fed the milk-based formula. Address: Nutrition Research & Development Center, Bogor.

1785. Barrett, Clare. 1985. A practical guide to soyfoods. *Vegetarian Times.* Aug. p. 33-40. No. 96. [14 ref]
• ***Summary:*** An overview of fresh green soybeans, whole dry soybeans, soynuts, soy sprouts, soy flour & soy grits, soy oil, soy protein isolates, soymilk, okara, tofu, tempeh, soy sauces, miso, natto. Concludes with a list of 14 recommended books on soyfoods.

1786. Eckett, Alison. 1985. Beating the protein crunch: A growing number of people are discovering the range of soyfoods, both traditional and modern, that can be made from this bean. *Food Processing* (*UK*) 54(8):25-28. Aug.
• ***Summary:*** "The term 'soyfoods' is a recent generic

expression that has been used to describe the complete range of soy products prepared for human consumption. It covers both high technology, modern products such as soy [protein] fibres, concentrates and isolates which are mainly used as ingredients by food manufacturers... and includes the traditional low technology products of soymilk, soy sauce, miso, natto, tofu, tempeh and soy sprouts that have formed part of the staple diet in East Asia for thousands of years."

Soyfoods are divided into non-fermented and fermented. Photos show: (1) Miso Dip (front of two packages). (2) Cubes of tofu under water. (3) Nasoya Tofu Vegi-Dip. (4) Sliced cakes of tempeh. (5) The front of four tempeh packages, made by The Tempeh Works. (5) White Wave tempeh, a tempeh burger, and a promotional piece. (6) A box of Tofu Lasagna, made by Legume, Inc. (7) The front of a package of "6 All Natural Vanilla Ice Bean Sandwiches," made from Ice Bean by Farm Foods.

1787. Gipson, Beckilynn. 1985. Processed proteins: Markets, developments. Business Communications Co., Inc., 9 Viaduct Rd., P.O. Box 2070C, Stamford, CT 06906. 112 p. Aug. Report GA-043R. *

1788. Hesseltine, C.W. 1985. Fungi, people, and soybeans. *Mycologia* 77(4):505-25. July/Aug. [92 ref]
• ***Summary:*** In this Mycological Society of America Annual Lecture, presented on 7 Aug. 1984 at Colorado State University (Fort Collins, Colorado), Dr. Hesseltine gives a nice history of the research conducted by him and others at the Northern Regional Research Center (NRRC) on Asian soybean fermentations, including fermented tofu (Frank Meyer, early USDA plant explorer, in a letter dated 21 Nov. 1916, states: "Parcel No. 125c contains first quality Chinese soybean cheese: please taste a little on the point of a knife; it is extremely appetizing."), sufu, shoyu, miso, tempeh, Chinese black beans (soy nuggets), natto, and "the use of lactic acid bacteria to produce a yogurt product from soybeans." He also studied non-fermented tofu.

Dr. Hesseltine pays a nice tribute to the work of Dr. A.K. Smith of the NRRC (p. 506-07). After his trip to East Asia shortly after World War II, Dr. Smith (a protein chemist) made great efforts to promote cooperation between the USDA, particularly the NRRC, and Japan in conducting research to understand how our exported soybeans were used for food. He had the foresight to recognize the importance of studying soybeans used in such huge quantities for processing into human food. Dr. Smith was instrumental in arranging for two Japanese scientists (Dr. Tokuji Watanabe and Dr. Kazuo Shibasaki) to come to the NRRC to do research on tofu and miso. "This really began a new era of research on use of Oriental methods to produce foods from soybeans" (p. 507).

"My first real involvement in fermentation of soybeans was the arrival [in Oct. 1958] of Professor K. Shibasaki of Tohoku University to study the miso fermentation. He was sponsored by the American Soybean Association and USDA's Foreign Agricultural Service. When he arrived, I was told that since I was curator of the mold collection and since the *Aspergillus oryzae* strains used in the miso process were in my charge, I would be the person he would work with. I had no background and no interest in soybean fermentations, but this was a fortuitous happening because it acquainted me with Oriental food fermentations. All my background was in conventional liquid agitated pure culture fermentation. The miso fermentation introduced me to two new concepts in fermentation: (1) solid state fermentation, and (2) use of mixed pure culture inoculum" (p. 510).

"Probably my interest in fermented foods would have abated had it not been for the acceptance of Mr. Ko Swan Djien of Indonesia, who came to us in 1960 for practical training. In my first discussion with him, we talked about the kind of work he would do. Since I knew that a fermentation was conducted in Indonesia using soybeans and reportedly the fermentation organism was a species of *Rhizopus,* I asked him if he was familiar with the product; his answer was yes, that he often ate it, but he knew nothing about how the fermentation was conducted. It was decided that during his 6 months at Peoria this might be an interesting subject to study, especially since he could obtain samples of the tempeh cake from his wife, who was in Java and could tell good tempeh from bad. Dried samples were quickly obtained; from these cakes, four species of *Rhizopus* were isolated" (p. 514-15). Eventually many strains of *Rhizopus* were isolated and investigations showed that *Rhizopus oligosporus* strain NRRL 2710 produced especially good tempeh.

Photos show four famous Japanese scientists (see next page) who studied fermented foods: (1) Prof. Teizo Takahashi. (2) Ryoji Nakazawa. (3) Kin-ichiro Sakaguchi. (4) Kendo Saito. Address: NRRC, ARS/USDA, Peoria, Illinois.

1789. Leneman, Leah. 1985. Tomorrow's world [soyfoods]. *Vegetarian* (*The*) (*England*). July/Aug. p. 21-24.
• ***Summary:*** There are now 8-9 brands of soya milk sold in Britain. "It is a shame that most people's introduction to tofu is in the form of Morinaga silken tofu which... is now found in most health food stores. Silken tofu is pleasant and nutritious, but is much softer than regular tofu and is therefore much less versatile. Following recipes meant for firm tofu with it can be frustrating.

"*Granose* is the first big-name health food manufacturer to feature a line of tofu-based products (imported from Denmark). Two of the three tinned convenience meals seem to me less than ideal. The tofu adds nothing special to either the Tofu and Tomato Sauce nor to the Tofu in a Savoury Bean Sauce; they might just as well have used tvp. However, the Chinese-Style Tofu is really excellent, with a nice balance of tastes and textures, including the cubes of tofu–

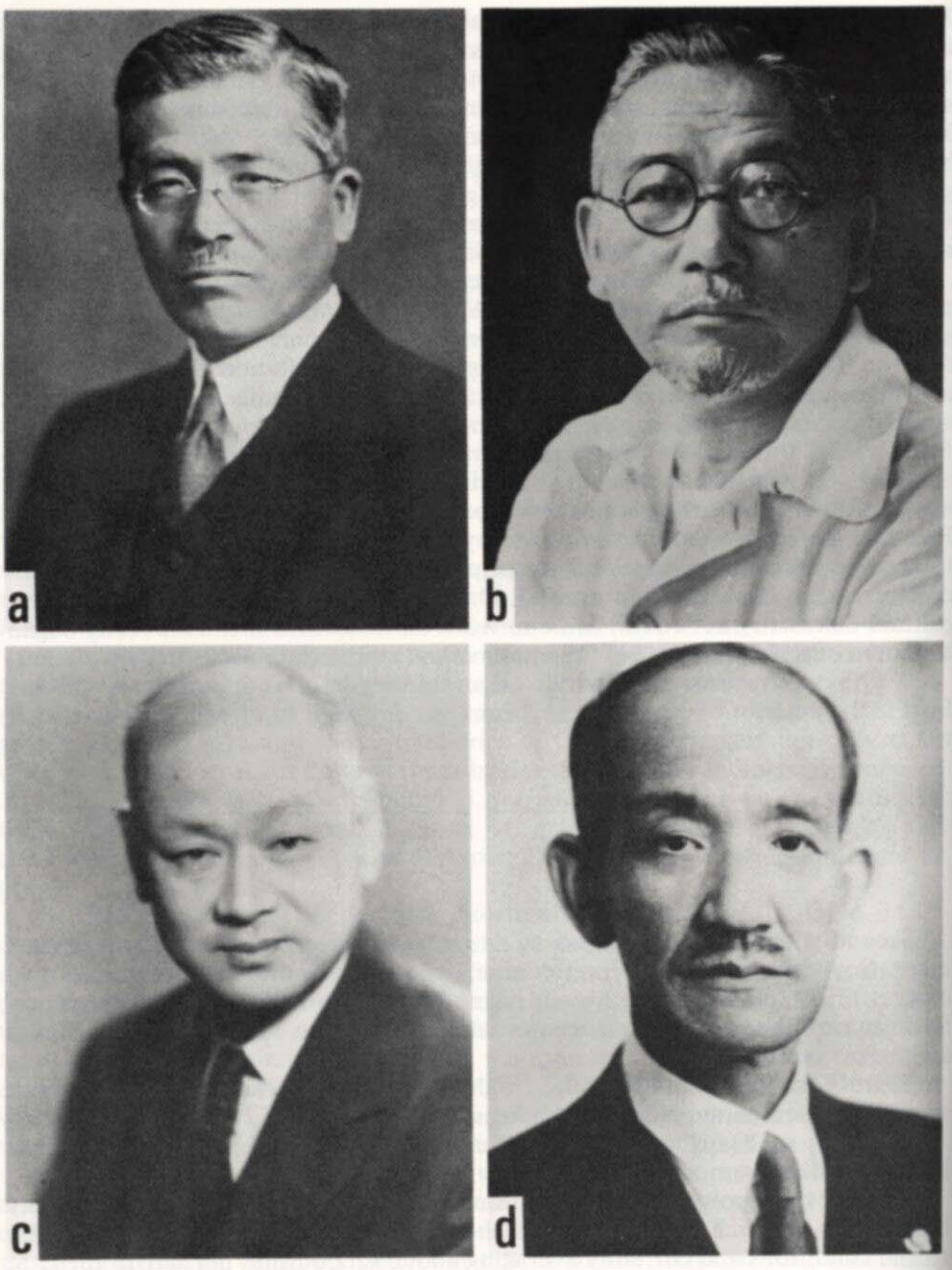


FIG. 1. Four famous Japanese scientists who studied fermented foods: (a) Prof. Teizo Takahashi, (b) R. Nakazawa, (c) Kin-ichiro Sakaguchi, and (d) Kendo Saito.

just about the nicest tinned convenience meal around.

"The first national distributor of tofu (to the best of my knowledge) was *The Regular Tofu Company...* Like all other national distributors, their tofu is vacuum-packed, which considerably lengthens its shelf-life... *Paul's Tofu* (The Old Brewery, Wheathampstead House, Wheathampstead, St. Albans, Herts.) produces another vacuum-packed firm tofu, which is available in London and South-East England...

"Bean Machine (Station Road, Crymych, Dyfed) produces not only tofu but also a range of 'soysage' foods made from okara... They also make 'Soyannaize,' a dairy-free dressing. *Duchesse* All-Natural Tofu Dressing and Dip (made by St. Giles Foods Ltd, St. Giles House, Sandhurst Road, Sidcup, Kent DA15 7HL) is another mayonnaise-type product..."

She is writing The International Tofu Cookery Book for Routledge & Kegan Paul. Address: 19 Leamington Terrace, Edinburgh EH10 4JP, Scotland.

1790. *Natural Foods Merchandiser.*1985. New products, changing diets propel soyfood sales. Aug. p. 1, 39-40, 42-44.
• ***Summary:*** "The soyfoods revolution is being fueled by several powerful trends... Many consumers are attracted to soyfoods because they are an excellent no-cholesterol 'replacement' for meat and dairy products. Soyfoods are also growing with the rising tide of macrobiotics, which promotes the use of various soy products. And there are now enough soyfoods on the market to create synergy within the category: consumers buying soymilk try tofu, and go from tofu to tempeh.

"Tofu is by far the best-selling product in the soyfoods category, according to figures provided by the Soyfoods Association [and Soyfoods Center]. An estimated $60 million worth of tofu is produced and sold in the U.S. annually, while frozen tofu desserts, entrees, and prepared products account for approximately $25 million. Soymilk sales have jumped from near zero a few years ago to $10 million today, while tempeh is an emerging growth category at 5 million in yearly sales." All of the retailers interviewed by NFM indicated that the soymilk category is experiencing major growth. Most of the growth has been in six-ounce aseptic individual serving packages supplied by such companies as Westbrae, Ah Soy, Vitasoy and Eden. Health Valley's Soy Moo has recently been repackaged in a 8.45-ounce package.

"Tempehworks produces approximately 7,000 pounds of tempeh a week during peak months, including that used in its processed tempeh products, such as Fakin' Bacon, New York Style Strami and Kansas City Barbecue."

Includes "A directory [sic, glossary] of soyfoods terminology" that defines tofu, tempeh, soybean, miso, soymilk, shoyu/tamari, TVP or TSP, soy protein isolate, defatted soy flour, and "secondary" soyfoods products.

1791. **Product Name:** [Tempeh].
Foreign Name: Tenpe.
Manufacturer's Name: Nisshin Shokuhin, Ltd.
Manufacturer's Address: 1-29-2 Tachibana, Sumida-ku, Tokyo, Japan.
Date of Introduction: 1985. August.
New Product–Documentation: Toyo Shinpo. 1985. Aug. 21. p. 5.

1792. Noguchi, Kazuko. 1985. Tenpe ryôri–Nihonjin no shikô ni awasete [Tempeh cookery–adapted to Japanese tastes]. *Daizu Geppo* (*Soybean Monthly News*). Aug. p. 9-17. [Jap]
• ***Summary:*** Contains numerous Japanese-style tempeh recipes plus some nutritional analyses. Address: Saga Joshi Tanki Daigaku Kyoju.

1793. O'Leary, James. 1985. Tempeh Mexicana. 50+ protein rich recipes. Vancouver, BC, Canada: Benedict Books, 115-8675 French St., V6P 4W5. 48 p. Aug. No index. 14 cm. [5 ref]
• ***Summary:*** Contents: What is tempeh? Tempeh: Deepfried, mockfried, smallfried. About all. How to make. Recipes. Addresses, books, other important matters.

Note: This little cookbook shows how nicely tempeh and Mexican food work together. Address: #115-8675 French St., Vancouver, BC, Canada.

1794. **Product Name:** Okara tempeh.
Manufacturer's Name: Soy City Foods.
Manufacturer's Address: 2849 Dundas St. W., Toronto, ONT, M6P 1Y6, Canada.
Date of Introduction: 1985. August.
New Product–Documentation: Interview with Jon Cloud. 1985. Aug. Talk with Lorraine Guardino of Soy City Foods. 1992. Feb. 18. The company still makes two types of tempeh.

1795. Soy City Foods. 1985. I love Soy City's vac pac soy foods: Tofu, Soy Pro, tempeh (Bumper sticker). 2849 Dundas St. W., Toronto, ONT, M6P 1Y6, Canada. 15 x 35 cm.
• ***Summary:*** This bumper sticker is green, red, orange, and yellow on white. A heart stands in place of the word "love." Address: Ontario, Canada.

1796. Steinkraus, Keith H. 1985. Book review: *The Book of Tempeh,* 2nd ed. Revised & updated, by W. Shurtleff & A. Aoyagi. *Food Technology.* Aug. [1 ref]
• ***Summary:*** A substantial, favorable review. Address: Prof., Microbiology, Cornell Univ., Geneva, New York.

1797. Sugiyama, Masanori. 1985. "Tenpe" shain shokudô funsen-ki [Tempeh–Report of a hard struggle to introduce tempeh into a company cafeteria]. *Daizu Geppo* (*Soybean*

Monthly News). Aug. p. 18-21. [Jap]
Address: Mitsui Bussan (K.K.) Kagaku-hin Sokatsu-bu Kacho.

1798. *Whole Foods.*1985. Source book 1985-86. 8(8):1-136. Aug. Illust. Index. 28 cm.
• ***Summary:*** This is the 5th edition of this directory. Contents: Publisher's page. NewsLinks Wholesalers / distributors: Alphabetical address directory. Wholesalers / distributors: Geographical directory. Product directories: A list of product manufacturers: Foods (p. 33-48–soy-related categories include: Bean products, beans, coffee substitutes, cultures, ice cream, macrobiotic, milk, miso, sauces, soy products, soy sauce, tamari, tempeh, tofu), vitamins and supplements, cosmetics & personal care, herbs. Trade name index: An alphabetical listing of products by their brand or trade names. Brokers. Publishers. Associations. Alphabetical listing of manufacturers / importers. Advertisers' index.

Note: The listings related to soy products are full of errors. This Source Book contains many interesting ads. Whole Foods claims prominently and repeatedly to have the largest circulation in the natural foods industry. Address: South Plainfield, New Jersey.

1799. Karyadi, Darwin. 1985. Re: New interest in and developments with tempeh in Indonesia. Letter to William Shurtleff at Soyfoods Center, Sept. 17. 1 p. Typed, with signature on letterhead.
• ***Summary:*** "It was a great pleasure to see your continuous interest in tempeh. The computerized soya data-base set up is also an excellent effort to facilitate the management information system on soyfoods.

"Indeed it was a pity that the tempeh bibliography we published for the Symposium was not 'enriched' with English translation. We'll re-edit later on, also the Proceedings of the Symposium will include the English Abstracts.

"Enclosed you'll find 2 papers which highlight the new breakthrough ad new perspectives on tempeh 'Second generation products' in the field of medicine, public health and famine relief, world-wide! Therefore I want to share with you some thoughts [about] how we can mobilize the technological, economical resources from the North (USA and Japan) to the South (Third World) to meet the challenge to overcome millions [of] malnourished and hungry people. Can the international and American banks with American Expertise and technology and Indonesian traditional tempeh technology through the UN systems or either business channels start with such a big endeavour.

"I would propose to start such an effort from Indonesia since tempeh was originated and historically inherited from here, moreover to popularize and disseminate the 'Second generation products' will be much easier from here. Do you know interested key people from the 'Soybean business world' in the US who are interested to collaborate? Do you have any suggestion?

"Sincerely yours,..." Address: Nutrition Research Development Center, Komplek Gizi, Jalan Dr. Semeru, Bogor, Indonesia. Phone: (0251) 21763.

1800. *Cultivar.*1985. Le soja en alimentation humaine [Soya in human nutrition]. No. 186. p. 77-78. Sept. [Fre]
• ***Summary:*** A brief introduction to tofu, soymilk, soy sauce, tempeh, miso, soy flour, soy protein isolates, and concentrates. Address: France.

1801. **Product Name:** [Big Dream Time Powdered Tempeh].
Foreign Name: Taimu Taimu.
Manufacturer's Name: Nakasho Bussan.
Manufacturer's Address: Japan.
Date of Introduction: 1985. September.
Wt/Vol., Packaging, Price: Bottle.
New Product–Documentation: Toyo Shinpo (Soyfoods News). 1985. Sept. 21. p. 8. "New tempeh product announced. Nakasho Bussan to sell it [powdered tempeh]." This new product called Taimu Taimu (Time + Big Dream) was developed by the Japan Natto Assoc. It is their first commercial product. A 450 gm (1 lb) bottle sells for 6,000 yen ($26.67). Use it in miso soup, milk, juices or just mix with hot or cold water.

1802. **Product Name:** [3 Grain with Soy Tempeh (Soy & Barley & Millet & Brown Rice)].
Manufacturer's Name: Noble Bean.
Manufacturer's Address: R.R. 1, McDonalds Corners (near Elphin), Ontario K0G 1M0, Canada. Phone: 613-278-2305.
Date of Introduction: 1985. September.
Ingredients: Organically grown millet, barley, brown rice, soybeans, rhizopus culture, apple cider vinegar.
Wt/Vol., Packaging, Price: 227 gm.
How Stored: Frozen.
New Product–Documentation: Label. 1985, undated. 4.5 inches square. Brown on yellow. At bottom of front panel: "Culturing fine tempeh since 1979." On the back are three recipes in English: Honey Curry Bake, Indonesian Fried Tempeh, North Atlantic Tempeh; Letter from Allan Brown. 1985. Aug. 7. 8 oz for $1.65. Letter (fax) from Allan Brown. 1998. Jan. 21. This tempeh was first sold in Sept. 1985.

1803. Patni, Manmath. 1985. Soybean–Present situation and future possibilities. *Poultry Guide* (*India*) 22(9):53-62, 85-90. Sept.
• ***Summary:*** This paper was presented at the Zonal Agricultural Research Station, College of Agriculture, Indore. Contents: Miraculous tiny seed. Source of vital goodness. World leader soybean. Processing of soybean.

Effect of heat treatment on nutritive value / functionality. Basic protein food from soybean. Soya protein concentrate. Soy protein isolate. Texturized protein product. Whole soybean products: Soya milk, tofu, tempeh. Full fat soya flour. Miracle crop of many uses. Present situation and future possibilities.

"For over 5,000 years this tiny seed has been the staple food of certain parts of the East, including North China, Japan, Korea and some areas of India. The ancient Yogis, who were among the world's first vegetarians, placed great faith in the soya bean as a supplement to their meatless diet. In fact it became known as, and is still in the Far East referred to as, 'The Meat of the Soil.'"

Note: In a letter to William Shurtleff of Soyfoods Center dated 21 May 1997, M. Patni states that the source of his information about ancient yogis and soybeans was a book titled *About Soya Beans,* by G.J. Binding (1970, p. 10).

"Source of Vital Goodness: Soybean is not new to India. Black soybean has been cultivated for ages in the low hills of Kumaon and Garhwal regions of U.P. [Uttar Pradesh] as well as on the foot hills of the Himalayas and in some scattered pockets of central India. However, strangely enough the crop has not so far become popular in the Indian sub continent and other tropical countries."

The Soybean Processors' Association of India is opening a Research & Development cum-Training Center at Indore. Address: Product Development Manager, Prestige Group of Industries, Indore.

1804. **Product Name:** Vegetarian Gourmet Traditional Pot Pie with Tempeh.
Manufacturer's Name: Soy Source (Kenish, Inc.). Appropriate Foods Inc.
Manufacturer's Address: 137 New Hyde Park Rd., Franklin Square, Long Island, NY 11010.
Date of Introduction: 1985. September.
Ingredients: Water, whole wheat flour, durum wheat semolina, unbleached wheat flour, tempeh, mixed vegetables (carrots, peas, potatoes, onions, stringbeans, lima beans, okra), soy oil, tamari, herbs, spices.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Frozen.
New Product–Documentation: Label. 1985. Sept. 3 by 3.5 inches. Self adhesive. Black on orange. Interview with Robert Werz. 1987. Sept. 9.

1805. Torii, Yasuko. 1985. Book review: *The Book of Tempeh,* 2nd ed. Revised & updated, by W. Shurtleff & A. Aoyagi. *Hikari.* Aug/Sept. p. 46. [1 ref. Eng]
• ***Summary:*** A substantial, positive review, showing the cover of the book and one recipe. In a box below the review we read:

"Several natural food restaurants in the Tokyo area offer tempeh on their menus. Among them are Healthy Kan (see this month's restaurant review); Alicia, at Daini Suzuki Biru, Kitazawa 2-9-23, Setagaya Ku, tel. 03-485-3681; and Mamenoko at 2-24 Nakamachi, Omiya Shi, Saitama Ken, tel. 0486-44-1323.

"Prepared tempeh is sold at the Aoyama and Kichijoji Natural Houses, and Nihonbashi Mitsukoshi Dept. Store, frozen foods section.

"The Book of Tempeh and Tempeh starter is available from Y. Torii, who can answer any questions on availability or manufacture of tempeh. Call her at 0467-76-0811, or contact her at 324 Kamitsu- chidana Ayase, Kanagawa 252."

Note: On page 41 is a review of Healthy-Kan (*Herushi-kan*) natural foods, which was started in Nov. 1984 by Ikuyo Imuta, who says her mother was an excellent cook. "She chose to include tempeh on her menu not only because of its nutritional qualities, but because it's such a versatile protein source which can be used to make anything from cake to curry." Address: Kamitsuchidana 324, Ayase-shi, Kanagawa-ken 252, Japan. Phone: 0467-76-0811.

1806. *Toyo Shinpo* (*Soyfoods News*).1985. Natto no peeji: Tenpe no jidai. Tenpe wa ayumi chakujitsu-ni [The natto page: The age of tempeh. Tempeh steps very steadily] Oct. 21. p. 6. [Jap; eng+]
• ***Summary:*** An interview with Goro Kanasugi about tempeh and the Japanese Natto Association. Small photos show: (1) Portrait photo of Mr. Kanasugi. (2) Pieces of tempeh.

1807. **Product Name:** [Delicious Tempeh].
Foreign Name: Le Delicieux Tempe.
Manufacturer's Name: Athanor.
Manufacturer's Address: 4, rue Toiras, 34000 Montpellier, France. Phone: (67) 58 41 81 or 67.87.06.08.
Date of Introduction: 1985. October.
Ingredients: Organic soya, water, starter.
Wt/Vol., Packaging, Price: 250 gm doubled plastic bag. FOB price is 10.50 FF.
How Stored: Refrigerated, 6 weeks shelf life at 4ºC.
Nutrition: Per 100 gm: Energy 182 calories, phosphorus 233 mg, calcium 82 mg, magnesium 6.6 mg, iron 5.2 mg, zinc 1.0 mg, manganese 1.4 mg, copper 0.6 mg.
New Product–Documentation: Letter from Luis Garcia. 1985. March 12. "Hi. We are a couple from South America that moved to this side of the earth... We are trying hard to get going a tempeh cottage industry, to hopefully supply the southern area of France. We have been doing test batches for the last 8 weeks (aided by The Book of Tempeh) with ups and downs, and thought that The Book of Tempeh II can be very helpful."

Letter from Patrick Roger of Arts. 1985. June 12. Luis Garcia makes tempeh. Two Labels. 1985, dated. Photocopy black on green. "Produit du soja biologique fermente." With three recipes.

Letters from Cilica Chlimper. 1985. Oct. 2 (5 p.

handwritten) and Oct. 28 (2 p. handwritten on letterhead). Luis Garcia is her husband. "We are now half way installed and producing about 150 x 250 gm packages per week (only enough to pay the rent)." She helps him with sales and promotion. They are doing cooking demonstrations and using tempeh in French-style recipes. They would like to make a ready-to-eat *saucisson* product (like salami). They are in close contact with Patrick Roger at Olivier of Arts.

Leaflet with recipes. 4 p. Sent by Luis Garcia and Cilica Chlimper. Le Compas. 1986. March-April. p. 34.

Form filled out by Luis and Cicilia for each of Athanor's commercial soy products. 1988.

1808. **Product Name:** Tempeh Delites [Mild Cutlets, or Sticks; Spicy Cutlets, or Sticks].
Manufacturer's Name: Harvest Earth Foods.
Manufacturer's Address: 2789 Steamboat Springs, Rochester, MI 48063.
Date of Introduction: 1985. October.
Ingredients: Tempeh. Batter and breading: Certified organically grown corn, hard red spring and winter whole wheat, brown rice, barley malt, tofu, soybean oil, bicarbonate of soda, rare herbs, imported spices.
Wt/Vol., Packaging, Price: 6 per 16 oz pack.
How Stored: Frozen.
New Product–Documentation: Spot in Natural Foods Merchandiser. 1985. Oct. Made from certified organically grown soybeans and whole grains. Leaflet. 1985, undated. "Create a main course or sandwich! Fully cooked–Just heat & serve."

Product Alert (Naples, WY). 1986. March 17. "16. Frozen misc. foods." Tempeh Delites from Harvest Earth Foods of Rochester, Michigan, comes in four varieties. Mild Cutlets and Spicy Cutlets with 6 per pack. Mild Sticks and Spicy Sticks with 9 per pack. All four are in 16 oz size.

Talk with Charles J. Leonardi, owner. 2001. May 18. Harvest Earth Foods is now located at P.O. Box 816, Sterling Heights, Michigan 48316. Phone: 810-469-1730. Charles bought the company from Dr. Jerry Skrocki, the founder.

1809. *Point Soja–Soyfoods.*1985. L'intérêt du Club de Dakar pour le soja [The Club of Dakar's interest in soybeans]. Autumn. p. 3. No. 3. [Fre; Eng]
• ***Summary:*** The Club of Dakar is a non-governmental organization, unique in the sense that it is composed of about 200 people from both inside and outside Africa. Their purpose is to develop efficient solutions in the fields of cooperation and development. Three years ago, when the Club got involved with the soybean and saw its real usefulness for African countries, it requested an overview of the situation. Two young Africans, M. Gomes and M. Toumbi, were asked to make the first survey of soybean cultivation in Africa and of information available regarding the development of soybeans in Africa. The main conclusions of the report are: Soya is not unknown in Africa, but it has undergone an uneven and discontinuous development. The only perspective that would allow the development and prosperity of Africa's soybean complex would be in cooperation with Europe. Also new soyfood products such as tofu, tempeh, and flavored soymilk must be tested in Africa. A great deal of work on soybean cultivation has been done by the IITA in Ibadan, Nigeria, and by various institutes in Senegal. For more information and to order publications on soy in Africa and on Biotechnics, contact The Club of Dakar, Administrative Secretary, 4 Avenue Hoche, 75008 Paris, France. Phone: 42-67-16-00.

1810. Roger, Patrick. 1985. Interview de Jean Claude Sabin, Président du CIS-ONIDOL [Interview with Jean Claude Sabin, President of CIS-ONIDOL]. *Point Soja–Soyfoods.* Autumn. p. 1-2. [Fre; Eng]
• ***Summary:*** Concerning the history of soybeans in France, cultivation on a national scale dates back to 1973 after CETIOM had done some research in the preceding years. Before that, soybeans were widely grown during World War II, sometimes even with strong pressure from the Vichy government. Soybeans used to be roasted to make coffee.

"During the 1960s experiments with soybean cultivation were conducted, one of them initiated by M. Dolfuss, who made an unsuccessful attempt at the time at being elected a deputy. He used a pamphlet together with a documentary film on soybean cultivation. But at the time there were no guidelines for growing soybeans, and no seeds were available. "I became interested in soybeans in 1965, because of the large amounts being imported for animal feed. Around the same time, heads of the French oil industry asked the Ministry of Agriculture to start a research program... So CETIOM conducted experiments in soybean cultivation and microbiological research on the inoculum. Without the 1973 American soybean embargo, there still would not be any soybeans grown in France. President Pompidou became angry in the middle of a Council of Ministers meeting, and a research mission was sent to the U.S.

"On the cultivation level, the pioneer areas [departments] were Tarn, Haute-Garonne, and Gers [all located in the southwest of France], with some experiments in Bas Rhône. Later the growing expanded northwards... Around 1965 the GATT accords were signed. The U.S. allowed corn to develop, but locked up soy growing. Since that time, there have been no custom duties on oilseed products in Europe. And until the embargo, none of the politicians ever noticed that fact! Then, after 1979, and the new soy *reglementation* [system with strict regulations for growing soybeans], this crop has been in steady expansion." Mr. Proudon has played a key role in this process.

France needs to reduce its surpluses of cereals (such as wheat), expand production of oilseeds, and use the two to balance crop rotations. "I am quite a believer in soyfoods.

Our western food habits are out of balance. People are starting to look for a different way of feeding themselves... I do think that tofu and tempeh have very good prospects."

Note: CIS = Conseil Interrégional Soja. ONIDOL = Office National Interprofessionnel de Développement des Oléagineux. CETIOM = Centre Technique Interprofessionnel des Oléagineux Metropolitains (France). CIS-ONIDOL Is located at 17 rue Fleurance, 31400 Toulouse, France. Address: President, Office National Interprofessionnel des Oleagineux.

1811. *Delicious!* (*Boulder, Colorado*).1985. Tempeh time: The soyfoods scene! Nov. p. 50, 52.
• ***Summary:*** A basic introduction to tempeh, with four recipes.

1812. Jackson, Vicki. 1985. Squirrels vegetarian cook book no. 2. Oneness Life Press, Elizabeth St., Brisbane, Queensland, Australia. 156 p. Illust. by Vicki Jackson. Index. Nov. 29 cm.
• ***Summary:*** This hand-lettered cookbook was written for Squirrels Restaurant, 190 Melbourne St., West End (Brisbane) 4141, which has been open for more than 3 years. The first vegetarian cookbook from this restaurant was published in Nov. 1983.

Soy-related recipes include: Miso & green vegetable soup (p. 8). Tempeh & beanshoot (p. 42). Lemongrass and tofu curry (p. 87). Tempeh kebabs (p. 94). Tempeh burgundy (p. 95). Tempeh & coconut sauce (p. 96). About tofu (p. 97-98). Tofu & Spinach pie (p. 98). Tofu teriyaki & fried rice (p. 99). Tofu à la king (p. 100). Tofu stroganoff (p. 101). Tofu chow mein (p. 102). Tofu nuggets in chick pea batter (p. 103). Curried tofu loaf (p. 104). Pages 149-50 describe tamari, tempeh, tofu, and miso. Address: Brisbane, Queensland, Australia.

1813. Murata, Kiku. 1985. Tenpe kenkyû no konjaku: Kôsanka-sei kara shôhi shikô made [Tempeh research, past and present: From antioxidants to consumers taste preferences]. *Daizu Geppo* (*Soybean Monthly News*). Nov. p. 9-17. [Jap]
Address: Rigaku hakase: Osaka Shi-dai Teikoku Joshi-dai, Meiyo Kyoju. Teikoku Gakuen Kyoiku Kenkyujo Komon.

1814. Okada, Noriyuki; Hariantono, Jimmy; Hadioetomo, Ratna Siri; Nikkuni, S.; Itoh, H. 1985. Survey of vitamin B-12-producing bacteria isolated from Indonesian tempeh. *Shokuhin Sogo Kenkyujo Kenkyu Hokoku* (*Report of the National Food Research Institute*) No. 47. p. 49-56. Nov. [9 ref. Eng]
• ***Summary:*** "Identification tests were performed on those bacteria which were isolated from Indonesian tempeh and produced more than 10 nanograms/(cells in 5 ml of culture) of vitamin B-12. Thirteen out of 33 isolates were identified as *Klebsiella pneumoniae.* Two isolates were identified as *K. pneumoniae* subspecies *ozaenae* and *Enterobacter cloacae.* Twelve isolates closely resembled either *K. terrigena* or *K. planticola.* Others included gram-positive rods (4 isolates), Gram-negative, oxidase-positive rod (1 isolate) and Gram-negative, oxidase-negative rod (1 isolate)." This work was sponsored by the Joint Japan-Indonesia Project on the Development of Tropical/Subtropical Microbial Resources, under the direction of the Science and Technology Agency of Japan and BPPT of Indonesia.

Note: A gram-positive bacterium is one that holds the purple dye when stained by Gram's stain. Address: National Food Research Inst. (Shokuhin Sogo Kenkyujo), Kannon-dai 2-1-2, Yatabe-machi, Tsukuba-gun, Ibaraki-ken 305, Japan.

1815. Praskin, Laurie Sythe. 1985. The Farm soy history: An overview. Part I. Los Gatos, California. 10 p. Dec. 1. Unpublished manuscript. [Eng]
• ***Summary:*** "In 1971, a unique group of people settled in the Tennessee backwoods to live an alternative lifestyle, committed to living collectively off the land. The community of 200 people came to be known as The Farm and over the years grew to 1,500 residents, gaining international and domestic fame for its community ideals, lifestyle, alternative technologies, [midwifery], and vegetarian diet based on soybeans. Soy technologies practiced and developed on The Farm became the seed for many tofu and tempeh shops that sprang up around the world in the years that followed. Community members started the first [sic, sixth] commercial soy ice cream company, and the first soy 'deli.' Some went on to start several of the major tempeh shops across the United States and Canada and others helped start a network on international soy programs in underdeveloped countries. Innovative recipes developed by Farm members led to the publication of three cookbooks which have made a large contribution to the growing acceptance of soybeans and tofu in the American diet.

"When The Farm was first settled in 1971, most of the people were already vegetarians. There were a variety of reasons for their personal choices: (1) an unwillingness to kill in order to live (feelings which stemmed from religious beliefs similar to the Buddhist religion, as well as pacifist attitudes deepened during the Vietnam War); (2) a growing awareness that meat was too costly to produce and that if more people at lower on the food chain there would ultimately be more food to go around in the world; (3) evidence of the healthful benefits of a vegetarian diet; (4) a belief that the dairy industry practiced cruel and exploitive methods on animals and a reluctance to support that system.

After the community was established, the entire membership decided to adhere to a complete vegetarian [vegan] diet devoid of all animal products, including eggs and dairy. They wanted to create a self-sufficient community, eating primarily what they grew on the land. They also

wanted to be an example of how people could eat foods lower on the food chain to help create a larger supply of food in the world. During the search for a nutritionally sound vegetarian diet, they settled on soybeans as the main form of vegetable protein, as soybeans have one of the highest and most complete protein contents and are more versatile than any other vegetable protein. Many of the members had already been eating tofu and other soy products before The Farm, but acquiring these foods in the middle of the Tennessee woods was not an easy job. Soybeans were readily available, as they were used as local cattle food, but the challenge was how to create healthy and appetizing foods from them. Besides the Asian population and some Seventh-day Adventists, there weren't many people in the U.S. at the time actually eating soybeans, let alone trying to use them as the main source of protein.

"There were not many physical resources available as the people arrived with few possessions, lived in buses and tents, and had little capital to work with (a typical Third World situation). Some people owned Corona hand mills and occasionally ground soybeans to make fresh milk or tofu, using the recipe in the Seventh Day Adventist's Ten Talents cookbook. Fearn Instant Soya Powder was purchased and used for making soymilk, tofu, yogurt, and 'soy butter'. Just a few families owned pressure cookers so people cooked large communal pots of soybeans, taking turns 'watching the pot,' since they boiled them for 16 to 20 hours, to be sure they were digestible.

"By 1972 the Farm had its own flour mill that ground soybeans into full-fat soy flour and soy grits. The community was then able to make fresher soymilk, and tofu, as well as add soy flour to baked goods for added protein. They developed a curded soy flour base that was spiced and used as a sandwich spread, and they also baked soy flour 'souffle.'

"During these early days while the diet was still being worked out, the young children were given eggs for their protein source. Margaret Nofziger, the Farm's dietician, wanted to provide the babies and young children with a soy formula as a weaning food. She asked Alexander Lyon, a Farm member with a Ph.D. in microbiology, to research how the community could make the formula. He began an extensive research both in libraries and through correspondence. Fortunately, there were studies available about the uses of soy for human food consumption. Alexander, (Dr. Lyon) contacted Dr. Hesseltine and Dr. Wang of the Northern Regional Research Center in Peoria, Illinois, and Dr. Steinkraus of Cornell University in New York. These researchers provided a treasure of information to Dr. Lyon and to the soy technicians that followed. Other scientists who should be credited for their early and helpful research are Dr. Harry Miller with Loma Linda Foods and Malcolm Bourne with Cornell University.

"All of the information gathered by Dr. Lyon led to the start of the Farm Soy Dairy in 1972. After learning the basic processes involved in soy milk preparation, Alexander began collecting used equipment that could be adapted for the use of making soymilk. The original soy dairy was very small, with a production capacity of 20 gallons of soymilk a day, and expanded over the years as the soy technicians were able to find and add new equipment to their dairy. This dairy became a cross between a Japanese tofu shop and American ingenuity. The Farm Soy Dairy had no capital to start operations and no investors beside the Farm itself. Cash was hard to come by and as with all other commodities on the Farm, the products were distributed freely to community members. For these reasons, the soy technicians had to be creative and imaginative in how they obtained equipment and how they adapted such equipment to their needs. Over the years, they went to auctions, scrap metal yards and used restaurant equipment houses. They bought, bartered and traded for their equipment. They designed their own systems in their welding shop and then re-designed them to make improvements and to increase production. They became a school, learning as they went along. In 1975, Laurie Sythe Praskin, one of the early workers in soy dairy, succeeded Dr. Lyon in managing the operation. Over the next 4 years, with David Handel and Michael Halpin as equipment developers, weekly production increased to 800 gallons of soymilk, 600 lbs. of tofu, 80 gallons of soy yogurt, and a varied amount of soy ice cream." Continued. Address: 17969 Oak Dr., Los Gatos, California 95030.

1816. Praskin, Laurie Sythe. 1985. The Farm soy history: An overview. Document part II. Los Gatos, California. 10 p. Dec. 1. Unpublished manuscript. [Eng]

• ***Summary:*** Continued: In 1975, Farm members started a company to promote the use of soybean products in the America diet. The company, named simply Farm Foods [Farm Food Company], began sales on the East Coast with full-fat soy flour (ground fresh on The Farm), TVP (texturized vegetable protein), Good Tasting Nutritional Yeast, split soybeans, and Tempeh Starter Kits (developed by Cynthia Bates and Dr. Lyon). In 1976, under the management of Leticia Coate and Robert Tepper, Farm Foods began participating in national health food trade shows. At the time, they were one of the only companies representing soyfoods. Along with their packaged products, they sold cookbooks and served free samples of tempeh, TVP chili, and nutritional yeast crackers.

"The products and recipes developed over the years led to the publication of three cookbooks: *The Farm Vegetarian Cookbook* (1975) and *Tofu Cookery* (Oct. 1982), edited by Louise Hagler, and *Tempeh Cookery* (March 1984), edited by Colleen Pride. These books made a major contribution in westernizing recipes previously Oriental in origin. They were available in all natural food stores throughout the country.

"The work with soy products on The Farm also inspired members to start two vegetarian restaurants; the Farm

Foods Cafe [opened Aug. 1976], in San Rafael, California, managed by Robert Dolgin, was the first "soy deli" in the United States. Everybody's, located in Nashville, Tennessee [opened July 1980], was managed by Judd and Diane Hoffman.

"The acceptance by the public of Farm Foods Cafe was overwhelming, and although it only operated from 1976 to 1977, it pioneered the path for many tofu delis that have followed since. The unique characteristic of this deli was the tofu and tempeh shop producing fresh products located in the rear of the store. The Farm Foods Cafe also became the first [sic] company to market a non-dairy ice cream made from soybeans. This frozen dessert, marketed under the name of 'Farm Foods Ice Bean,' is still being sold in health food stores nationwide.

"In 1977-78, The Farm Foods Cafe closed, and the soy processing equipment was moved to San Francisco. Farm Food Company began wholesaling soy products throughout California under the management of Robert Tepper. They continued marketing Farm Foods Ice Bean, and added tofu salad [like eggless egg salad], 'tofu cheesecake,' a frozen soy yogurt dessert, and the first firm-pressed tofu to hit the California market. In 1980 it was decided to drop the perishable tofu business and concentrate on the nationwide distribution of Farm Foods Ice Bean. The plant in San Francisco was closed, and large scale production began in a Memphis, Tennessee, dairy and ice cream factory. This new location gave the company easier access to East Coast distributors, and they soon established additional warehouses in Connecticut and California.

By 1984, under the management of Ron Maxin and Michael Lee, the weekly production of The Farm Soy Dairy [in Summertown, Tennessee] was 1,000 lb of tofu, 150 gallons of soymilk, 20 gallons of soy yogurt, 20 gallons of soy ice cream, 400 ice cream sandwiches, and 90 lb of tempeh. Today, the Soy Dairy produces an average of 5,000 gallons of soymilk a month for Farm Foods to use in Ice Bean production. The soymilk is shipped by tanker truck to the Ice Bean production plant [in Memphis], and the Farm Soy Dairy also markets its products in Nashville and Columbia, Tennessee.

"The Farm's uniquely controlled vegetarian diet led to two official studies of its effect on the children. In 1979, Dr. Jeffrey Hergenrather, et al., conducted a study on the pesticide levels in the breast milk of vegetarian nursing mothers on the Farm. He submitted a letter of his findings to the editor of the *New England Journal of Medicine,* March 26, 1981. His letter challenged a previous article written by Rogan, et al, (New England Journal of Med. 1980) which stated that 'there are no obvious dietary predictors' of chemical pollutant in human milk. Rogan went on to say 'For certain fat-soluble chemicals, nursing infants can be regarded as living at the top of the food chain and are exposed to much more than background levels.' Dr. Hergenrather's study included 12 women whose breast milk was analyzed for 17 chemical substances. When compared to the seven contaminants studied by Rogan, in all but one of the contaminants, which showed no difference in contaminant levels, the milk of the vegetarian women had lower levels of contamination.

"The second study was conducted by Jean Roberts Fulton in 1980 and was published in the *Journal of the American Dietetic Association.* She studied a group of the Farm nursery school children and found their amino acid and iron intake to be adequate. (The diet was low on calories, however.)

"The innovative methods used by the Farm soy technologists inspired many groups and individuals to start all over the world to train in the Farm Soy Dairy, and many who couldn't come personally were encouraged through correspondence. In 1977, Plenty, the non profit relief organization founded by the Farm, established an international training program whereby people from other countries could come and train in soybean processes and other technologies that The Farm had to offer. The Farm Soy Dairy received its first trainees from Guatemala and Mozambique.

"From the beginning days of the Farm Soy Dairy, the technicians realized the value that soybeans could have in Third World countries. Eventually they were able to share their knowledge and training in the field of soybeans by starting a dairy in an impoverished country. In 1979, Plenty Canada and Plenty USA sent Farm Soy Dairy technicians Laurie Sythe Praskin, Suzy Viavant and Richard Decker to Guatemala to help establish Plenty's first international soy dairy/tofu shop. Other technicians who trained on the Farm have gone on to help start soy programs with Plenty Canada in Lesotho (in Southern Africa, 1979-present), Jamaica (1983-present), St. Lucia (1983-present), and Dominica (1984-present).

"Many of the people who lived on The Farm and trained in the Soy Dairy or with Farm Foods have started their own soy companies or are working in underdeveloped countries. The common goal felt by all has been to provide healthful, delicious foods for all people, rich and poor alike. Because soybean products can be presented as gourmet dishes, yet can also be prepared very simply, they continue to be accepted by all classes of people." Continued. Address: 17969 Oak Dr., Los Gatos, California 95030.

1817. Praskin, Laurie Sythe. 1985. The Farm soy history: An overview. Document part III. Los Gatos, California. 10 p. Dec. 1. Unpublished manuscript. [Eng]

• ***Summary:*** "The Farm soy dairy was started in 1972. The original equipment consisted of a 15 gallon electric coffee pot to cook the [soy] milk, a washing machine [whose spin cycle was used] to extract the milk from the okara, and a peanut grinder to grind the dry soybeans into fine grits.

The dry soy grits were added to the boiling water, cooked, and then poured into a bag that was placed in the washing machine. As the washing machine spun, the milk was extracted by the bag by centrifugal force. The soymilk was distributed immediately in glass gallon jars, as there was no refrigeration system available. The capacity of this operation was around 20 gallons a day at this time, the soy dairy was located in the sorghum mill, a split-level, cement block building with concrete floors.

"In 1973, a Farm member's parents donated some used dairy equipment that they had used on their goat farm. The soy dairy made its first technological leap. Included in the equipment was a 45 gal. electric pasteurizer/cooker, a drip system plate cooler, and a 90 gal. refrigerated milk tank. The washing machine was too inefficient and unsanitary, and a simple hand-lever press was constructed, modeled after a Japanese-style press observed by Lesli Jordan in 1973. Lesli apprenticed for one week in a small Stockton Tofu company where she compiled information on procedures for making tofu and age pouches and also took photographs. When she returned to the Farm, her husband Darryl built the soy dairy's first tofu box. The new presses were made from two galvanized wash tubs with holes on the bottom. These were placed on a strong wooden stand and lined with a light cotton cloth bag. Wooden racks were placed on the bottom to keep the bag of the hole, allowing the milk to flow from the tubs freely. The milk was pumped into the bags from the cooker. The filtered milk flowed into buckets, which were then carried and poured into the small holding tank of the plate cooler. The slightly cooled milk was then carried by bucket to the refrigerated milk tank, where it was cooled to 30 degrees Fahrenheit and stored until delivery to the store. The milk was transported in 10 gal stainless steel milk cans to the store where it was distributed. The okara in the bags was pressed to extract all of the milk using a lever system come-along. At this time, the beans were being ground into dry grits at the Farm Flour mill. The capacity of the soy dairy was now 90 gallons of soymeal [not defatted] a day. Occasionally, large blocks of sour milk cheese were made, and 12 to 16 gallons of acidophilus yogurt were made daily. The yogurt was made in one gallon glass jars, incubated in an old refrigerator, and stored in a conventional refrigerator. Tempeh was also being experimented with, using the okara left over from soymilk production. Soy ice cream was being made on a very small scale, using two table top ice cream machines with one quart capacity. Alexander Lyon was still managing the soy dairy. By this time, the Farm was no longer producing sorghum, and the soy dairy had taken over two levels of the three level building. Only cold water was available, so pots of water were carried to the second floor, where they were heated on a stove to be used for cleanup. During the cold winters, a pot belly stove was added to the array of equipment and centered right in the middle of the production room.

"Early in 1975, Alexander left the soy dairy and Laurie Sythe Praskin took over managing production. David Handel and Warren Jefferson stepped in as full-time equipment men to help improve the operation and increase production. Laurie began doing research on how to improve the flavor of the milk, which was very cereal-tasting because of the dry grits. She and David added an industrial Hobart meat grinder to the system and began soaking their beans and grinding them fresh each day. The beans were initially soaked in a bath tub and later in one of the copper lined sorghum tubs. The tub was placed on the second level, so the beans could gravity feed into the grinder. The flavor was greatly improved, but the grinding was very slow and the grind was not very fine.

"They began working on new ideas for a press that could omit the bag and muscle needed to press with the come-along. David devised a system using an upside-down bumper jack mounted over a stainless tank. Inside the tank was a stainless cylinder with holes drilled in the bottom and sides. The milk was pumped or bucketed into the inner cylinder and flowed out the holes when vibrated. The cylinder was vibrated with a rubber mallet. A stainless press plate was placed on top and jacked down to press out all the milk. This system was slow and the okara had to be shoveled out after each batch.

"In late 1975, it was decided to move the soy dairy to The Farm's cannery building so that it would be in a more central location to the Farm's growing population and to make use of the steam boiler that was located there. Even though it had a wooden floor, it was a great improvement for the dairies production. They immediately added some steam jacketed cooking kettles acquired from a scrap yard and production capacity doubled to 150 gallons of soymilk a day. The slow points of operation were now the grinding, separation of milk and okara and cooling of the milk. They began hot blanching the soy beans before grinding for improved flavor. A 150 gallon refrigerated milk tank was added to handle the increase in milk production. While looking for an improved separating system, one that could be continuous, David and Laurie started eyeing some equipment that had been scrapped by one of the Farm's crews. The equipment came from an old evaporated milk plant and included a vibrating separator and a tubular heat exchanger. The separator was converted for the use of the wet soymilk separation. A stainless frame was built to fit in the vibrator with a cloth secured around it. The milk was bucketed and later pumped over the screen while the vibrator was on. The milk flowed through the screen and out the end into a holding tank. The pulp was sprayed with a little water to wash out the milk and the pulp was deposited into buckets. The tubular heat exchanger was converted to be used as a pre-cooler. Cold tap water was run through jacket that surrounded inner stainless tubing that the milk was pumped through. A wet corn masa mill was made by Michael Halpin to be used to

grind corn for tortillas and to grind the soybeans for the dairy. Now the grinding time was no problem and production increased to 200 gallons of milk a day. Tofu was still not being made on a community scale as the milk came out of the separator too cold to curd properly. Laurie was also making thirty to forty gallons of yogurt a week." Address: 17969 Oak Dr., Los Gatos, California 95030.

1818. Praskin, Laurie Sythe. 1985. The Farm soy history: An overview. Document part IV. Los Gatos, California. 10 p. Dec. 1. Unpublished manuscript. [Eng]
• ***Summary:*** Continued: "In 1977, Laurie visited her home town in California. She went to visit her favorite Japanese tofu shop and ran into Bill Shurtleff and Akiko Aoyagi outside the closed shop. They were delivering a copy of their *Book of Tofu* to the owner and tofu maker of the shop. Bill took Laurie to the tofu makers' home and helped arrange for Laurie to observe in his shop for one day. Upon returning to the Farm, Laurie immediately set up the Farm's first tofu shop in a small corner of the soy dairy. She set up a very simple shop using one of their cooking kettles and designating it for cooking milk only for tofu. A wash tub was mounted on a stand with a simple lever for pressing out the milk. The tub was lined with a coarsely-woven bag, and a sawed-off whiskey barrel was placed underneath to catch the milk. A finer nylon cloth was stretched over the top to strain out the finer pulp [okara]. Hot milk was bucketed into the press, the bag twisted shut, and a heavy wooden press plate placed on top. The original wooden tofu box was finally in use as well as two additional round stainless boxes made by Michael Lovett. The tofu was pressed with cement blocks or buckets of water. Tofu was made in the whiskey barrel and a 20 gal [gallon] aluminum Hobart bread bowl. The tofu shop's capacity was 200 lb of tofu on a production day. In total, about 600 lb/wk in addition to 800 to 1000 gal/wk of soymilk. Most of the tofu went to people with special dietary needs.

"It seemed very energy inefficient to run a separate tofu and soymilk operation, so technicians started designing a separator that could service both operations. Michael Halpin, one of the Farm's equipment technicians, designed a hydraulic press which cost less than $1500 to build. This was the first large amount of money spent by the dairy for equipment. The inspiration for the money came from the delicious tofu produced in the small shop. Once everyone realized how good it was, the decision to invest community money for improved nutrition followed. The idea of the press was good, but all of the bugs were never worked out. It was supposed to require no bag. The milk was pumped into a stainless cylinder that was drilled with holes and set inside another stainless holding tank. Then with press plate and gasket, the hydraulic ram came down from above, squeezing out the milk. When pressed, there was a trap door at the bottom that was opened, and the pulp pressed right out into a container. The trap door shut, and the press was ready for another batch. The system was supposed to work easily and efficiently. It never did. Gasket failures were a problem, spewing hot soymilk and pulp all over the dairy. In addition, the trap door never worked easily. In an expedient measure to get the dairy back in operation, Laurie removed the cylinder and replaced it with a Japanese pressing sack. The hot soymilk and pulp pumped into the bag which was set down in the stainless holding tank. There was a stainless rack on the bottom to keep the bag off the hole and a stainless plate was set on top of the bag after it was filled. The hydraulic ram came down and pressed the bag. This worked all right, but the bag had to be lifted out by hand, and the position was very awkward and left many sore backs. The milk went directly into a curding barrel or was pumped through the tubular heat exchanger. The capacity jumped to 300 gal of milk and 250 lb of tofu approximately 4 days/wk. At this time, the dairy had concrete floors and was starting to get sheetrocked. Yogurt production became unsuccessful because of the close proximity of the cannery, and vegetable contamination was airborne. Tempeh was also in the cannery and experiencing the same difficulties. Ice cream was very popular and being produced in large commercial soft-serve machines. Production of ice cream was varied, but its popularity was unquestionable.

"While the Farm was piecing together its operation, a small settlement of Farm members began in Northern California. In 1976, they opened a small commercial soy deli in California under the management of Robert Dolgin. To supply the deli, a small soy dairy and tempeh shop was set up in the back room. This consisted of Japanese equipment specifically designed for the purpose of making soymilk and tofu. They had a Japanese grinder, 45-gal pressure cooker, and a small, efficient hydraulic press. It was a nice small kit which they took out a loan to buy. The deli's business was excellent and lasted over one year before it closed and relocated to San Francisco (SF) in order to expand production and market products throughout the health food store industry in California. So with more investment and loans and a warehouse in SF, Farm Foods re-opened. The building was fixed up to meet all the strict California codes, and the equipment was improved for increased output. They continued cooking with the 45-gallon pressure cooker but went for a continuous separator. This was a Brown, an orange juice extractor, and a vibrating screen to remove the finer pulp. They got a plate heat exchanger to cool the milk and a state-of-the-art Mark 25 continuous ice cream maker. They were running an extremely sophisticated operation complete with walk-in coolers and freezers. The Farm management council sent many of the Farm's trained technicians, business managers, and distributors out to SF to operate the business. In total, 60 Farm residents moved to support the growing business, which was under the direction of Robert Tepper and Daniel Lloyd. They started the first

commercial soy ice cream company that marketed Soy Ice Bean. Laurie Praskin and her husband were sent to help run the shop and perfect the ice cream recipe. In April 1979, they left to work on the Guatemala soy program and were replaced by Michael and Deborah Lovett and Bobby and Michael Bonnickson. Because of the high cost of operating a business in downtown SF and the increased interest of Ice Bean nationwide, Farm Foods decided to move the Ice Bean production to Tennessee. The Farm Soy Dairy purchased the continuous extractor from the SF Soy Dairy and once installed, it immediately increased the production to 1500 lb/day of tofu and 300 gal/day of soymilk–enough for everyone.

"The soy dairy is now under the management of Michael Lee and Ron Maxin and consists of a 400 gallon bean soak tank and a one-and-a-half horse-powered Japanese grinder. Beans are ground with hot water, and the resulting slurry is pumped into one of three 60 gallon stainless kettles. Direct steam injection cooks this milk. When done, it is pumped into the brown extractor. It flows over a second vibrating-screen filter and is gravity-fed to a 45 gal stainless holding tank where it is tapped off into curding barrels or pumped through the same heat exchanger which now has chilled water running through it for more efficient cooling. A chilled water system also provides cold water to cool and store our tofu. When cooled, the tofu is transferred to 40 gal plastic tubs and wheeled into a walk-in cooler where it awaits distribution. (For more information on the Farm Soy Dairy as it is today, contact Ron Maxin or Michael Lee.)" Address: 17969 Oak Dr., Los Gatos, California 95030.

1819. Friedman, Martin. 1985. New entries crowd health food market: Even more tofu desserts and frozen entrees. *Adweek East* (*New York*). Dec. 9.
• ***Summary:*** Discusses various new products. As "reports of weakening sales of frozen tofu desserts are filtering in, there were a half-dozen new tofu dessert items that were being confidently introduced to the health food market."

"Tofu items are becoming so popular that they have a section of their own at health food shows. Legume's success with frozen entrees is spawning such imitators as Walker & Wilks Tofoods (sweet and sour, Bar-B-Q and teriyaki) and Lamp Lite Natural Foods' six Italian tofu entrees... Harvest Earth Foods offers Tempeh Delites, fully cooked cutlets and sticks that are made from cultured organic soybeans; and Light Foods sampled Light Links (tofu hot dogs) and Tofu Bagel Links. In the frozen dessert arena, Tofu Today presented Tofruzen, while Tofreezi was sampled by Melta [sic, Metta] Tofu Products. Other new low-calorie and low-cholesterol desserts promoted were Imagine Foods' Rice Dream and Nouvelle Sorbet."

1820. Burns, Bob. 1985. Re: Mennonite Central Committee (MCC) is now making tempeh experimentally. Letter to William Shurtleff at Soyfoods Center, Dec. 17. 1 p. Typed, with signature on MCC letterhead. [1 ref]
• ***Summary:*** "M.C.C. (Mennonite Central Committee) is a small church-related development agency with which I am serving a three-year term here in southern Bangladesh. Some of our expatriates have begun exploring tempeh making for themselves as well as considering introducing it to the people here as we are also extending soybeans as a potential new crop and protein source. (M.C.C. is the only organization presently actively promoting soybean in this country).

"Thus far starter has been procured, as well as a copy of your 'Book of Tempeh' and several batches of tempeh have been made at two of our expatriate residences; we are now trying to make the starter."

He then asks about making leuceana tempeh from the seed of the ipil-ipl tree, and how to deal with the mimosine toxin. He has a considerable amount of ipil-ipil seed at his disposal. Address: MCC Horticulturist, c/o MCC, Box 13, Feni, Feni District, Bangladesh.

1821. Geslewitz, Gina; Wittenberg, Margaret. 1985. Soyfoods: The age of soy literacy. *Health Foods Business* 31(12):33-34, 36, 38-44, 46-47. Dec. [15 ref]
• ***Summary:*** Contains a market study largely pirated from Shurtleff & Aoyagi's *Soyfoods Industry and Market.* Address: New York.

1822. **Product Name:** [Tempeh (Fresh, or Canned), and Tofu & Tempeh Pate (Spreads, 8 Varieties)].
Manufacturer's Name: La Sojeria, S.C.
Manufacturer's Address: Carretera de Vic Km. 30, 08180 Moia (near Barcelona), Spain. Phone: (93) 830 1123.
Date of Introduction: 1985. December.
Wt/Vol., Packaging, Price: Can.
New Product–Documentation: Letter from Javier Arocena of Zuaitzo, Spain. 1992. Dec. 14. He knows of three other soyfoods manufacturers in Spain: Natur-Soy, Vegetalia, and La Sojeria, all near Barcelona.

Form filled out by Laura Cami and Mario Rimoldi of La Sojeria. 1993. Feb. 13. Their company began making soyfoods in Dec. 1985. These products were introduced at that time. They now make about 200 lb/month of fresh and canned tempeh. The spreads are preserved in glass, with a twist-on lid, and sterilized.

Leaflet sent by Allan Brown of Noble Bean, Ontario Canada. 1998. Jan. "Tempeh de Soja." Contents of this Spanish-language leaflet: Telephone: 340 43 62. Que es? Cuáles son sus cualidades? Cómo prepararlo? Recipes for: Tempeh frito. Rellenos. Tempeh hervido o al vapor. Tempeh a la crema. Tempeh cacciatore. Allan writes: "These folks make fresh tempeh in Barcelona." They learned how from The Farm and from Allan in Canada. Form filled out by Mario Rimoldi. 2001/07. His company still exists at the above address but he stopped making tempeh in March 1996.

1823. Ransom, Ruth. 1985. Alternatives to four food groups: Meal plan. *Vegetarian Journal* (*Baltimore, Maryland*) 4(12):2. Dec.
• ***Summary:*** "A. Protein Foods: 1-2 servings per day. One serving equals: 1½ cups cooked dried beans or peas. 8 oz. tofu. 4 ounces tempeh. 2 cups fortified soy milk. ½ cup almonds, cashews, walnuts, pecans..."

Note: On page 1 we read: Editors: Debra Wasserman, Charles Stahler. Ruth Ransom, R.D. P.O. Box 1463, Baltimore, MD 21203. (301) 752-VEGV. Address: R.D. [Registered Dietitian].

1824. Zenkoku Natto Rengokai, Tenpei Fukyukai [Japan National Natto Association, Tempeh Popularization Group]. 1985. 21 seiki no kenko shokuhin wa kore da! [This is the health food of the 21st century (Leaflet)]. Japan: Zenkoku Natto Kyodo Kumiai Rengokai. 3 panels each side. Front and back. Each panel: 22 x 9 cm. [Jap]

• ***Summary:*** A color leaflet (see next page for recipes). "Tempeh is a distant relative of natto." Contains recipes (with tempeh) for: Curry rice. Gyoza (Pot stickers). Tempeh kabayaki domburi. Tempeh banana donuts. Happosai. Potato croquettes. Seafood salad.

A nice chart compares the nutrients in tempeh and beef.

1825. **Product Name:** Jay and Lisa Sommers Tofu and Tempeh?
Manufacturer's Name: Unknown.
Manufacturer's Address: Latrobe, Tasmania.
Date of Introduction: 1985-1988.
New Product–Documentation: Talk with Trishala Shub. 1998. Jan. 18. As far as she knows, the first people to make tofu commercially in Tasmania were Jay and Lisa Sommers. They started in about 1985-88 in a small factory in Latrobe, near Bernie, in Tasmania. They also made tempeh. Trishala is still in touch with Jay and Lisa, who still live in Tasmania; she will ask them if they will write the story of how they founded Tasmania's earliest known tofu and tempeh manufacturing company. The Sommers later sold their equipment to a church group, which some years later sold it to Trishala and her former husband. She sold the equipment in June 1997 to the people from Organic Choice.

1826. **Product Name:** Tempeh (Marketer-Distributor).
Manufacturer's Name: Cauldron Foods Ltd.
Manufacturer's Address: 4, Conduit Place, Lower Ashley Rd., St. Paul's, Bristol BS2 9RL, England.
Date of Introduction: 1985.
New Product–Documentation: Soya Bluebook. 1985. p. 100. Talk with Philip Marshall, owner of Cauldron Foods. 1990. March 29. Cauldron Foods has never manufactured tempeh; they sold it at one time on behalf of someone else, but they have discontinued it. The manufacturer was a woman, probably in Chippenham, who owned a small company that has since gone out of business. It was not Paul's Tempeh.

1827. Kawarai, Kumiko; Kikuchi, Kyoji; Aoki, Sadao. 1985. Tenpe hakkô katei ni okeru seibun no henka [Change in nutrients during tempeh fermentation]. *Tochigi-ken Shokuhin Kogyo Shido-sho Hokoku* (*Tochigi Prefecture Food Industry Leadership Group Report*) p. 1-5. [Jap]*
Address: Tochigi-ken Shokuhin Kogyo Shido-sho.

1828. Ko Swan Djien. 1985. Growth and toxin production of *Pseudomonas cocovenenans,* the so-called 'Bongkrek Bacteria.' *Asian Food Journal* 1:78-84. *
Address: Bandung Inst. of Technology, Indonesia; Agricultural Univ., Wageningen, Netherlands.

1829. Kronenberg, Hananya J.; Hang, Y.D. 1985. A puncture testing method for monitoring solid substrate fermentation. *J. of Food Science* 50:539-40. *
Address: Dep. of Food Science, Cornell Univ., Ithaca, New York 14853. Present address: Soy Systems, 1418 N.W. 179th St., Ridgefield, Washington 98642.

1830. **Product Name:** Gomasio Tempeh Chips (Gomashio is Sesame Salt).
Manufacturer's Name: Light Wave Wholefood.
Manufacturer's Address: 21 Gilbert St., Newton, Adeliade,

South Australia.
Date of Introduction: 1985.
Ingredients: Tempeh, gomasio [gomashio], olive oil.
Wt/Vol., Packaging, Price: 50 gm.
How Stored: Shelf stable.
New Product–Documentation: Label. 1985, undated. 4.5 by 5 inches. Black on yellow.

1831. **Product Name:** Pre-seasoned Tempeh.
Manufacturer's Name: Light Wave Wholefood.
Manufacturer's Address: 21 Gilbert St., Newton, Adeliade, South Australia.
Date of Introduction: 1985.
Ingredients: Soybeans, herbs, spices, tempeh starter.
Wt/Vol., Packaging, Price: 250 gm.
How Stored: Refrigerated.
New Product–Documentation: Label. 1985, undated. 4.5 by 5 inches. Black on green.

1832. **Product Name:** Rice & Soy Tempeh.
Manufacturer's Name: Light Wave Wholefood.
Manufacturer's Address: 21 Gilbert St., Newton, Adeliade, South Australia.
Date of Introduction: 1985.
New Product–Documentation: Label. 1985, undated. 4.5 by 5 inches. Black on blue.

1833. **Product Name:** Sweet & Sour Tempeh Lumpia (Vegetarian Spring Roll).
Manufacturer's Name: Light Wave Wholefood.
Manufacturer's Address: 21 Gilbert St., Newton, Adeliade, South Australia.
Date of Introduction: 1985.
Ingredients: Pan-steamed tempeh, onions, lotus root, cabbage, soya and/or mung sprouts, carrot, tamari, miso, tamarind, maple syrup.
New Product–Documentation: Label. 1985, undated. 2 by 5.5 inches. Dark blue on light blue. "No eggs, synthetic additives or any animals and not deep fried."

1834. **Product Name:** Margaret's Tempeh.
Manufacturer's Name: Margaret's Tempeh.
Manufacturer's Address: P.O. Margaret River, W.A., Australia.
Date of Introduction: 1985.
New Product–Documentation: Label. 1985, undated. 4 inches square. Black and green on white. 250 gm.

1835. Nasoya Foods. 1985. A "tempeh-tation" for healthy sandwiches and entrees (poster). Mechanic St. Ext. (P.O. Box 841), Leominster, MA 01453. 4.25 by 11 inches,
• ***Summary:*** Horizontal, on card stock. A large color photo in the center shows two halves of a tempeh sandwich, with sprouts and lettuce. A black olive and cucumber are on the side. The printing is black on white. "High in protein. Rich in B vitamins." A color photo shows two packages of Nasoya Foods tempeh. Note: Nasoya is now making its own tempeh. Address: Leominster, Massachusetts.

1836. **Product Name:** [Whole-Grain Pizza {With Tempeh}].
Foreign Name: Vollkorn Pizza.
Manufacturer's Name: Natuerliche Lebensmittel. Paul Stuart Zacharowicz.
Manufacturer's Address: Staudgasse 70, A-1180 Vienna, Austria. Phone: 0222/48 50 03.
Date of Introduction: 1985.
Ingredients: Whole wheat flour, tempeh (cultured fresh soy product), cheese, homemade Paradise Sauce, vegetables, herbs, sea salt, cold pressed oil (kaltgepresstes Oel).
New Product–Documentation: Label. 1987. 5.5 x 4 inches. Black, gold, and red on white card stock. "Natur. Whole grain pizza is already baked. Warm for about 5 minutes in the oven. Contains no chemical colorings or preservatives."

1837. **Product Name:** One World Foods Tempeh Sandwiches.
Manufacturer's Name: One World Natural Foods.
Manufacturer's Address: 188 Old St., London EC1V 9BP, England. Phone: 01-490 0749.
Date of Introduction: 1985.
New Product–Documentation: Interview with Joe Simpson, the owner, conducted by Anthony Marrese. 1992. March 28. In 1985 the company launched Tempeh Sandwiches, plainly wrapped with no individual labels; they were discontinued in 1989 due to Joe's lack of interest in doing more secondary production and distribution.

1838. **Product Name:** [Tempeh Salad (Indonesian Style)].
Foreign Name: Tempeh–Salate (Nach indonesischer Art).
Manufacturer's Name: Pro Natura.
Manufacturer's Address: Elisabetenstr. 10, D-6074 Roedermark, West Germany. Phone: 06074-97437.
Date of Introduction: 1985.
Wt/Vol., Packaging, Price: 330 gm glass.
How Stored: Shelf stable; refrigerate after opening.
New Product–Documentation: Leaflet from Tofuhaus Tiefenthal, a distributor. 1988. "No preservatives are used. They are sterilized to make them non-perishable."

1839. **Product Name:** [Tempeh Sandwich Spread (Yugoslavian)].
Foreign Name: Tempeh–Aufstrich (Jugoslawisch).
Manufacturer's Name: Pro Natura.
Manufacturer's Address: Elisabetenstr. 10, D-6074 Roedermark, West Germany. Phone: 06074-97437.
Date of Introduction: 1985.
Ingredients: Incl. tofu, tempeh, spices.
Wt/Vol., Packaging, Price: 180 gm glass.
How Stored: Shelf stable; refrigerate after opening.
New Product–Documentation: Leaflet from Tofuhaus Tiefenthal, a distributor. 1988.

1840. Siagian, Uhum L. 1985. Data konsumsi rata-rata tempe dan oncom di berbagai daerah di Indonesia menurut Susenas 1980 dan 1981 [Average consumption data for tempeh and onchom in different regions in Indonesia according to the National Socio-Economic Survey (Susenas) in 1980 and 1981]. Bogor: Pusat Penelitian dan Pengembangan Gizi. 2 p. [Ind]*
Address: Bogor, Indonesia.

1841. **Product Name:** Tempeh.
Manufacturer's Name: Soy Power (Marketer-Distributor). Made in South San Francisco by Quong Hop & Co.
Manufacturer's Address: 2811-A Ocean Park Blvd., Santa Monica, CA 90405.
Date of Introduction: 1985.
New Product–Documentation: Talk with Kevin Cross. 1988. Sept. 22. Made by Quong Hop. Introduced in about 1985.

1842. **Product Name:** Meatless Burger. Marinated Soy Tempeh.
Manufacturer's Name: Soyfoods Unlimited, Inc.
Manufacturer's Address: 14670 Doolittle Dr., San Leandro, CA 94577.
Date of Introduction: 1985.
Ingredients: Soy tempeh (made with cultured soybeans organically grown in accordance with the California Health and Safety Code, Section 26569.11), soy sauce, garlic, onion, and spices.
Wt/Vol., Packaging, Price: 6 oz vacuum packed.
How Stored: Frozen or refrigerated.
New Product–Documentation: Label. Undated. "All the Sizzle... None of the steak. Ready to eat in 3 minutes." This product, introduced in September 1981, was originally called "Tempeh Burgers."

1843. **Product Name:** Tempeh Burgers (Marinated).
Manufacturer's Name: Western Soy Complements.
Manufacturer's Address: 1560 Mansfield Ave., Suite D, Santa Cruz, CA 95062. Phone: 408-479-05968.
Date of Introduction: 1985.
New Product–Documentation: Talk with Jeremiah Ridenour. 1988. Aug. 31. This product was launched in 1985.

1844. Affandi, Erwin; Mahmud, Mien K. 1985. Pengujian aktifitas antibakterial pada tempe terhadap bakteri penyebab diare [Tests of the antibacterial activity of tempeh against bacteria causing diarrhea]. *Penelitian Gizi dan Makanan* 8:46-56. [3 ref. Ind]

1845. Aubert, Claude. 1985. Les aliments fermentés traditionnels: Une richesse méconnue [Traditional fermented foods: An unrecognized richness]. Paris: Terre Vivante. 261 p. Index. 21 cm. Series: Collection les Vrais Aliments d'Aujourd'hui et de Demain. [173* ref. Fre]
• ***Summary:*** The author gives good, brief introductions to the fermented soyfoods tempeh, miso, miso pickles, shoyu, tamari, sufu, natto, soy idli, and hamanatto. Related foods that are also discussed include koji, amazake (amasaké), and ontjom. See especially chapter VII: The fermentation of legumes (p. 73-78). Part IV (p. 153-216) is a dictionary of fermented foods and beverages, in which they are listed alphabetically; basic information and references for each are given. Instructions are given for preparing many of these foods on a home scale, and for some foods (such as tempeh) even recipes are given (fried tempeh, tempeh goreng). The book contains many beautiful illustrations and an excellent bibliography. The author acknowledges his extensive use of the material in *Handbook of Indigenous Fermented*

Foods (1983) edited by K.H. Steinkraus. Address: Ingénieur agronome de formation, France.

1846. Botton, B.; Breton, A.; Fevre, M.; Guy, P.; Larpent, J.P.; Veau, P. 1985. Moisissures utiles et nuisibles: Importance industrielle [Industrial importance of useful and harmful molds]. Paris: Coll. Collection Biotechnologies. 364 p. [150 ref. Fre]*
• ***Summary:*** Contains a discussion of popular fermented soyfoods, including soy sauce, tempeh, and miso.

1847. Bradford, Peter; Bradford, Montse. 1985. Cooking with sea vegetables: A collection of naturally delicious dishes using to the full the bountiful harvest of the oceans. Wellingborough & New York: Thorsons Publishing Group. 144 p. Illust. by Sue Reid. Index. 22 cm. [8 ref]
• ***Summary:*** The Bradfords have spent considerable time studying food in Japan and are especially well qualified to present this vegan, macrobiotic cookbook. It contains recipes using tofu, tempeh, miso, shoyu (soy sauce), and seitan. Address: UK.

1848. Brody, Jane E. 1985. Jane Brody's good food book: Living the high-carbohydrate way. New York & London: W.W. Norton & Co. xxviii + 700 p. Foreword by Pierre Franey. Illust. (line drawings by Ray Skibinski). Index. 24 cm.
• ***Summary:*** Advocates a diet with more complex carbohydrates and starches–including whole grains and beans.

The section titled "Soy, the queen of beans" has the following contents: Soy protein, the meat of the East. Soy oil, a boon to blood vessels. A selection of super soy foods: Tofu–fast track to soy nutrition, tempeh–a treat from Indonesia, soybean sprouts–growing nutrients, soy flour–a protein boost, textured vegetable protein, for more recipes.

"Soy, the Queen of beans. The soybean may be the single most important food produced in the world today. It is certainly the most versatile." A praiseful introduction to soy protein, soy oil, soy grits, flakes and flour, soy powder (isolate), soy milk, soy nuts, tofu, tempeh, soy sprouts, and textured vegetable protein... by one of America's most widely read food writers.

Dr. C.R. Sirtori and collaborators at the University of Milan found that a diet rich in soy protein is considerably more effective in lowering cholesterol than is the traditional low-fat "prudent" diets. Even when 500 milligrams of cholesterol–the equivalent of two large egg yolks–were added to the soy diet, blood cholesterol levels did not rise, the study showed.

On the inside rear dust jacket is a portrait photo of Jane Brody and a brief biography. Born in New York City, she received her B.S. degree from Cornell University [Ithaca, New York] and her M.S. in Journalism from the University of Wisconsin School of Journalism. She lives with her family in Brooklyn, New York.

Note: This book is not vegetarian; meat, fish and poultry are used extensively, but not as extensively as in many cookbooks. Address: Food writer for The New York Times.

1849. Culioli, J. 1985. Les procédés de texturation des matières protéiques végétales: Aspects technologiques [The processes of texturization of vegetable protein materials: Technological aspects]. In: B. Godon, ed. 1985. Protéines Végétales [Vegetable Proteins]. Paris: Technique et Documentation–Lavoisier : APRIA. xxvi + 629 p. See p. 489-522. [99 ref. Fre]
• ***Summary:*** Contents: Introduction. Traditional foods based on textured soy protein: Tofu, dried-frozen tofu, yuba, sufu (fermented tofu), tempeh. The principles of protein texturization. Spinning: Historical, processes, aptitude of proteins for spinning, the texture and structure of spun proteins, the techniques of spinning derived from the Boyer process. Cooking–extrusion. Other processes for texturization of protein. Conclusion. Address: Institut National de la Recherche Agronomique, Station de Recherches sur la Viande, Theix 63110 Beaumont, France.

1850. Findlater, Evelyn. 1985. Making your own home proteins: Tofu, tempeh, soft cheeses, yoghurt and sprouted seeds. London: Century. 151 p. Illust. 20 cm. *

1851. Hermana, -. 1985. Pengelolaan kedelai menjadi berbagai bahan makanan [Management of soybean for foods]. In: Kedelai [Soybeans]. Bogor: Badan Penelitian dan Pengembangan Pertanian Bogor (Agency for Agricultural Research and Development, Bogor). [Ind]*

1852. Holt, Helen. 1985. Eten zonder vlees: dat kan! [Eat without meat: It's possible!]. Den Haag, Netherlands: De Nederlandse Vegetariërsbond. 38 p. Illust. Index. 15 x 21 cm. [9 ref. Dut]
• ***Summary:*** A vegetarian cookbooklet. Soy-related foods are mentioned on the following pages: Miso (sojapasta, p. 6-7). Soy bits / morsels (probably chunks of textured soy flour; Sojabrokjes, p. 12, 32). Soybeans (sojabonen, p. 12, 15). Tempeh (tempé, p. 2, 3-4, 12, 22). Tofu (tahoe, table of contents, p. 3-4, 7, 12, 18, 20, 28).

Also discusses: Azuki beans (adzukibonen, p. 11, 15). Quark (kwark, p. 7). Sesame salt (sesamzout, gomasio, p. 6) Sesame tahini (sesampasta, tahin, p. 6-7)

Note: This is the earliest Dutch-language document seen (Jan. 2005) that mentions azuki beans, which it calls *adzukibonen.* Address: Larensweg 26, 1221 CM Hilversum, Netherlands.

1853. Hume, D.J.; Shanmugasundaram, S.; Beversdorf, W.D. 1985. Soyabean (*Glycine max* (L.) Merrill). In: R.J.

Summerfield and E.H. Roberts, eds. 1985. Grain Legume Crops. London: Collins. xvi + 859 p. See p. 391-432. Illust. Index. 24 cm. [192 ref]
• ***Summary:*** Contents: Introduction: History, current status and future projections. Principal economic yield and uses of crop products. Principal farming systems. Botanical and agronomic features: Symbiotic nitrogen fixation potential. Principal limitations to production and yield: Developing countries, developed countries. Fertiliser requirements. Quality of seed constituents. Germplasm resources. Principal breeding strategies: Adaptation to new geographic areas, breeding methodology, breeding objectives, seed quality, pest and disease tolerances, current trends in soyabean breeding. Avenues of communication among researchers (INTSOY, AVDRC, IITA, FAO). Prospects for larger and more stable yields.

Tables: (1) Area (1000 ha), yield (kg per ha), and production (1000 tonnes) of soyabeans from 1969-71 to 1982. (2) Maturity durations and productivity potentials of soyabeans in selected countries. (3) *Glycine* species collections around the world. (4) Sources of resistance among soyabeans to selected insect pests. (5) Sources of resistance among soyabeans to selected diseases.

Table 9 shows that there are soybean germplasm collections in 15 countries. This table has 4 columns: Country, location (city), curator, and no of accessions. AVRDC in Taiwan has the largest germplasm collection in one location (10,400 accessions, Tainan), followed by USA (9,648, Illinois and Mississippi), India (4,000, Pantnagar; 1,800 Amravati), Japan (3,541, Tsukuba; 200, Morioka), USSR (3,000, Leningrad), China (3,000 Jilin; 3,000 Hubei; 2,930 Shadong [sic, Shandong {W.-G. Shantung}]; 2,500 Beijing; 960 Heilungjiang [Heilongjiang]). Also: Australia 400, France 500, Nigeria 1,300, Indonesia 600, South Korea 2,833, North Korea 300, South Africa 600, Sweden 1,200, and Thailand 1,686. Address: 1&3. Univ. of Guelph, Dep. of Crop Science, Guelph, Ontario N1G 2W1, Canada; 2. Asian Vegetable Research and Development Centre (AVRDC), PO Box 42, Shanhua, Tainan 741, Taiwan, Republic of China;.

1854. Kushi, Aveline; Esko, Wendy. 1985. The changing seasons macrobiotic cookbook. Wayne, New Jersey: Avery Publishing Group, Inc. xii + 265 p. Illust. Index. 28 cm. [43 ref]
• ***Summary:*** The recipes are arranged by the four seasons. The index contains 43 entries for miso, 39 for tofu, 35 for tamari, 18 each for seitan and tempeh, 3 for natto, and 1 each for Japanese black [soy] beans, and for soybeans (dry).

Also contains entries for amazake, amazake pudding, azuki beans, brown rice, hiziki [hijiki], kuzu, mochi, and sea vegetables. Address: Brookline, Massachusetts.

1855. Lembaga Kimia Nasional–LIPI (National Chemistry Institution). 1985. Membuat oncom [Preparation of onchom]. Bandung, Indonesia: Kerja Sama, LIPI-INKUD. 20 p. Undated. 22 x 28 cm. [Ind]
• ***Summary:*** An informative, practical booklet, with illustrations (line drawings) on every page, showing how to make onchom. With an introduction by Ig. Suharto, director of LKN–LIPI. Address: Bandung, Indonesia.

1856. Lembaga Kimia Nasional–LIPI (National Chemistry Institution). 1985. Membuat tempe [Preparation of tempeh]. Bandung, Indonesia: Kerja Sama, LIPI-INKUD. 22 p. Undated. [Ind]
• ***Summary:*** An informative, practical booklet, with illustrations (line drawings) on every page, showing how to make tempeh and tempeh starter in Indonesia. With an introduction by Ig. Suharto, director of LKN–LIPI. LIPI is an acronym for Lembaga Ilmu Pengetahuan Indonesia. Address: Bandung, Indonesia.

1857. McConnaughey, Evelyn. 1985. Sea vegetables: Harvesting guide & cookbook. Naturegraph Publishers, Inc., P.O. Box 1075, Happy Camp, California 96039. xi + 240 p. Illust. Index. 22 cm. [53* ref]
• ***Summary:*** An excellent book by an expert on the subject, with years of experience. Sea vegetables: *Alaria* (wakame). *Analipus japonicus* (fir needle; matsumo in Japan). *Cystoseira* (chain bladder). *Desmarestia* (color changer). *Egregia menziesii* (feather boa). *Gracilaria* (ogo). *Halosaccion* (sea sac; add to soup and stir fries). *Laminaria* (kelp; kombu in Japan). *Macrocystis* (giant kelp). *Nereocystis* (bull kelp or bullwhip kelp). *Pelvetiopsis* (stir fry seaweed) and *Fucus*. *Pleuroficus* (sea spatula). *Polyneura* (use in soups and as a garnish). *Porphyra* (nori). *Postelsia* (sea palm). *Sargassum* (add to soups). Other sea vegetables. Commercial and imported sea vegetables. Note: Some recipe titles contain the word "vegetarian," but some also use meat.

Soy-related recipes: Frozen tofu (p. 85). Miso (p. 93). Soybeans (p. 205). Tempeh (p. 71, 72, 81, 82, 92, 94, 96, 155, 179, 205). Tofu (p. 72, 78, 93, 147, 151, 155, 171, 206, 207, 208).

Contains many excellent illustrations (line drawings by Wendy Lou Manley) and photos. Address: Oregon.

1858. Moeljopawiro, Sukarti. 1985. Bioavailability of iron and zinc in fermented soybeans. PhD thesis, University of Missouri–Columbia. 193 p. Page 1001 in volume 49/03-B of Dissertation Abstracts International. *
• ***Summary:*** Trials were conducted using lactic acid fermented soybeans and tempeh fed to rats. The relative biological value (RBV) of iron and zinc in boiled non-fermented soybeans was the lowest among the products evaluated. The RBV of iron was increased from 60.1% in boiled non-fermented soybeans to 86.7% by lactic acid producing organisms and to 87.5% by *Rhizopus oligosporus* fermentation (ferrous sulfate = 100%). Fermentation also

significantly increased the RBV of zinc from 73.0% in boiled non-fermented soybeans to 84.5% in lactic acid fermented soybeans and to 89.0% in tempeh (zinc sulfate = 100%). Results of this investigation suggest that fermentation by lactic acid producing organisms and *Rhizopus oligosporus* increases the RBV of iron and zinc in soybeans. Address: Univ. of Missouri–Columbia.

1859. Nabben, Alexander. 1985. Soja-Kueche: Vielseitig und gesund [Soya cookery: Versatile and healthful]. Schaafheim, West Germany: Pala Verlag. 144 p. Illust. Index. 21 cm. [Ger]
• ***Summary:*** Contents: Soya, the wonderbean (*die Wunderbohne*). A cultural history of the soybean. A little soybean botany. Soya is versatile. The world market and world hunger. Health through proper nutrition and diet. Product types and buying tips. Recipes. About the author (autobiographical, with photo; he was born in 1953 in Viersen. Since 1978 he has worked in a whole-grain bakery, a soya kitchen, and in a vegetarian restaurant in Munich).

This vegan cookbook contains a large number of tofu and tempeh recipes, as well as recipes for most of the other types of soyfoods. Note the following German terms: *Ganze Sojabohnen* (*getrocknete gelbe Sojabohnen*) = whole dry soybeans. *Vollsojamehl* = Whole soy flour. *Sojasauce* = soy sauce. *Miso* (*Sojapaste*) = miso. *Okara* (*Sojakleie*) = okara. *Tofu* (*Sojaquark oder -käese*) = tofu. *Tempeh* (*Soja-"Brie"*) = Tempeh.

On the last page of the book (p. 144) is an advertisement for Morgenland Naturkost, located at: Aus dem Anger 3410 Northeim 19, West Germany. Phone: 05551-64592. They offer tofu and tofu dishes, seitan and seitan products, and utensils for the production of tofu and tempeh.

Apparently a second edition or printing appeared in 1988 (ISBN 3-923176-35-x). Address: Morgenland Naturkost, Auf dem Anger 2, 3440 Northeim 19, West Germany.

1860. Salunkhe, D.K.; Kadam, S.S.; Chavan, J.K. 1985. Postharvest biotechnology of food legumes. Boca Raton, Florida: CRC Press. 160 p. Illust. Index. 26 cm. [25 soy ref]
• ***Summary:*** Contents. 1. Introduction. 2. Seed structure, production, and distribution (Soybean, p. 8-10, 17-18). 3. Chemical composition. 4. Nature and causes of losses. 5. Harvesting, threshing, and drying (Soybean, p. 69-70). 6. Storage. 7. Processing and utilization (Soyfoods, p. 121-36). 8. Food legumes in protein crisis.

Chapter 7, "Processing and utilization," discusses tofu, tempeh, soy flour, soymilk, miso, shoyu, natto, hamanatto, and cereal-soy blends. Address: 1. Vice-Chancellor; 2. Prof. of Food Science & Technology; 3. Asst. Food Science & Technol. All: Mahatma Phule Agricultural Univ., Rahuri, Maharashtra State, India.

1861. Steinkraus, Keith H. 1985. Bio-enrichment: Production of vitamins in fermented foods. In: B.J.B. Wood, ed. 1985. Microbiology of Fermented Foods. Vol. 1. Essex, England: Elsevier Science Publishing Co. xx + 371 + 14 p. See p. 323-43. [60 ref]
• ***Summary:*** Contents: Introduction. Enrichment/fortification. Sources of vitamins (bio-enrichment through fermentation, incl. Indonesian tempe and tape ketan). Summary.

During the tempeh fermentation, riboflavin doubles, niacin increases 7 times, and vitamin B-12 activity increases 33 times. Thiamine unfortunately decreases. Address: Inst. of Food Science, Cornell Univ., Geneva/Ithaca, New York 14456.

1862. Wood, Brian J.B. 1985. Miscellaneous food-related fermentations. In: B.J.B. Wood, ed. 1985. Microbiology of Fermented Foods. Vol. 1. Essex, England: Elsevier Science Publishing Co. xx + 371 + 14 p. See p. 213-35. [27 ref]
• ***Summary:*** Contains a good overview of tempeh, ontjom, and "New substrates for old technologies," as chickpeas for miso and tempeh, or soybeans for idli. Address: Dep. of Bioscience & Biotechnology, Univ. of Strathclyde, Glasgow, Scotland, UK.

1863. Simas, Luiz; Joels, Bobbi. 1986. Re: Miso, tempeh, shoyu, and macrobiotics in Brazil. Letter to William Shurtleff at Soyfoods Center, Jan. 7. 2 p. Typed, with signature on letterhead. [Eng]
• ***Summary:*** "When we returned to Brazil from the USA in Nov. 1981, we decided to hold a series of classes on natural foods processing, including a class on making tempeh at home. (Tempeh was completely unknown around here at that time.) We also began to make tempeh for our own consumption, but ended up setting up a small shop in our apartment. Because of the limited space, our tempeh production never went beyond 50 pounds per month, in spite of the large demand. So after a year or so, as we had originally planned, we handed the business over to a couple of friends who, unfortunately, for many reasons, were not able to continue tempeh production.

"However there is now another group of people making and selling tempeh here in Rio: Jurema and Mariá Paulinho, Rua Raimundo Correia, 27, apt. 504, 22.040 Rio de Janeiro (RJ), Brazil. Phone: (021) 237-7897. We will always be available for providing any kind of information about or classes on tempeh. One of our dreams is to see tempeh introduced in Brazil's tropical northeast, where an incubator would not be necessary.

"At present we are involved in setting up miso and koji production in our house in the mountains of Minas Gerais for the coming year (1986). It's an old dream, but it looks like it will finally come true. At first it will be a small-scale farm-house style production.

"Miso and shoyu, as well as tofu, are soy products with

a long history in Brazil, mainly due to the large number of Japanese immigrants in Sao Paulo. There are many shops there and some here in Rio which sell Oriental products, including miso, shoyu, tofu and natto. Nevertheless, they are usually semi-industrialized and include sugar, preservatives, etc. among the ingredients.

"Production and consumption of quality miso, shoyu, tofu and natto only began with the arrival of Tomio Kikuchi, a student of George Ohsawa's and one of the first people to introduce macrobiotics to Brazil. Until today the best known good quality miso and shoyu are the miso and shoyu distributed by Kikuchi's Instituto Princípio Unico. There are, however, other good misos as well.

"Instituto Princípio Unico, Sao Paulo (SP); Arma-Zen Produtos Naturais Ltda., Rio de Janeiro (RJ); Terrazul, Nova Friburgo (RJ).

"We're sure there are many, many small producers of quality miso and shoyu all over Brazil, but we don't know their addresses. There is also a large company which claims to devote part of its production to naturally-fermented miso and shoyu, with no sugar. The company's name is Tozan. Their factory address is: Bairro Carlos Gomes s/nº, Campinas (SP); phones: (011) 278-2495 or (011) 278-5826.

"There are also two individuals who have a lot of experience in making miso and koji at home. They are available to provide information as well. They are: Dr. Sakae Maki, Praia de Botafogo, 428, s/304, Rio de Janeiro (RJ), phone: (021) 266-0503; Edson Hiroshi Seó, Fazenda Escola, 45.260 Poçoes (BA), phone: (073) 431-1108.

"We will continue to give classes on making homemade miso here in Rio, and we plan on eventually turning our small miso shop in the mountains into a school. We will always be available for any type of assistance or information concerning soy products.

"Several years ago the Brazilian Government tried to introduce soybeans in the public's diet. It was a complete fiasco, mainly because of the lack of information on the part of the authorities. They simply tried to introduce soybeans as a substitute for the traditional black (turtle) beans, and soy milk as a substitute for cow's milk. It didn't work." Address: Rio de Janeiro, Brazil.

1864. **Product Name:** [Tempeh Vegetarian Pâté (Natural, or with Olives)].
Foreign Name: Pâté végétale à tartiner au Tempé, Pâté végétale à tartiner aux olives et Tempé.
Manufacturer's Name: Athanor.
Manufacturer's Address: 4, rue Toiras, 34000 Montpellier, France. Phone: 67.87.0608.
Date of Introduction: 1986. January.
Ingredients: With Olives: Tempeh, brown rice, onions, green olives, soy sauce, soy oil (4%), natural aromas and binders, sea salt.
Wt/Vol., Packaging, Price: 120 gm glass jar with Crown-type cap (removable with bottle opener). FOB price 7.05 FF.
How Stored: Shelf stable for 3 years; refrigerate after opening.
Nutrition: With Olives: Moisture 73.3%, lipids [oils/fats] 8.7%, protein 8.6%, carbohydrates 6.0%, total Nitrogen 1.3%, iron 2 mg/100 gm, magnesium 50 mg/100 gm, calcium 131 mg/100 gm, energy 202 calories/100 gm.
New Product–Documentation: Labels. Received 1988. May. 5 by 1 inch. Green or brown on beige. "Rich in protein. No cholesterol. Best if consumed within 3 years of date printed on lid." Soyfoods Center product evaluation. 1988. May. Nothing special. This lid is very difficult to remove without a bottle opener, a device no longer widely available in America.

1865. **Product Name:** [Tofu, Smoked Tofu, Tempeh, and Tofuburger].
Foreign Name: Tofu, Tofu Fumé, Tempeh, Galette: Petit Roti Végétal.
Manufacturer's Name: Gaec de La Lix: United Macrobiotic Company.
Manufacturer's Address: 32260 Tachoires–Seissan, France. Phone: 62.65.35.04.
Date of Introduction: 1986. January.
New Product–Documentation: Form filled out for Anthony Marrese. 1989. Sept. These four products were introduced as follows with the amount presently produced shown in parentheses: Tofu (80 kg/week) and Soyaburger (800 pieces/week), Jan. 1986. Smoked Tofu (8 kg/week), June 1986. Tempeh (40 kg/week), Oct. 1986. Anthony visited the community in mid-Oct. 1989 and noted: "They are a small group similar to Terre Nouvelle, but doing more with soya. Very nice kitchen production (see color slide), which is growing. They sell through markets and through 10 stores, which helps them to educate people. They are all Germans who came to France about 5 years ago mainly because land prices were lower in France. They also make small quantities of miso (experimental stage) and 4 kg/week of koji for amazake and miso.

Labels for all 4 products. 1989. 4 by 2.75 inches. Each photocopied with black handwritten letters on pastel color paper, and each with the Nature et Progres logo indicating organically grown. Each label has a description of the food on the back.

For details and an update to 1989 see the letter from Gaec de La Lix: United Macrobiotic Company to Anthony Marrese, of Sept. 1989.

1866. **Product Name:** [Tempeh].
Manufacturer's Name: Jurema and Mariá Paulinho Tempeh.
Manufacturer's Address: Raimundo Correia, 27, apt. 504, 22.040 Rio de Janeiro (RJ), Brazil. Phone: (021) 237-7897.
Date of Introduction: 1986. January.

New Product–Documentation: Letter from Luiz Simas and Bobbi Joels. 1986. Jan. 7. "There is now another group of people making and selling tempeh here in Rio." The above name, address, and phone number is given.

1867. Plenty Canada. 1986. The Soya Centre (Calendar). Castries, St. Lucia.
• ***Summary:*** This is the head of a calendar, 8½ by 11 inches. On the top three-fourths of the page is a large black-and-white photo of the Soya Centre, looking from the outside in through two open doors–on each of which is written "Soya Beans" in large diagonal letters, above an illustration of a soya bean plant. Inside are about 10 local black people. On the back right is a food retail counter and snack bar, staffed by several women. On the back wall is a blackboard with a price list and menu written on it in chalk.

On the bottom quarter, in large black letters is written "The Soya Centre" in an arch. A laughing Santa Claus on the left is holding the word "The." Below the arch is written the Center's address: "19 Grass St., Castries, St. Lucia. Tel: 26421." To the right of the arch is a line drawing of a dove, and below it: "With the Compliments of Plenty Canada and the Staff of the Soya Centre." The calendar itself is missing.

Talk with Maya Clarke of Ontario, Canada. 1998. June 25. Maya worked for 7 years as a nutritionist and soyfoods instructor/technician for Plenty Canada at this Soya Centre in St. Lucia. She remembers this calendar well but does not have a copy. "There could possibly be one in the Plenty archives" at Lanark, but she is not too sure. Plenty made a calendar like this for two years, and this was the first of the two. It was designed by Plenty and printed in Castries (the capital city, by the person who prints *The Voice* newspaper) in December 1985 and presented on 1 Jan. 1986 as a New Year's gift to the Center's popular customers and friends. The calendar had a photograph as the head, then one page for each month below. The soya bean plants on the two big doors were painted by a Rastafarian man named Papa. Many of the people shown in the picture, the same as those who came to the Centre, were Rastafarians, who are vegetarians (very important) and consider themselves members of the lost tribe of Israel. They esteem Marcus Garvey, who they consider one of their forerunners. Note: *Webster's Dictionary* (1985) defines Rastafarian (derived from *Ras Tafari,* the precoronation name of Haile Selassie), a word first used in 1955, as "an adherent of Rastafarianism." The latter word, first used in 1968, is defined as "a religious cult among black Jamaicans that teaches the eventual redemption of blacks and their return to Africa, employs ritualistic use of marijuana, forbids the cutting of hair [it is worn in long braids called dreadlocks (first used in 1960)], and venerates Haile Selassie as a god."

The Soya Centre, which was constructed specifically for this purpose by the team just before Maya (John Baranni and Christine Kilgour from Plenty with local labor), was located in the middle of a black ghetto in Castries, and there were lots of social problems in the area. In the back of the Centre was a soyfoods factory. The factory was used to train all the people who subsequently opened up soyfoods businesses in St. Lucia. "What went on with soyfoods in St. Lucia was very significant–much more so than what happened in Jamaica, etc. At any given time, up to ten local people worked (for pay) at the Centre. The Centre was self-sufficient, so the money from the foods they sold went to pay the workers. Two guys would start very early in the morning (about 4:00 a.m.) to make soymilk and tofu. Then a crew of ladies would come in about 7:00 a.m. and use the tofu and soymilk to make second generation products from soymilk, tofu, and okara–such as "bakes" (like a little doughnut) and "accras" (like a fritter, in which the traditional salt cod was replaced by okara). The use of okara made the products more affordable. Tempeh was made at time, but it did not catch on as well as tofu and soymilk, and it was somewhat hard to get the spores. "Tofu caught on almost immediately "The local people just took it up; they just seemed to know what to do with it." Soymilk ice cream was one of the most popular products. Soymilk, imported soy flour, and okara were use to make little breads. Many people would bike or walk to the Centre to buy tofu in bulk over the counter–which was also a snack bar. The Centre was both a business and an education/training center. Many local Seventh-day Adventists came to cooking classes at the center, and Maya also taught classes in their churches, schools, and homes. Maya remembers that one day a 13-year-old kid named Sooner knocked on the door of the Center at 7 o'clock in the morning and said to her: "I want to know everything there is about soyfoods." She happily invited him in, and began to teach him. For a while there was a "Comments Book" at the Centre; in it people wrote soy poems and soy songs–some of which Maya still has.

At one time some 10-12 soyfoods businesses were started in St. Lucia by local people who had first trained at Plenty Canada's Soya Centre. About 6 of those businesses are still in operation. A good example is La Soyarie. The reasons the others did not survive had nothing to do with local acceptance of soyfoods; they failed largely for reasons related to money or business management skills.

St. Lucia is a very small (27 miles long) independent country; It was granted self-government by the British in 1967 and attained independence on 22 Feb. 1979. The population is about 160,000 (1998). About 90% of the population is of African descent, with a small minority of Europeans and a few Carib Indians. Bananas are the chief crop. The official language is English, but Creole is the language most widely spoken. It is largely an oral culture.

Note: This is the earliest calendar seen (Oct. 2001) that mentions soy. Address: 19 Grass St., Castries, St. Lucia. Phone: 26421.

1868. Sig, Marie. 1986. Soja: la protéine du futur [Soya: The protein of the future]. *Physic.* Jan. p. 32, 34-35, 110. [Fre]
• ***Summary:*** A brief introduction to tempeh, miso, tamari, tofu, soymilk, and soy flour from a macrobiotic viewpoint. One recipe is given, from the forthcoming French-language book, *Mysteries and Secrets of Soya,* by C. and L. Clergeaud. Address: France.

1869. **Product Name:** Chili Con Tempeh.
Manufacturer's Name: Surata Soyfoods.
Manufacturer's Address: Eugene, Oregon.
Date of Introduction: 1986. January.
Ingredients: Incl. Soy tempeh, spiced meatless chili, tomato sauce.
How Stored: Refrigerated.
New Product–Documentation: Food Report (Lehmann). 1986. Jan. Ready to eat.

1870. Durfee, Roy. 1986. Santa Fean offers recipe for health: Fortunes of his soyfood business ride on growing public awareness of tofu, tempeh. *Journal* (*Albuquerque, New Mexico*). Feb. 2. p. G1, G4.
• ***Summary:*** Jennings bought Southwest Soyfoods in July 1982. He now makes about 1,500 lb/day of tofu and has 6 employees. The tofu retails for $0.89 to $1.39.

Note: Talk with Richard Jennings. 1989. Aug. 22. He has renamed his company to The Food Plant. His main product is organic salsa. Soyfood products include tofu, tofu tamales, and a burrito filling. He stopped making tempeh in about June 1986. Photos show: Two workers making tofu tamales. Richard Jennings operating a soymilk extractor.

1871. Djurtoft, Robert. 1986. Re: Work with tempeh. Letter to William Shurtleff at Soyfoods Center, Feb. 3. 1 p. Typed, with signature on letterhead. [Eng]
• ***Summary:*** "Thank you for sending me the 2nd ed. of 'The Book of Tempeh."

"Because of your interest, I have also gone back to my files and found copies of some reports (mostly in English) I originally sent to DANIDA who has sponsored most of the work [with tempeh in Africa] from 1970 to 1983. DANIDA stands for Danish International Development Agency and is part of the Danish Ministry of Foreign Affairs." Address: Prof., Dep. of Biochemistry and Nutrition, The Technical Univ. of Denmark, Building 224–DK-2800 Lyngby, Denmark.

1872. *Toronto Star* (*Ontario, Canada*).1986. Tempeh new to Toronto. Feb. 6. p. F5.
• ***Summary:*** "Soy based foods are available at more and more restaurants, specialty stores, and supermarkets, in response to a growing demand for lighter and meatless protein foods. For example, there has been a rapid rise in the popularity of tofu (soybean curd) and tofu based products.

"Once only for 'those who dare,' tofu is now available in all major supermarkets and in many major restaurants in Toronto.

"Moving quickly on the heels of tofu is tempeh, and Indonesian culinary delight."

Two varieties of tempeh (traditional soy tempeh and a lighter grain tempeh) is now being made by Soy City Foods in Toronto. They are served at: (1) Vegetarian Restaurant, 542 Yonge St.; (2) West End Vegetarian Restaurant, 2849 Dundas St. West.

Gives a recipe for Barbecued tempeh.

1873. Vogel, Lothar S. 1986. Re: Growing interest in tempeh. Letter to William Shurtleff at Soyfoods Center, Feb. 25. 4 p. Handwritten. [Eng]
• ***Summary:*** "I'm sure you will remember me. We first met when I was hitch-hiking from Berkeley to Marin [California], studying Sanskrit, reading the Vivekachudamani [famous work by Adi Shankara that expounds Advaita Vedanta philosophy].

"Then I visited with Candle [lady's name] and went cross country teaching people about tempeh."

"It seems I have at last found an area I like and possibly will try to continue and do my work. I was in Hawaii for a while, then in Europe, and now in San Diego. My last workshop in Honolulu was the best one I have had yet, and the ones I am planning here feel promising.

"Besides contacting the 'alternative community' I contact schools, newspapers, radio stations, etc. I plan to hold a workshop entirely for restaurant chefs and cooks.

"As you see, I have a goal to put out *The International Tempeh News,* a publication I envision to be sort of open to all tempeh fans, but [directed] more to lay people than professional producers." Address: 2019 Granada Ave., San Diego, CA 92014. Phone: (619) 233-8273.

1874. Karta, Susani K. 1986. Tempeh–The gem of the vegetarian diet. Paper presented at International Convention of "Prospects for Soybean Utilization." 8 p. Organized by Soyabean Processors Assoc. of India on 15-16 Feb. 1986 at Indore, MP, India. [1 ref]
• ***Summary:*** A good overview. "Although soy tempeh is by far the most popular type, there are more than thirty varieties of tempeh which can be grouped into five basic types. They are as follows:" 1. Legume. 2. Grain and soy tempeh. 3. Grain tempeh. 4. Presscake tempeh. 5. Nonleguminous seed and legume tempeh (e.g. sesame seed and soy tempeh). Address: India.

1875. **Product Name:** Harvest Light Tempeh.
Manufacturer's Name: Northern Soy Inc.
Manufacturer's Address: 30 Somerton St., Rochester, NY 14607. Phone: 716-442-1213.
Date of Introduction: 1986. February.

Ingredients: Organically grown soybeans, filtered water, apple cider vinegar, live tempeh culture.
Wt/Vol., Packaging, Price: 8 oz vacuum packed. Not frozen. Steamed.
How Stored: Refrigerated, 45 day shelf life.
New Product–Documentation: Manufacturer's catalog. 1987. Oct. Talk with Andy Schecter. 1988. Feb. 17. This is the brand for their steamed, vacuum packed, non-frozen tempeh. The separate brand idea started with their vacuum packed tofu; previously all of their tofu had been fresh and unpackaged in bulk.

1876. Rocheman, Marc. 1986. Les aliments fermentés derivés du soja [Fermented foods derived from soya]. *Biofutur* No. 43. p. 34-42. Feb. [8 ref. Fre]
• ***Summary:*** Gives the composition and nutritive value of various soy products: tofu, fermented tofu (sufu), miso, natto, shoyu, and tempeh. Describes the possibilities for use of koji, as a source of proteases and peptidases, in the production of these fermented foods.

1877. *Watashi no Kenko* (*My Health*).1986. Neba neba shinai Java natto, tempeh wa: Shibô no sanka o fusegu seijin-byô yubô saku [Non-sticky natto from Java: Tempeh is a food to prevent geriatric diseases]. Feb. p. 102-04. [Jap]
• ***Summary:*** A general introduction to tempeh. Address: Japan.

1878. Bailey, Simon. 1986. Re: Work with tempeh in Trinidad. Letter to William Shurtleff at Soyfoods Center, March 11. 1 p. Typed, without signature.
• ***Summary:*** "I am at present producing Tempeh here in Trinidad on a small (community) scale and attempting to encourage the greater use of soya and other vegetable-based foods here. In a month's time we will be organising a small seminar for a group of local farmers on soya cultivation and basic processing. Response is gradual and in order to maintain a livelihood I am preparing vegetarian / macrobiotic lunches for sale in Port of Spain in the capital. I visited the Plenty soya project on Dominica and that experience was very inspiring." Address: c/o Valdez, 21 Sun Valley Dr., La Pastora, Upper Santa Cruz, Trinidad, West Indies.

1879. Stromnes, Lonnie. 1986. Tempeh production increasing at Soyfoods Unlimited (Interview). *SoyaScan Notes.* March 15. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Production of tempeh at Soyfoods Unlimited grew 25% in 1985. Address: Soyfoods Unlimited, 14670 Doolittle Dr., San Leandro, California 94577.

1880. Tibbott, Seth. 1986. Update tempeh at Turtle Island (Interview). *SoyaScan Notes.* March 15. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Turtle Island is now making 800 lb/week of tempeh. Address: Turtle Island Soy Dairy, 1 Main St., Husum, Washington 98623.

1881. *Toyo Shinpo* (*Soyfoods News*).1986. Tenpe no hansoku ni hongoshi. Zenkoku Nattô Rengôkai Tenpe Fukyûkai tairyô na panfu o sakusei [They're putting real effort into promoting tempeh. The Japan Natto Assoc. Tempeh Popularization Group has published many pamphlets]. March 21. p. 10. [Jap; eng+]
• ***Summary:*** Pamphlet title is "This is the health food of the 21st century." Goro Kanasugi is head of the Tempeh Popularization Group. Address: Kyoto, Japan.

1882. *Toyo Shinpo* (*Soyfoods News*).1986. Tenpe no jidai. Daizu hakkô shokuhin "tenpe" ni tsuite. Jiaru-san e no teikôsei tsuyoshi [The age of tempeh. About this fermented soyfood. It has a strong resistance to thiosulphuric? acid]. March 21. p. 10. [1 ref. Jap; eng+]

1883. Steiner, Mary P. 1986. Tofu, tempeh also good in dinner entrees: Third of series. *News* (*Bluffton, Ohio*). March 27.
• ***Summary:*** This is the third part of a series on a class in Bluffton Family Recreation class in cooking with whole foods. "The instructors include many recipes using tofu and tempeh, both of which are soybean products." Gives recipes for: Almond tofu. Chili con tofu. Tempeh stroganoff. Orange pudding. A photo shows Hans Houshower stirring tofu in a wok.

1884. Great Life Enterprises Unlimited. 1986. Principles of tempeh production and making tempeh starter: Workshop XII with Lothar S. Vogel, M.A. (Leaflet). San Diego, California: East West Center for Macrobiotic Studies. 1 p. Single sided. 28 cm. [Eng]
• ***Summary:*** "Lothar has been studying the relationship of Food-intake and Well-being, and has been professionally involved in the food service industry since 1956, serving five-star hotels..." Cost: $25.00.

Workshop sponsored by Great Life Enterprises Unlimited. Address: East West Center..., 3436 30th St., San Diego, CA 92014. Phone: (619) 233-8273.

1885. **Product Name:** Tempeh Delites [Mild Sticks, or Spicy Sticks].
Manufacturer's Name: Harvest Earth Foods.
Manufacturer's Address: 2789 Steamboat Springs, Rochester, MI 48063.
Date of Introduction: 1986. March.
Wt/Vol., Packaging, Price: 9 per 16 oz package.
How Stored: Frozen.

1886. **Product Name:** Tempeh Delites Breakfast Naturals

(Meatless Breaded Tempeh Sausages).
Manufacturer's Name: Harvest Earth Foods.
Manufacturer's Address: 2789 Steamboat Springs, Rochester, MI 48063.
Date of Introduction: 1986. March.
Wt/Vol., Packaging, Price: 6 oz vacuum pack bags.
How Stored: Refrigerated or frozen.
New Product–Documentation: Food Report (Lehmann). 1986. March.

1887. Katoh, Kiyoaki; Ohta, Teruo. 1986. Quality assessment of tempe products–Triglyceride profile of tempe and onchom chips of Indonesia: Notes. *Shokuhin Sogo Kenkyujo Kenkyu Hokoku* (*Report of the National Food Research Institute*) No. 48. p. 86-90. March. [4 ref. Eng; jap]
• ***Summary:*** "Eight samples of tempe and oncom chips were collected in Java, and the crude fat contents and triglyceride profiles of extracted oil were examined. Tempe chips samples included famous souvenir brands of Sri Umbi (No. 1) and Zogor Sari (No. 2) from Bandung, and other three samples purchased in Pasar Bogor (Nos. 6, 7 and 8). Oncom chips tested were Souvenir brands Reno (No. 4) and Gouw (No. 5). Sambel Goreng (No. 3) was a specialty product of mixed fries of tempe and hot chilli." Address: Tsukuba, Japan.

1888. **Product Name:** The Soy Deli Tofu-Tempeh Burgers.
Manufacturer's Name: Quong Hop & Co.
Manufacturer's Address: 161 Beacon St., South San Francisco, CA 94080. Phone: 415-873-4444.
Date of Introduction: 1986. March.
Ingredients: Organic tofu, organic tempeh, fresh carrots and onions, sesame seeds, sunflower seeds, currants, safflower oil, sea salt, garlic powder.
Wt/Vol., Packaging, Price: 7 ox (199 gm) vacuum pack.
How Stored: Refrigerated.
Nutrition: Per 3.5 oz.: Calories 268, protein 18.6 gm, carbohydrate 9.3 gm, fat 17.3 gm.
New Product–Documentation: Leaflet. 1986. 8½ by 11 inches, color. "There is Quality & Variety after 80!" Shows all products. Pre-cooked, they are quick and easy to prepare by toasting, broiling, frying, or microwaving. Labels (front and back). 1987. 5 inches square. Orange and brown on white film. "High in protein. No cholesterol, contains no meat. Pop 'n serve."

Product Alert (Naples, WY), 1986. March 17. "27. Misc. foods." Soy Deli Tofu-Tempeh Burgers were spotted "at a recent health food show."

1889. **Product Name:** The Soy Deli Pacific Tempeh Burger [Original, or Marinated].
Manufacturer's Name: Quong Hop & Co.
Manufacturer's Address: 161 Beacon St., South San Francisco, CA 94080. Phone: 415-873-4444.
Date of Introduction: 1986. March.
Ingredients: Marinated: Organic soy tempeh, water, shoyu (natural soy sauce), lemon juice, natural herbs and spices, safflower oil.
Wt/Vol., Packaging, Price: 7 oz (199 gm) vacuum pack.
How Stored: Refrigerated.
Nutrition: Marinated: Per 3.5 oz. Calories 247, protein 18 gm, carbohydrates 12.1 gm, fats 13.75 gm, sodium 13 gm, vitamin B-12 2.2 mg.
New Product–Documentation: Labels for both. 1987. 3.5 inches diameter. Front and back. Front is full color, with orange, yellow and red lettering. Photo of a round burger with onions rings on top, on mushrooms, lettuce and tomato. "Pop 'n Serve. Meatless. Delicious. High Protein. No Cholesterol. Good food in minutes."

1890. **Product Name:** The Soy Deli Pacific Tempeh.
Manufacturer's Name: Quong Hop & Co.
Manufacturer's Address: 161 Beacon St., South San Francisco, CA 94080. Phone: 415-873-4444.
Date of Introduction: 1986. March.
Ingredients: Water, organically grown soybeans, tempeh starter (Rhizopus oligosporus).
Wt/Vol., Packaging, Price: 8 oz vacuum pack.
How Stored: Refrigerated.
Nutrition: Per 4 oz.: Calories 190, protein 20 gm, carbohydrates 14 gm, fat 9.7 gm, sodium 10.5 mg, vitamin B-12 2.5 mg.
New Product–Documentation: Note: Pacific Tempeh was acquired by Quong Hop & Co. in South san Francisco on 1 July 1984. Label. 1987. 3.75 by 4.25 inches. Full color, with orange, yellow and red letters. Photo of a dish of fried tempeh on rice. "Cultured soyfood. Delicious. High protein. Easy to cook. No salt."

1891. Winter, Dorothy. 1986. The substitute foods industry–New directions. Business Communications Co., Inc., 9 Viaduct Rd., P.O. Box 2070C, Stamford, CT 06906. 186 p. March. Report No. GA-052. *
• ***Summary:*** Table of Contents lists the following: The Tofu Market Scene. Description, Manufacturer's and their products. Markets, sales, and outlook. Tables: Percentage of Tempeh Sales by Type. Largest Tofu-Tempeh-Miso Manufacturers in the U.S., 1984. Tofu/Tempeh/Miso Industry in the United States, 1984 and 1990. Much of this material seems to be taken without permission from *Soyfoods Industry & Market* by Shurtleff & Aoyagi.

Other chapters: The role of protein in substitute foods, Meat (extenders and analogs). Dairy substitutes. Regulation in the substitute foods industry. Address: Stamford, Connecticut.

1892. Harrison, Slater. 1986. Re: Work of the Mennonite Central Committee (MCC) with soybeans in Bangladesh.

Letter to William Shurtleff at Soyfoods Center, April 3. 1 p. Typed, with signature on MCC letterhead. [1 ref]
• ***Summary:*** George Horlings' book [report] on soybeans in Bangladesh–summarizing his work and that of others on soybean utilization and production–should be published within 2 months.

A Japanese nutritionist, Dr. Yoshimiko Kobayashi (a soyfoods expert), is now helping MCC; she is with a volunteer organization of Japanese doctors.

Bob Burns got 9 large seeded vegetable type soybeans for "edamame." He planted them and got a second generation of quite a few more. Both Bob and Slater make tempeh regularly. Several immigrants from Hong Kong are making tofu in Dhaka. Address: c/o MCC, P.O. Box 5, Maijdi Court, Noakhali, Bangladesh. Phone: 317065 or 316461.

1893. Bailey, Simon. 1986. Re: Work with tofu and tempeh in Trinidad. Letter to William Shurtleff at Soyfoods Center, April 28. 1 p. Typed, with signature.
• ***Summary:*** "I hope you received my letter dated 11th March. I didn't receive a reply yet so am writing again in the meantime.

"I'm British and since mid-1984 have been in Trinidad Cooking natural foods and beginning to make tempeh on a small scale. In conjunction with tofu producer, Susan Lee Hem, I am seeking to communicate more about soyafoods, improve and increase production of tempeh and act as a focus for farmers interested in growing beans in Trinidad. I would like to receive information about establishing a Soyafoods Centre here.

"If you have names and addresses of any tempeh producers in Surinam those would also be useful. Also any information on suppliers of soyabeans in Brazil, Venezuela, or Belize."

"I would like to obtain the professional edition of The Book of Tempeh, please let me know the price.

"With the original letter I sent some U.S. currency with a request for Tempeh pamphlets and a media package.

"Once again, I trust you received it and await a reply

"Best wishes, Simon Bailey." Address: c/o Valdez, 21 Sun Valley Dr., La Pastora, Upper Santa Cruz, Trinidad, West Indies.

1894. **Product Name:** [Tempeh Cuisine (A preserve)].
Foreign Name: Conserves Tempé–Tempé Cuisine.
Manufacturer's Name: Athanor.
Manufacturer's Address: 4, rue Toiras, 34000 Montpellier, France. Phone: 67.87.0608.
Date of Introduction: 1986. April.
Ingredients: Tempeh, water, salt.
Wt/Vol., Packaging, Price: 165 gm glass jar with Crown-type cap (removable with bottle opener). FOB price 9.35 FF.
How Stored: Shelf stable for 2 years; refrigerate after opening.
Nutrition: Per 100 gm: Energy 120 calories, protein 12.8 gm, lipids 6.4 gm, carbohydrates 2.8 gm, calcium 31.1 mg, magnesium 11.2 mg, iron 1.9 mg, vitamin A < 0.5 mg, vitamin B-1 0.011 mg, vitamin B-2 0.038 mg, vitamin C < 0.02 mg.
New Product–Documentation: Athanor Price List. 1988. Labels. 1988. The front one: Nature et Progres logo. CINAB logo. "Protein 100% vegetable. Tempeh–Fermented soya." The back one: Suggestions for use and Italian recipe. Best if consumed within 2 years of date printed on lid.

1895. **Product Name:** [Tempeh Salad].
Foreign Name: Tempé en Salade.
Manufacturer's Name: Athanor.
Manufacturer's Address: 4, rue Toiras, 34000 Montpellier, France. Phone: 67.87.0608.
Date of Introduction: 1986. April.
Ingredients: Tempeh (Fermented soybeans rich in protein), onions or leeks, carrots, virgin olive oil, cider vinegar, water, garlic, sea salt.
Wt/Vol., Packaging, Price: 160 gm glass jar with Crown-type cap (removable with bottle opener). FOB price 9.95 FF.
How Stored: Shelf stable for 2 years; refrigerate after opening.
Nutrition: Per 100 gm: Energy 100 calories, protein 4.1 gm, lipids 6.8 gm, carbohydrates 4.3 gm.
New Product–Documentation: Label. 1988. 2.75 inch diameter. Black, orange, dark green and white on light green. "Fermented Soya."

1896. Bhatnagar, P.S. 1986. All India Coordinated Research Project on Soybean (Indian Council of Agricultural Research). National seminar & seventeenth annual workshop: Proceedings & technical programme 1987-87. G.B. Pant University of Agriculture & Technology, Pantnagar-263145, India. iv + 247 p. Held 22-25 April 1986 at MACS (Maharashtra Assoc. for the Cultivation of Science) Research Institute, Pune, Maharashtra, India. No index. 27 cm.
• ***Summary:*** Recommendations concerning food uses of soybeans include: A domestic market for defatted soy flour should be created. The production and use of tofu, soy beverage, and full-fat flour in weaning (human and cattle calves) should be encouraged. Utilization research is taking place mostly at Sehore (oil, flour), Pantnagar (flour, milk, oil, isolate, tofu), and Bangalore (tempeh, soy yogurt, soy cheese). A directory of researchers is given at the back of the proceedings. Address: Coordinator, All-India Coordinated Research Project on Soyabean (ICAR), G.B. Pant Univ. of Agriculture & Technology, Pantnagar, UP, 263145, India.

1897. Camo, Jean-Pierre. 1986. La trilogie végétale. 1. Le tofu, fromage de soja. 2. Le tempeh, ou soja fermenté. 3. Le

seitan: La viande de blé [The vegetable trilogy. 1. Tofu or soy cheese. 2. Tempeh or fermented soya. 3. Seitan or wheat meat]. *Compas* (*Le*) (*France*) No. 26. p. 31-35. March/April. [10 ref. Fre]
• ***Summary:*** Each of the three sections gives a description of the product, with black-and-white photos, the nutritional composition, several recipes by Viviane Camo, a list of manufacturers (with the address and phone number of each), and a list of books on the subject. Address: France.

1898. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Christian Nagel Tofumanufaktur.
Manufacturer's Address: Oelkersallee 14a, D-2000 Hamburg 50, West Germany. Phone: 040/89 49 37.
Date of Introduction: 1986. April.
Ingredients: Sojabohnen aus kontr. biolg. Anbau, Rhizopus oligosporus.
Wt/Vol., Packaging, Price: 200 gm.
How Stored: Refrigerated.
New Product–Documentation: Form filled out by Christian Nagel. 1988. Jan. Product was introduced in April 1986. They are now making 60-100 kg/month. Label. 1988. 4 by 3 inches. Black on blue.

Bernd Drosihn. 1989. Tempeh: Ein traditionelles Nahrungsmittel mit Zukunft [Tempeh: A traditional food with a future]. p. 38. Says the company, "Tofumanufaktur Christian Nagel," makes fresh tempeh and tempeh burgers.

www.tofunagel.com/ tempeh.htm. Retrieved 2001. April 22. Three pages of information about the company's tempeh.

1899. *Compas* (*Le*) (*France*).1986. Des saucisses de soja [Soy sausages]. No. 26. p. 26-27. March/April. Interview with Eric Dewilde of De Hobbit. [Fre]
• ***Summary:*** About the tempeh and tempeh sausages made by De Hobbit in Belgium. Three photos show the company cooking and centrifuging the soybeans to make tempeh, adding the tempeh starter culture, and forming the tempeh sausages. De Hobbit is located at Waterstraat 4, B-9980 Sint Laureins, Belgium. Phone: 091/79.96.22. Their distributor in France is Traditions du Grain, 16 avenue Jean-Jaurès, 94200 Ivry, France. Phone: (1) 46.71.89.88. Address: France.

1900. Givant, Marlene. 1986. Soy foods come of age on Long Island: No reason to resist tempeh-tation at Appropriate Foods. *Whole Life.* April. p. 63-64.
• ***Summary:*** Robert Werz and Shelley Martin, the owners, make 2,500 lb/week of tempeh and 150 gallons/week of soymilk. They also distribute some 200 other purely vegetarian and kosher products.

1901. Ho, Coy Choke. 1986. Identity and characteristics of *Neurospora intermedia* responsible for *oncom* fermentation in Indonesia. *Food Microbiology* 3(2):115-32. April. [25 ref]
• ***Summary:*** Seventy-one *Neurospora* cultures were isolated from *Oncom tahu* [okara onchom] based on soybean residues [okara] the in Jakarta-Bogor and from Onchom based on peanut presscake in the Lembang-Bandung regions of West Java. Tests for meiotic sterility of hybrids showed the onchom cultures to be *Neurospora intermedia* Tai and not *N. sitophila* as previously assumed and reported.

First presented at the IFS-UNU workshop on 'Development of indigenous fermented foods and food technology in Africa." Held 14-18 Oct. 1985 at Douala, Cameroon.

"Went (1901), based on asexual hyphal and conidial characteristics, named the *oncom* fungus as *Monilia sitophila* (Mont.) Sacc. Shear and Dodge (1927) discovered the sexual ascospore state of *Monilia* and thus named it as a new genus, *Neurospora.* Furthermore, the old *Monilia sitophila* was not a monospecific species but can be divided into four species namely, *Neurospora crassa, N. erythraea, N. sitophila* and *N. tetrasperma.*

"Since the classical investigations of Went, there have been little detailed studies on the *oncom* fungus and it has appeared erroneously as *N. sitophila* in current literature (Dwidjoseputro 1961). This paper describes the traditional process of *oncom* fermentation and the isolation of the responsible *Neurospora* from *oncom* from numerous sites in West Java." Address: Dep. of Genetics and Cellular Biology, Univ. of Malaya, Kuala Lumpur, Malaysia.

1902. **Product Name:** [Tempeh].
Manufacturer's Name: Les Sept Marches.
Manufacturer's Address: Les Creusettes, Poisy, 74330 La Balme de Sillingy, France. Phone: 50.22.13.45.
Date of Introduction: 1986. April.
New Product–Documentation: Le Compas. 1986. March-April. p. 32.

1903. Maeda, Toshiie. 1986. Miso no furusato [The homeland of miso]. Tokyo: Kokon Shoin. 258 p. April. Illust. 20 cm. [124 ref. Jap]
• ***Summary:*** Contents. 1. The homeland of miso: The birthplace of miso. Cultural factors that gave birth to miso. 2. The paths of dissemination of miso: Southern and northern paths in China. The arrival of miso in Japan and its spread there. History of miso in Japan. 3. The taste and nutritional value of miso: Theories of change in miso. Miso in our lifestyle. 4. Miso as a commercial product: The movement of miso from producer to consumer. The price of miso. Future prospects for miso culture. Present status of changes in miso culture. Explore these new miso products from the principles of changes in miso culture. Proposal for the future of miso culture.

This creative book discusses miso's history, the present status of the Japanese miso industry, the future of miso in the westernized Japanese diet, and the fact that the use of

miso mainly in miso soup presents a big problem. The first solution to the problem is to use miso in thick ketchup-like sauces. The second is to return to the non-salted fermented foods such as Japanese natto, Nepalese kinema, Indonesian tempeh, and Chinese soy nuggets (shi), which are the ancestors of miso. He emphasizes tempeh, which he feels is a wonderful food that can be used in various ways, and is nutritious and healthy. He explains that tempeh is becoming popular in the USA and Europe, and concludes that tempeh alone can be used to start a food industry. Address: Sozosei Kaihatsu Kenkyusho Shusai.

1904. **Product Name:** [Marusan Tempeh & Shrimp Crackers].
Foreign Name: Marusan Tenpe Ebi Senbei.
Manufacturer's Name: Marusan-Ai Co., Ltd.
Manufacturer's Address: Aza-Arashita, 1 Jungi-cho, Okazaki city, Aichi prefecture 444-21, Japan.
Date of Introduction: 1986. April.
Ingredients: Potato powder, sweet potato powder, tempeh, shrimp, kombu (seaweed), shoyu (soy sauce).
Wt/Vol., Packaging, Price: Poly bag, with window.
How Stored: Shelf stable.
Nutrition: Per 100 gm: Moisture 4.4%, protein 6.5%, fat 0.9%, carbohydrates 83.5%, ash 4.7%, calories 368, calcium 193 mg, iron 2.9 mg.
New Product–Documentation: Label. 1986, undated. 4.5 by 9.5 inches. Red, dark brown, and orange on white. Contains 10 crackers.

1905. Sheikh, I.A.; Arshad, M.; Aslam, M.; Adil, Razia. 1986. Preparation and nutritional evaluation of weaning food based on wheat, rice and soybean (Soylac). *Pakistan J. of Scientific and Industrial Research* 29(2):151-54. April. [9 ref. Eng]
• ***Summary:*** Soylac (its brand name) is based on a blend of wheat, rice, and soybean flour (free of trypsin inhibitors), and fortified with essential vitamins and minerals. Of high nutritive value and conforming to the FAO/WHO/Protein Advisory Group's specifications for weaning foods, it contains 20% protein, costs less to make, and has better nutritive value than similar products named Protofex and Protolac. Address: PCSIR Labs., Karachi, Pakistan.

1906. Stahl, H.D.; Sims, R.J. 1986. Tempeh oil–Antioxidant(?).*J. of the American Oil Chemists' Society* 63(4):555-56. April. [10 ref]
• ***Summary:*** Previous workers have claimed that tempeh oil contains a potent fat antioxidant. These claims were based solely on measurements of peroxide value during accelerated storage of tempeh oil alone or as an additive to other unsaturated oils. Oxygen absorption rate measurements indicate that tempeh oil actually has weak prooxidant activity. Fermentation of soybeans to produce tempeh generates high levels of free fatty acids. FFA promote rapid decomposition of peroxides so that the levels in the oil never increase substantially during oxidation. Consequently, PV is a poor index of oxidation rate in oils which are high in FFA. Our experience with tempeh oil does not confirm earlier observations of its efficacy as an antioxidant. Address: General Foods Corp., Technical Center, White Plains, New York 10625.

1907. Usmani, Naseem F.; Noorani, Radia. 1986. Studies on soy bean tempeh. I. Optimization of factors affecting fermentation in commercial production of tempeh with respect to pilot plant studies. *Pakistan J. of Scientific and Industrial Research* 29(2):145-47. April. [4 ref]
• ***Summary:*** Stainless steel trays with a holding capacity of 25 kg and housed in a stainless steel chamber, were designed and fabricated for the commercial production of soybean tempeh. *Rhizopus oligosporus* was used for fermentation process and factors affecting pilot plant fermentation, i.e. fermentation time, humidity (RH), pH, temperature, and aeration were optimized 25-26 kg of good quality tempeh (16% protein, 66% moisture, 14% ash) was made from 15 kg of soybeans. Address: PCSIR Lab., Karachi, Pakistan.

1908. Usmani, Naseem F.; Noorani, Radia. 1986. Studies on soybean tempeh. II. Propagation and preservation of *Rhizopus oligosporus* spores for commercial production of tempeh from soybean. *Pakistan J. of Scientific and Industrial Research* 29(2):148-50. April. [9 ref. Eng]
• ***Summary:*** Spores were produced from a *Rhizopus oligosporus* NRRL 2710 culture and used for producing a sporulated mass by fermenting processed soybeans. The sporulated mass (with a viable count of 890,000,000/gm) was dried at 50-55ºC, packaged in polyethylene bags and stored at -4ºC. In tempeh production there was no appreciable difference in the fermentation process when processed soybeans were inoculated with tempeh (tempeh-to-tempeh method) or with the sporulated mass thawed for 30-40 minutes at room temperature (25-28ºC). The viability of the spores was not greatly reduced even after 15 months' storage. Address: PCSIR Labs., Karachi, Pakistan.

1909. *Toyo Shinpo* (*Soyfoods News*).1986. Kanai kôgyô de tenpe tsukuri. Nihon no shikô ni tekigô saseru [Making tempeh as a home industry. Making it suitable for Japanese tastes]. May 1. p. 3. [Jap]
• ***Summary:*** Contains three photos. Address: Kyoto, Japan.

1910. Kanasugi, Goro. 1986. Tenpe ryôri jisshû [Tempeh cooking class]. 2 p. May 15. Unpublished manuscript. [Jap]
• ***Summary:*** Ten tempeh recipes were presented in this cooking class which was held at the Omiya Chûbu Public Hall on 15 May 1986 and narrated by Mr. Goro Kanasugi. The class was broadcast by NHK television on 28 May 1986.

Address: Japan.

1911. *Soybean Update.*1986. Southeast Asia's appetite for soy foods is growing. May 19.
• ***Summary:*** Susani Karta, nutritionist with the American Soybean Assoc. in Singapore, links interest in nutrition and traditional food. In 1984 Thailand consumed 65,000 tonnes of beans; In 1986 this increased to 100,000. Indonesia uses about 1 million tonnes for traditional soyfoods, such as tofu and tempeh. A company there is developing a new soy ice cream.

1912. *Toyo Shinpo* (*Soyfoods News*).1986. Tenpe ryôri no tokuchô reiji. Torigoe Goorudo. Torigoe Seifun ga PR [They demonstrate the special characteristics of tempeh cookery. Torigoe Flour Milling Co. does PR for its Tempeh Gold, with recipes]. May 21. p. 9. [Jap; eng+]
• ***Summary:*** Recipes include Gojiru, Takikomi Gohan, Tempeh Hamburger, Potato Croquettes, Kakiage, Banana Doughnuts. Address: Kyoto, Japan.

1913. Business Trend Analysts, Inc. 1986. The health and natural food market. 2171 Jericho Turnpike, Commack, NY 11725.
• ***Summary:*** Section VII is titled "The Market for Soyfoods." It is a combination of material taken without permission from Shurtleff & Aoyagi's *Soymilk Industry and Market* (especially the overview on page 96) and little bits and pieces for various sources that fail to give an accurate picture of this market. The report repeatedly speaks of the "soyfoods market" without defining which product types it is including. Part of the information is said to be based on "A special survey of 5,000 households, providing up-to-date information on changing consumer attitudes and buying patterns with respect to soyfood products." The results of this survey include consumption levels by household income, type of retail outlet, geographic region, race, age and presence of children. They project manufacturers' sales of soyfoods to be $499.5 million in 1995, assuming a compound annual growth rate of 15.3% from 1985 to 1995. Generally a disappointing study, especially for the price. Address: Commack, New York.

1914. Miller, Susan. 1986. Tempted by tempeh: This Indonesian specialty tantalizes Western palates. *East West.* May. p. 18-19. [1 ref]
• ***Summary:*** A good introduction to tempeh. The article starts: "Fragrant, delicious, and versatile, tempeh (pronounced TEM-pay) has become one of the most important protein foods in America's move toward a meatless, natural, and nourishing diet. It joins such notables as camembert, Brie, and Roquefort cheeses, classic Japanese misos, and naturally brewed soy sauce in the panoply of mold-cultured foods that have found acceptance in an evolving American cuisine."

It concludes: *"The Book of Tempeh* contains many recipes, as well as detailed instructions for making tempeh at home and sources of tempeh starter.

"Whether you make your own or purchase it from a natural foods store, tempeh is sure to become a favorite in your household. As you come to know its qualities of versatility and convenience, you may even begin to find it indispensible." Address: Freelance writer, New York City.

1915. Okano, Tadashi. 1986. "Shoku" no tanken ryokô. Otona no tame no esniku ryôri [A trip to explore food and eating. Ethnic cookery for adults]. *Signature* (*Japan*). May. p. 28-32. [Jap]
• ***Summary:*** Tempeh (*Tenpei*) is discussed on p. 32. A photo shows a plate of tempeh chips.

1916. Perez, Oswaldo. 1986. La soya en la alimentacion humana [Soya in human nutrition]. *La Era Agricola* (*Merida, Venezuela*) No. 0. May. p. 14-15. [1 ref. Spa]
• ***Summary:*** Shows how soya makes most efficient use of the earth's ability to produce protein. Address: Granja Tierra Nueva, Aldea San Luis, La Azulita, C.P. 5102, Estado Merida, Venezuela.

1917. Bailey, Simon. 1986. Notes on soya in Trinidad & Tobago. Upper Santa Cruz, Trinidad, W.I. 2 p. June 1. Unpublished typescript.
• ***Summary:*** "Soyabeans do not have a long history here. It is not clear whether any of the indentured Chinese immigrants coming to Trinidad about 150 years ago brought any soya with them and there is certainly now no evidence of cultivation on any considerable scale by the Chinese community."

There seem to have been two soyabean experiments by the Ministry of Agriculture. The first [in 1913] failed from poor management. The second, "initiated and originally funded by the Government of West Germany, included variety trials at the Chaguaramas Agricultural Development Project (ADP) and has resulted in the annual maintenance of germplasm for the varieties Pelican Improved & Jupiter. The seed has been grown for about ten years using a mechanised methods with a yield much lower than US averages. The ADP produced a recipe booklet in 1977 encouraging the use of soya by Trinidadians and incorporating soyafoods in recipes with a local flavour. The recipes rely mainly on the use of boiled (or pressure-cooked) soyabeans. There does not seem to have been any investigation by the ministry into the use of traditional soyafoods (e.g. tofu, tempeh etc).

"Sales of soyabean seed to farmers from this source have been slight. Small amounts may have been purchased out of curiosity & for backyard use and user response is not effectively monitored. In the last few years there have been some demand from consumers for beans surplus to ADP's

requirements although ADP's brief is to produce seed for farmers. There are signs that, since the failure of the 85-86 crop due to poor storage and low germination of seed, the ADP project may be abandoned altogether unless a policy decision is taken to reactivate it.

"At the same time an oil extraction plant is being constructed by National Flour Mills, a government subsidiary, on the Port of Spain waterfront to handle cargos of imported soyabeans for production of cooking oil & secondary products; the presscake to be used for livestock feeds, replacing existing imports of defatted soya.

"In the marketplace we can find soya/beef burgers, dehydrated soya chunks, fortified powdered "Soyamel", some surrogate boxed and canned soyafoods (imported by Seventh Day Adventists) and the raw beans themselves. Susan Lee Hem has sold tofu on a small scale until recently, but at present all of her tofu production is going into pastelles, a steamed, corndough-wrapped local snack food. I am catering with, and selling, tempeh also on a small scale. The levels for acceptance for soya and vegetarian food in T&T are high, due partly to the dietary codes of Hindus, Adventists & Rastafarians and it is out of these groups that the majority of "health food" businesses have been formed." Address: c/o Valdez, 21 Sun Valley Dr., La Pastora, Upper Santa Cruz, Trinidad, West Indies.

1918. *Toyo Shinpo* (*Soyfoods News*).1986. Tenpe kaihatsu no jigyô. Zen Nôren. Gyôkai no takakuka to kasseika e [Tempeh project development report from Japan Natto Association. To make the industry more versatile and active. Second generation products are hoped for]. June 21. p. 9. [Jap; eng+]
• ***Summary:*** The techniques of making tempeh are already well established. The water content and cracking/dehulling the beans are the two key subjects. This report was presented to Japan's Department of Agriculture (*Nosuisho*) in April 1985 by the Japan Natto Assoc. The total budget was 18.1 million yen ($80,000). The project was done at Takashin Shokuhin Ltd. in Tokyo. Members of the research project were Goro KANASUGI and Haruo NITTA (President of Teito Shokuhin KK), Mitsuaki YAMANAKA (Head of Takashin Research Lab.). Head researcher was Makio TAKATO (President, Takashin). Address: Kyoto, Japan.

1919. Kislingbury, Graham. 1986. Tempeh. It's a soy food rich in protein and vitamin B-12, but most people have never heard of it. *Democrat-Herald* (*Albany, Oregon*). June 24. [1 ref]
• ***Summary:*** Janet Foudray, a Corvallis resident, and her husband Larry Klein own a small business named Food-Ray Tempeh that makes and markets tempeh in Corvallis. Foudray distributes her tempeh to First Alternative C-op in Corvallis, which also carries Surata Tempeh from Eugene, Oregon. Surata also distributes to Waremart in Corvallis.

Foudray's first exposure to tempeh was in 1975 through The Farm, a self-sufficient spiritual and farming community in Summertown, Tennessee. She started making her own tempeh nine years ago in South Dakota, her home state.

She moved to Corvallis seven years ago to study nutrition and dietetics at Oregon State University; she received her bachelor's degree last year.

She continued to make tempeh, and two years ago decided to go into business when the co-op agreed to carry her tempeh. She makes the tempeh in a state-licensed kitchen in her Corvallis home.

A photo shows Janet and her husband, standing by a barbecue. She is holding a bag of tempeh and a plate of tempeh shish kebab. He is holding a spatula above four cakes of tempeh on the grill. Address: Democrat-Herald Writer, Oregon.

1920. **Product Name:** Bean Supreme Tempeh.
Manufacturer's Name: Bean Supreme Ltd.
Manufacturer's Address: P.O. Box 78-084, Grey Lynn, Auckland, New Zealand.
Date of Introduction: 1986. June.
Ingredients: Whole soybeans, water, Rhizopus culture.
Wt/Vol., Packaging, Price: 300 gm poly bag, vacuum packed.
How Stored: Refrigerated.
New Product–Documentation: Label. 1986, undated. 6 by 8 inches. Orange and brown. "High protein. Cholesterol and lactose free." Form filled out by Trevor Johnston, Marketing Director. 1989. April. This product was introduced in June 1985. They now make 800 lb/month. Label. 1989. 3.75 by 4.5 inches. Blue and white. Self adhesive on seam-sealing plastic bag. "High protein. No cholesterol. Rich in B-12. Keep refrigerated. Slice and fry. Bake or steam. (Black spores on surface are normal and beneficial to the flavor and quality)."

1921. Belleme, Jan; Belleme, John. 1986. Cooking with Japanese foods: A guide to the traditional natural foods of Japan. East West Health Books, 17 Station St., Brookline, MA 02146. xi + 220 p. Illust. Index. 25 cm. [45 ref]
• ***Summary:*** A good study from a macrobiotic viewpoint, with more than 200 macrobiotic recipes. The authors studied in Japan and speak Japanese. Contents: Foreword. Acknowledgements. Introduction. Fermented Foods: miso, shoyu, tamari, brown rice vinegar, sake, mirin, koji, amazake, pickles, umeboshi, ume su, medicinal teas, ume extract, bonito flakes, natto. Noodles: cooking noodles, udon, soba, somen, clear noodles. Grains, incl. rice, mochi, seitan, fu gluten cakes, hato mugi [*hatomugi*] (Job's tears), rice syrup, rice bran. Vegetables: shiitake, daikon, Hokkaido pumpkin, Chinese cabbage, burdock, jinenjo, lotus root. Sea vegetables: kombu, nori, wakame, hijiki and arame, kanten (agar). Beans: azuki beans, black soybeans, tofu. Condiments: kuzu, dark (toasted) sesame oil, goma (sesame

seeds), tekka, shiso momiji (shiso leaf condiment), wasabi. Teas. Cooking utensils. Appendix: Composing meals, pronunciation guide, suppliers. Bibliography.

Amazake (p. 39-45). Contains a ½ page description plus good instructions for making basic amazake (thick "pudding" and thinner beverage), both from glutinous ("sweet") rice. Also recipes for Vanilla Amazake Pudding, Amazake Cream Puffs, Neapolitan Parfait, Carob Amazake Brownies, Bob's Coconut Amazake Macaroons, Amazake Bread (yeasted), and Unyeasted Amazake Bread. Perhaps the most lengthy information on amazake available in English up to this time.

Hato mugi ("Job's tears," p. 93) "resembles barley, but it is actually a member of the rice family. An easily digestible whole grain with only the tough outer husk removed, hato mugi contains less vitamin B-1 than brown rice but approximately twice as much protein, iron, vitamin B-2, fat, and slightly more calcium." It has long been used in China and Japan as a medicinal food, "for strengthening the stomach, purifying the blood, and restoring health. Since it is so effective in helping the body to discharge toxins, people who are sick and weak, and women who are pregnant, nursing a baby, or menstruating should eat it sparingly." Address: Rutherfordton, North Carolina.

1922. **Product Name:** Megaspore Tempeh Starter.
Manufacturer's Name: Cultured Products.
Manufacturer's Address: 1418 N.W. 179th Street, Ridgefield, WA 98642-9690.
Date of Introduction: 1986. June.
New Product–Documentation: Leaflet. 1986. June. Aug. 1986. New Address: 5916 N.W. 179th St., Ridgefield, Washington 98642-9682. Phone: 206-574-4707.

1923. **Product Name:** Food-Ray Tempeh.
Manufacturer's Name: Food-Ray Tempeh Co?
Manufacturer's Address: Corvallis, Oregon.
Date of Introduction: 1986. June.
New Product–Documentation: Kislingbury. 1986. Democrat-Herald (Albany, Oregon). June 24.

1924. **Product Name:** Curry Tempeh Pies.
Manufacturer's Name: Nectar Soy Products.
Manufacturer's Address: 57 Vincent St., Daylesford, VIC, 3460, Australia. Phone: 053-48-2051.
Date of Introduction: 1986. June.
New Product–Documentation: Letter (fax) from Ross Hamilton and Mike Manser. 1990. Sept. 13. This was the company's third product, introduced in June 1985 after the company had moved from Geelong to Daylesford in May 1985.

1925. Owen, Sri. 1986. Indonesian food and cookery. 2nd edition, revised and enlarged. Prospect Books, 45 Lamont Rd., London SW10 0HU. 268 p. First edition was 1976. Illust. by Thao Soun. Index. 23 cm. [20 ref]
• ***Summary:*** In the chapter titled "Essential ingredients" are sections on "Kecap or soya sauce" (p. 42-43) and tauco (p. 44). Also contains a chapter titled "Tahu and tempeh" (p. 216-28) with good information and recipes on tofu and tempeh. Address: Mustika Rasa, 96 High St., Wimbledon Village, London SW19 5EG. Phone: 01-946-7649.

1926. **Product Name:** [Soy Tempeh, Marinated and Vacuum Packed].
Foreign Name: Soj-Tempeh.
Manufacturer's Name: Sojvita Produktions GmbH.
Manufacturer's Address: Hauptplatz 1, 2493 Lichtenwoerth, Austria. Phone: 02622/75494.
Date of Introduction: 1986. June.
Ingredients: Sojabohnen, Edelpilzkultur.
Wt/Vol., Packaging, Price: 300 gm vacuum pack.
How Stored: Refrigerated.
New Product–Documentation: Letter from Norbert Brunthaler. 1988. Jan. 4. Gives date of introduction as June 1986. Label. 1987. 3.5 by 3 inches. Dark green, light green, orange, and black on white. "Durch Edelpilzkultur fermentierte Sojabohnen, mariniert. Tempeh is a versatile food that is rich in protein and vitamin B-12. It is suited for frying (plain or with breaded batter) or cooking, or for use raw."

1927. Wadud, Surruya; Ara, Hussan; Kosar, Saida. 1986. Studies on the preparation of tempeh and tempeh kababs [kabobs]. *Pakistan J. of Scientific and Industrial Research* 29(3):222-26. June. [8 ref]
• ***Summary:*** Boiling soybeans for 30 minutes resulted in complete destruction of the trypsin inhibitor. After fermentation another type of trypsin inhibitor was released which was completely destroyed by boiling the fermented material for 20 minutes in water, or deep fat frying. Procedures are described for the preparation of tempeh and food preparations, i.e. simple tempeh (fried), salted tempeh (fried) and tempeh kabab. Address: PCSIR Lab., Karachi, Pakistan.

1928. Wilson, Abagail. 1986. Tempeh Works making money–but not a profit. *Recorder* (*Greenfield, Massachusetts*). July 18.
• ***Summary:*** Tempeh Works had sales of $550,000 in 1985 and Michael Cohen anticipates they will reach $650,000 in 1986. "The company's potential is proven but money is scarce. Cohen has been able to secure $325,000 in seven years in both state and federal loans. But while the money helped him buy property and move into a new facility, most of it could not be used to meet two critical needs of his business: marketing and working capital." He has found that money for R&D is impossible to find.

"The single financier who invested $50,000 in Tempeh

Works for a high-risk venture–Tofu Pups, a soybean hotdog with no cholesterol or nitrates–gave birth to a product that in one year has brought in 65 percent of the company's sales."

Cohen now plans to raise $500,000 through a public stock offering. Half that sum will go to marketing.

1929. *Toyo Shinpo* (*Soyfoods News*).1986. Okara ni tenpe kin [Making okara tempeh. Japan patent application No. 155,358 of 24 August 1983 by Susumu Oshikiri]. July 21. p. 15. [Jap; eng+]
Address: Kyoto, Japan.

1930. **Product Name:** Sesame-Wheat Tempeh (Sausage Shaped).
Manufacturer's Name: 21st Century Foods Inc.
Manufacturer's Address: 30A Germania St., Jamaica Plain, MA 02130. Phone: 617-522-7595.
Date of Introduction: 1986. July.
Ingredients: Organic soybeans, purified water, bulghur wheat, roasted sesame seeds, fresh Rhizopus culture.
Wt/Vol., Packaging, Price: 8 oz or 16 oz flat, or 8 oz roll.
How Stored: Refrigerated, 21 day shelf life.
Nutrition: Per 4 oz.: Calories 197, protein 23 gm, carbohydrate 15 gm, fat 5 gm, fiber 3.45%.
New Product–Documentation: Label. 1987. 6 by 8 inch plastic bag. Orange, blue, yellow, black, and white. "Whole food for a healthy world. Low calories. Low sodium. No cholesterol. No preservatives. What is Tempeh? (Lengthy description on back). Dark areas may occur on our tempeh, which indicates ripeness, and are normal on foods naturally cultured." Talk with Rudy Canale. 1988. Sept. 13. The invoice for printing the labels for this product is dated July 1986.

1931. American Soybean Association. 1986. Soya Bluebook '86. St. Louis, Missouri: American Soybean Assoc. 278 p. July. Index (bold face type indicates advertiser). 22 cm.
• ***Summary:*** Contents: Index of advertisers (p. 4). Soybeans: Your profit opportunity, by Dr. Kenneth L. Bader, CEO, ASA (p. 5). Organizations (by country, within each country alphabetically): For each gives the name, address, contact person, year founded, number of members, objectives and activities, publications. Countries are: USA, Australia, Austria, Bangladesh, Belgium, Brazil, Canada, England, Germany (Federal Republic of), Finland, France, Hungary, India, Indonesia, Italy, Ivory Coast, Japan, Malaysia, Mexico, Netherlands, Norway, Philippines, Portugal, Senegal, Spain, Sweden, Taiwan, Turkey, Yugoslavia, Zaire, Zimbabwe. U.S. agricultural education, research & extension (by state; mainly state agricultural / land-grant colleges), ASA international offices and world regions (colored world map and photo of each country director), government trading agencies.

Soy directory: Oil extraction plants / refineries (alphabetically by state in USA, then by country), soyfoods / edible soy products manufacturers (lecithin, soy flour, soy grits, soy protein concentrates & isolates, textured soy protein, binders, extenders, simulated meat products, soy oil products {margarine, shortening, cooking / salad oil, salad dressings}, soyfoods–beverages [soymilk], frozen desserts, soy sauce, tempeh, tofu, whole soybean snacks {soynuts}, other soy-based foods), within each product by country, producers of soy products for industrial manufacturers (by products, etc.): Industrial lecithin, industrial soy flour / soy protein, industrial soy oil, soy sterols and tocopherols, soybean fatty acids.

Soybean manufacturing support industries: Manufacturing equipment & supplies, soybean processing equipment & supplies, manufacturing services. Marketing and auxiliary services: Brokers, financial services, forwarding agents, marketing consultants, trading companies, transportation, warehousing–export / import.

Soy statistics (tables & graphs): Soya conversions [weights & measures], metric conversions, temperature conversions. U.S. soybean planting and harvesting dates (by state). U.S. soybean acreage, yield and production, 1925–1985 (by year). U.S. soybean planted acreage by state (1970–1985). U.S. soybean harvested acreage by state (1970–1985). U.S. soybean yield by state (1970–1985). U.S. soybean production by state (1970–1985). U.S. soybean production major crops (1920–1985): One graph each for soybeans, corn, wheat, and cotton. U.S. harvested acreage of major crops (1920–1985): One graph each for the big 4. U.S. yield per acre of major crops (1920–1985): One graph each for the big 4. Argentine soybean area, yield and production by province (1975-1986). Brazilian soybean area, yield and production by province (1975-1986). Canadian soybean production: Acreage, yield, production, farm price and value (1950-51–1984-85). Canadian soybean production and utilization (1950-1984, year beginning Aug. 1): Production, imports, supplies, exports of beans, processed for oil and meal, soy oil produced, soybean oilcake produced. World soybean production: Area and production in specified countries and the world total (1980/81–1985/86). Soybean production by major countries (one graph, 1925-1985): U.S., Brazil, PRC [China], Argentina. Share of world soybean production [percentage] by major countries (one graph, 1925-1985): Big 4. Soybean acreage by major countries (one graph, 1925-1985): Big 4. Share of world soybean acreage [percentage] by major countries (one graph, 1925-1985): Big 4. U.S. soybeans: Supply, disposition, acreage, yield and price (1970–1986). Soybean usage in the U.S. for crush and exports (one graph, 1925-1985, million bushels). U.S. soybean exports: Percent of total usage (one graph, 1925-1985). Argentine soybeans and products (oil and meal): Supply and disposition (1975/76–1986/87). Brazilian soybeans and products (oil and meal): Supply and disposition (1975/76–1986/87). Prices of U.S. soybeans, No. 1 yellow:

Average price per bushel, Illinois country shipping points (by year and month, 1950–1984, dollars). Prices of U.S. soybeans received by farmers: Average price per bushel (by year and month, 1950–1984, dollars). U.S. soybean price support operations (1945-1985, incl. CCC). U.S. soybean crop value: U.S. and major producing states (1925-1985): Illinois, Iowa, Indiana, Ohio, Missouri, Minnesota, Arkansas. Fold-out color map of U.S. soybean acreage by county. U.S. farm marketings of soybeans: Percent of open market farm sales by month (1975/76–1984/85). Map of U.S. soybean processing plants. Value of U.S. soybean products per bushel and crush margin (1950-1984): Soy oil, soybean meal, soybean price (received by farmers, No. 1 yellow Illinois), margin (ditto). U.S. soybean meal: Prices paid by farmers–44% protein, dollars per 100 lbs, by year and month (1950-1984). U.S. soybean meal: Average wholesale price–44% protein, dollars per ton, bulk Decatur, Illinois, by year and month (1950–1984). U.S. soybean meal: Beginning stocks, production, exports and domestic disappearance, by year and month, thousand short tons (1978/79–1984/85). U.S. soybean cake and meals: Supply, disposition and price (1977-1985): Soybean, cottonseed, linseed, peanut. Major world protein meals: Supply and utilization (1981/82–1985/86; Production, exports, imports, consumption, ending stocks): Soybean, cottonseed, rapeseed, sunflowerseed, fish, peanut, copra, linseed, palm kernel. World major oilseeds: Supply and utilization (1981/82–1985/86). World major vegetable and marine oils: Supply and utilization (1981/82–1985/86). Prices of U.S. soybean oil: Soy oil, domestic crude, average cents per pound in tank cars at Midwestern mills, by year and month (1950/51–1984/85). U.S. soybean utilization, by year (1960-1984): Food–Shortening, margarine, cooking and salad oils, other edible, total. Nonfood–Paint and varnish, resins and plastics, fatty acids, other inedible (incl. soap), total. Total domestic utilization. U.S. soybean oil value as percent of total soybean value (1930–1985). Note: Peaked at about 55% in 1930, fell to about 32% in 1980-81. U.S. soybean oil: Supply, disposition and price (1960-1985). U.S. edible fats and oils: Supply and disappearance (1978-1985): Coconut, corn, cottonseed, lard, palm, peanut, soybean, sunflower, tallow (edible). U.S. exports of soybeans, by year and month (1953–1984). U.S. soybean exports by port and country of destination (Sept. 1984–Aug. 1985): Ports are–St. Lawrence Seaway, Lakes, Atlantic, Gulf (by far the largest), Pacific, Interior. U.S. exports: Soybeans–Volume of exports by country of destination (in metric tons) and total value (1981–1985). U.S. exports: Soybean oil–Volume of exports by country of destination (in metric tons) and total value (1981–1985). U.S. exports: Soybean oilseed cake and meal–Volume of exports by country of destination (in metric tons) and total value (1981–1985). Map of U.S. soybean exports by port areas: Sept. 1984–Aug. 1985 (1,000 bushels). U.S. exports of soybean, cottonseed and sunflowerseed oils: U.S. commercial and P.L. 480 exports–Volume of exports by region and country of destination (in metric tons) and total value (1979/80–1984/85; year beginning in October). U.S. exports: Soybean oil–P.L. 480, Title I and III, volume (in metric tons) and value (in $1,000) by country of destination (FY 1981–1985). U.S. exports of soybean and cottonseed oils: U.S. commercial and P.L. 480 exports (1950–1984, million lbs; incl. P.L. 480 as a percentage of the whole). Brazilian exports of soybeans and products to major countries (1,000 metric tons; 1976-1984). Graph of soybean & product exports by major countries (U.S., Brazil, Argentina) (soybean equivalent; 1970-1985). Graph of world share of soybean & product exports by major countries (U.S., Brazil, Argentina) (1970-1985). Note: U.S. share has fallen from 95% in 1970 to about 50% in 1984.

Glossary: General terms, soy protein terms. Standards & specifications: NSPA, Association of American Feed Control Officials (AAFCO), USDA (definitions and grades). Index. Address: P.O. Box 27300, St. Louis, Missouri 63141.

1932. Bean Supreme Soyfoods. 1986. Price list. P.O. Box 78 084, 1 Wallingford St., Grey Lynn, Auckland, New Zealand. • ***Summary:*** The company makes Tofu, Tempeh, Cottage Spread, Soymilk, Soysage, and Non-Dairy Frozen Dessert. Address: Grey Lynn, Auckland, New Zealand.

1933. Bean Supreme Soyfoods. 1986. Tofu (Leaflet). Box 78-084, Grey Lynn, Auckland 1, New Zealand. 3 panels each side. Front and back. Each panel 21 x 10 cm. Undated. • ***Summary:*** Printed with purple ink on beige paper. On the front panel, below the large, bold letters "Tofu," is written (on a purple background): "High protein. No cholesterol. Low fat. Low calorie. Ingredients: Soybeans, water, natural coagulant (nigari). No preservatives. The bottom half of panel 1 is about "Bean Supreme tofu." Panel 2 contents: Nutritional content. Low fat and cholesterol. Weight watchers. Vitamins and minerals. Storage. Let's eat... There are 11 recipes, starting with Chili con tofu, accompanied small illustrations from *The Book of Tofu,* by Shurtleff & Aoyagi. After the last recipe: "Bean Supreme Soyfoods: manufacturers of Tofu / Tofu Cottage Spreads, Tempeh–Fermented Soybean Cake. Below that is an order form for 4 books on tofu and tempeh. Address: Auckland, New Zealand.

1934. Cox, Peter. 1986. Why you don't need meat. Thorson's Publishing Group, Wellingborough, England. 240 p. July. * • ***Summary:*** A convincing, health oriented popularization of the case against meat. Tofu, tempeh, and tamari are mentioned in the nutritional tables. Cox, who was the first chief executive of the Vegetarian Society of the United Kingdom, is very familiar with both the scientific and popular literature on the subject.

Thorsons states in an ad: "There is mounting scientific proof that the meat we eat today actually *causes* heart

disease, cancer, obesity and other degenerative diseases. The author exposes the black market in animal growth hormones, looks at the unregulated use of antibiotics in animal feed, and shows why a meat-oriented diet can actually be nutritionally deficient."

Note: According to Vegetarian Times (Sept. 1987, p. 35), this book "has become a best seller in the U.K. and was selected by the Booksellers' Association of Great Britain as 'best paperback non-fiction campaign.'" See this issue of VT for more on Cox, Chrissie Hynde, and Reprieve! Address: England.

1935. Iwashina, Susumu. 1986. Tenpe kakô shokuhin e no kitai [Expectations for second generation tempeh products]. *Daizu Geppo* (*Soybean Monthly News*). July. p. 18-24. [Jap] Address: Nôgaku Hakase, Meiji Seika K.K. Torishimari-yaku Kaihatsu Bucho.

1936. **Product Name:** Fresh Organic Tempeh.
Manufacturer's Name: Nutrisoy Pty. Ltd.
Manufacturer's Address: 255 Forest Road, Arncliffe 2205, NSW, Australia.
Date of Introduction: 1986. July.
Ingredients: Organic soybeans, water, cider vinegar, and culture (*Rhizopus oligosporus*).
Wt/Vol., Packaging, Price: 250 gm in plastic bag.
How Stored: Refrigerated.
New Product–Documentation: Label with date sent by Tony Wondal of Nutrisoy. 2005. April 26. He started making and selling this product in July 1986. Brown, red and white on yellow. Front panel: "No cholesterol. Source of protein and vitamin B12. Complete protein food. Excellent meat substitute. Fry, bake, grill or steam for a quick and easy meal. Fitness food. Bermutu Tinggi."

1937. Okada, Noriyuki. 1986. Tenpe bisei-butsu-gaku no shinpo. I. [Microbiology of tempeh. I.]. *Nippon Jozo Kyokai Zasshi* (*J. of the Brewing Society of Japan*) 81(7):464-69. [Jap]
Address: National Food Research Inst. (Shokuhin Sogo Kenkyujo), Kannon-dai 2-1-2, Yatabe-machi, Tsukuba-gun, Ibaraki-ken 305, Japan.

1938. **Product Name:** Tempeh.
Manufacturer's Name: POLBAR (POL-BAR) Food Products.
Manufacturer's Address: P.O. Box 23234, 91231 Jerusalem, Israel. Phone: 972-2-862566.
Date of Introduction: 1986. July.
Ingredients: Soybeans, apple cider vinegar, Rhizopus starter.
Wt/Vol., Packaging, Price: 250 gm.
How Stored: Frozen.
New Product–Documentation: Letter from Roxana Dann. 1986. June 22. They are starting small scale production of tempeh and hope to soon reach production of 200 lb/week. "As there is no one else in Israel currently producing tempeh, we hope to be able to greatly increase production as we reach more of the population." Address: Ramot 20/25, 97725 Jerusalem.

Letter from Roxana Dann. 1988. May 25. "We have been producing tempeh for almost 2 years... We have now reached the stage where we are hoping to scale up the business into a viable enterprise."

Label in letter from Roxana Dann. 1988. May 25. 6.5 by 4.25 inches. Black on blue. In both English and Hebrew. "No cholesterol. No salt. No Kosher-Pareve." "We have been producing tempeh for almost 2 years." Leaflet in English and Hebrew. "A winning formula: Soybeans + fermentation = Good nutrition. Complete protein. No cholesterol. Low fat. Low calories. Easily digested. Vitamin B-12. Easy preparation. Rich in minerals."

1939. Shurtleff, William; Aoyagi, Akiko. 1986. Tempeh production: A craft and technical manual. Lafayette, California: Soyfoods Center. 176 p. Illust. by Akiko Aoyagi Shurtleff. Index. July. 28 cm. [28 ref]
• ***Summary:*** The table of contents of this edition is the same as that of the original 1980 edition. Major changes have been made in the ads at the back of the book and small changes in several other parts of the book.

Print history: Pre-publication: 100 photocopy copies. 1980 March 15: 1,021 paperback and 150 hardcover. 1986 July: 330 paperback. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1940. Katoh, Kiyoaki. 1986. Tenpe no shôraisei wa? Tônyû ni tsugu kenkô shokuhin dai-2 dan ni [What is the future of tempeh (in Japan)? The number two health food after soymilk]. *Toyo Shinpo* (*Soyfoods News*). Aug. 21. p. 6. [1 ref. Jap; eng+]
• ***Summary:*** He cannot imagine how tempeh will be accepted by the Japanese. Address: National Food Research Inst. (Shokuhin Sogo Kenkyujo), Kannon-dai 2-1-2, Yatabe-machi, Tsukuba-gun, Ibaraki-ken 305, Japan.

1941. Ho, C.C.; Ten, S.K.; Chuah, B.H.; Lee, G.S.; Kok, C.H.; Chen, Y.F. 1986. Microbiology of traditional fermented food in Malaysia and surrounding countries. In: V.H. Potty, et al. eds. 1986. Traditional Foods: Some Products and Technologies. 292 p. See p. 134-35. Aug. Presented at the UN University Workshop on "Traditional Food Technologies: Their Development and Integrated Utilisation with Emerging Technologies." Held June 1983 at CFTRI, Mysore, India.
• ***Summary:*** "Soy sauce, tempeh, ontjom, tapai and ubi are the fermented foods on which laboratory studies and extensive field work have been carried out in Malaysia.

Tempeh and tapai are traditional fermented foods of Malaya and also the Indonesians. Soy sauce manufacture is the largest fermentation industry in Malaysia, technology for which was introduced by the Chinese...

"Offensive odour development in the fermentation process results in spoilage of tempeh and tapai. *Bacillus subtilis* causes this problem. A strain of *B. subtilis* (H4052) has been isolated. It has been found that it inhibits the growth of *Rhizopus oligosporus* and *R. oryzae* through the likely production of antimycotic antibiotics." Address: Univ. of Malaya, Kuala Lumpur, Malaysia.

1942. **Product Name:** Tempeh Burger.
Manufacturer's Name: Nutrisoy Pty. Ltd.
Manufacturer's Address: 255 Forest Road, Arncliffe 2205, NSW, Australia.
Date of Introduction: 1986. August.
Ingredients: Organic soybeans, water, soy sauce, sunflower oil, cider vinegar, spices, herbs, and culture (*Rhizopus oligosporus*). "Black spots are normal sporulation and do not indicate spoilage."
Wt/Vol., Packaging, Price: 200 gm in plastic bag.
How Stored: Refrigerated.
New Product–Documentation: Label with date sent by Tony Wondal of Nutrisoy. 2005. April 26. He started making and selling this product in Aug. 1986. Orange, green, yellow, black and white on red. "Sandwich filling. Ready to serve, hot or cold."

1943. Okada, Noriyuki. 1986. Tenpe bisei-butsu-gaku no shinpo. II. [Microbiology of tempeh. II.]. *Nippon Jozo Kyokai Zasshi* (*J. of the Brewing Society of Japan*) 81(8):526-30. [46 ref. Jap]
Address: National Food Research Inst. (Shokuhin Sogo Kenkyujo), Kannon-dai 2-1-2, Yatabe-machi, Tsukuba-gun, Ibaraki-ken 305, Japan.

1944. Potty, V.H.; Shankar, J.V.; Ranganath, K.A.; et al. eds. 1986. Traditional foods: Some products and technologies. Mysore, India: Central Food Technological Research Inst. (CFTRI). 292 p. Aug. Papers presented at the UN University Workshop on "Traditional Food Technologies: Their Development and Integrated Utilisation with Emerging Technologies" held June 1983 at CFTRI, Mysore. 25 cm.
• ***Summary:*** This publication contains 27 papers presented by scientists from countries of Asia, Africa, Europe, and the Americas. Chapters related to soy are cited separately. The traditional foods of the following countries are discussed specifically: Ethiopia, Nigeria*, Sudan, Senegal, Pakistan*, India, Nepal*, Burma*, Thailand*, Malaysia*, Indonesia*, Philippines, Korea*, China*, Japan*, and Mexico*. Countries with foods related to soy are followed by an asterisk (*). Address: Central Food Technological Research Inst. (CFTRI), Mysore–570 013, India.

1945. Shah, F.H. 1986. Fermented foods of Pakistan. In: V.H. Potty, et al. eds. 1986. Traditional Foods: Some Products and Technologies. 292 p. See p. 44-48. Aug. Presented at the UN University Workshop on "Traditional Food Technologies: Their Development and Integrated Utilisation with Emerging Technologies." Held June 1983 at CFTRI, Mysore, India. [7 ref]
• ***Summary:*** In the section titled "Fermented foods from different raw materials," the subsection on Legumes states that "Soybean meal, left after extraction of oil, can be used for producing a variety of foodstuffs," including soy yogurt, soy-cheese (tofu, apparently fermented), and tempeh.

Concerning "Soy-cheese: Cheese produced from soybeans has cream white colour, delicate flavour, pleasant taste and texture. It is a low-cost high quality protein, free from cholesterol and with minimum amount of saturated fats." Address: Food Technology and Fermentation Div., PCSIR Laboratories, Lahore, Pakistan.

1946. Shurtleff, William. 1986. Safety of fermented foods (Letter to the editor). *Vegetarian Times.* Aug. p. 4.
• ***Summary:*** "I am concerned about the safely of eating tempeh and other fermented products. Rumor has it that these molds are potential carcinogens, but no one I know can cite the source of the data claiming it's dangerous. Please address this issue.–Nancy Lampka Simpson, Amherst, New York 14226.

"Editors Note: Bill Shurtleff, director of The Soyfoods Center and author of *The Book of Tempeh* writes this response:

"'The Soyfoods Center has the world's largest computerized database of information about soyfoods, listing more then 13,700 publications. Of these, 590 are about tempeh. Not one of these publications even suggests a possible link between soy tempeh or the tempeh molds (*Rhizopus* species) and cancer

"'It has been well known since the early 1960s that several of the *Aspergillus* molds (especially *Aspergillus flavus*) produce aflatoxins, which are potent carcinogens. There are numerous reports in the literature of aflatoxins being produced on poorly handled peanuts, especially in tropical countries. A fermented peanut product from Indonesia called *onchom* has been shown, in some cases, to contain aflatoxins.

"'Because the molds used to produce soy sauce and miso (*Aspergillus oryzae* and *A. soyae*) are of the same genus as *Aspergillus flavus,* a tremendous amount of research has been conducted worldwide over the past 20 years to see if aflatoxins are produced in soy sauce or miso. A vast body of literature shows that not in a single instance have aflatoxins been found in any commercial product.

"'In conclusion, thousands of years of daily use and many decades of testing by microbiologists have shown

fermented soyfoods to be completely safe.'" Address: Director, The Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

1947. Steinkraus, Keith H. 1986. Industrialization of indigenous fermented food fermentations. In: V.H. Potty, et al. eds. 1986. Traditional Foods: Some Products and Technologies. 292 p. See p. 232-45. Aug. Presented at the UN University Workshop on "Traditional Food Technologies: Their Development and Integrated Utilisation with Emerging Technologies." Held June 1983 at CFTRI, Mysore, India. [52* ref]
• ***Summary:*** Includes discussions of shoyu, miso, tempeh, koji, and meat analogs. Address: Inst. of Food Science, Cornell Univ., Geneva/Ithaca, New York.

1948. Winarno, F.G. 1986. Traditional technologies of Indonesia with special attention to fermented foods. In: V.H. Potty, et al. eds. 1986. Traditional Foods: Some Products and Technologies. 292 p. See p. 136-47. Aug. Presented at the UN University Workshop on "Traditional Food Technologies: Their Development and Integrated Utilisation with Emerging Technologies." Held June 1983 at CFTRI, Mysore, India. [24 ref]
• ***Summary:*** Contents: Introduction. Tempe. Oncom. Tauco and soy sauce. Tape (tapeh) and its products. Brem wine. Brem cake. Terasi. Salted eggs and pindang. Pindang (made from salted fish). Address: Food Technology Development Centre, Bogor Agricultural Univ., Indonesia.

1949. Arocena, Javier. 1986. Re: Brief history of the soyfoods company Zuaitzo in Spain. Letter to William Shurtleff at Soyfoods Center, Sept. 10. 2 p. Typed, without signature on letterhead. [Eng]
• ***Summary:*** "I've been working for the last 4 years making tofu, seitan, and tempeh, in a craftsman way, in the North of Spain, in the Basque country. Unfortunately in all of Spain we are only two people making those kind of products, even if slowly, slowly, people are asking us more and more for them every day. I have graduated in biology, and so have a background in what I am doing. I've really found myself useful for the rest of the world, and enjoy my life and work... I'd like to ask if there is any possibility of working for a short time (a summer or a month) is a place where I could learn how to make miso, tamari, natto, sufu, and soynuts." Address: Zuaitzo, Correria, 39–01001 Vitoria-Gasteiz, Spain. Phone: 945/28 86 30.

1950. Bhatnagar, P.S. 1986. Summary of the present situation with soya in India. Tape prepared for William Shurtleff at Soyfoods Center, Sept. 15–in reply to specific questions. 3 p. transcript. Unpublished manuscript.
• ***Summary:*** William Shurtleff was away during this team's visit, so Akiko took care of them. William left questions about soy in India which he asked them to answer.

All visitors in his team were impressed with Soyfoods Center and its work–"overwhelmed."

Soybean has a bright future in India. The increase in acreage from 300 ha in the late 1960s to the present 1 million speaks for itself. Initially there were several obstacles. The most important opposition was from India's groundnut lobby. The groundnut is an important oilseed in India. When soybean was introduced, they feared it might replace groundnut. Various people expressed apprehension. They said: Soybean is not good for health, it has toxins and soybean trypsin inhibitors (which are very widely discussed), antinutritional factors, and cause flatulence. They will disturb the commodity balance, etc.

But with time and effort, it has been established that these were not valid criticisms. Soybean would not disturb the commodity balance, as the land required would not be suited for groundnuts. Since all food is well cooked, there is no problem with trypsin inhibitors. Chickpeas, and green and black gram also cause flatulence, but no one bothers about it, They have been eaten since time immemorial.

With these facts: (1) The lobby against soy weakened. (2) At the same time the Indian government realized the importance of soy, especially in decreasing imports of edible oil.

Initially black seeded soybeans were cultivated in India from very early times. Then yellow soybeans were introduced in late 1960s to 1970s to use as a low cost source of protein. Farmers grew it but could not sell it so they stopped. For a while it looked as if soybean would never take off in India. However, then the edible oil industry saved the day. Expansion of acreage has been mainly a result of its use for oil. (3) An oil industry grew up and created a market. (4) The agricultural feasibility of growing soybean in different parts of the country was established, as was its economic viability and place in cropping system... through the All-India Coordinated Project on Soybeans.

Then more industry and new expanded cultivation.

Madhya Pradesh is the center of soybean cultivation and industry. New entrepreneurs are now also going there since the supplies are established. But now soybean acreage is saturated in Madhya Pradesh. However, a little is still available. Now his efforts are to expand areas that are not reaching their full potential.

A cause of worry now is that most of (95% of) the soybean protein (defatted soybean meal) is being exported as livestock feed. This situation is rather dangerous. The Indian oil industry is dependent on foreign countries. If the soybean meal were not sold abroad, the Indian industry would crumble. So the need is to develop products in India based on defatted flour and popularize these. To do this, there are two essentials: (1) The cost of the product should be low compared to other similar products. (2) The taste should not be drastically different from traditional products. Indian food

habits are very conservative, orthodox, and rigid. Also, use of the whole soybean must be encouraged in soya dairylike products at the home, village, and cottage industry levels.

Among soya dairylike products, tofu is one product that will definitely become popular subject to (1) High quality. (2) The profit margin is so small that the price difference between tofu and milk panir is small. He prepared some panir for us. Panir is very popular, especially in North India. All who can afford it would like to buy it. It is used for many curries, snacks, and other dishes. All are considered to be luxury dishes. Only the rich can afford them. The cost of panir is about $3 per kilogram, or 36 rupees per kilogram. Average monthly income is 250-300 rupees per month in India. As a result, only a few in the upper middle class can afford it. Tofu must sell for 7-8 rupees per kilogram. He calculated tofu production cost to be 3-4 rupees per kilogram. He feels this will catch on rapidly in North India.

With this in mind, many entrepreneurs have shown interest in tofu and soymilk. One big plant, Noble Soya, is starting in Bhopal. Another is United Soya. Plants are also planned in Kanpur and Delhi. So tofu has a good future. But Dr. Bhatnagar's worry is that small producers are making a poor quality product, which turns off consumers forever. Already many people have developed a negative prejudice. He also noticed this prejudice about soy in the USA.

To summarize: Prospects to narrow the oil gap are bright. The future of soy as food is also bright.

Tempeh has not yet been tried in a sincere sense, but he feels it has a good future.

In India, isolates, concentrates, and lecithin are now being extracted on a very small and limited scale. In a few areas, soy is taking land way from rice cultivation. Due to a slump in the international market for soybean meal, farmers' prices dropped, which led to a decrease in acreage the next year. It seems temporary. Government has set a minimum support price. On the initiative of Rajeev Gandhi, a technical mission of oilseeds has been established. The main goal is to increase oilseed production in India. Imports are now huge. India should become self sufficient in oilseeds, as she has become self sufficient in food grains. Soybeans are included in the mandate of this technology mission. Increase of production is planned, in both horizontal (area) and vertical (yield, presently very low–0.7 metric tons per hectare) growth. There will be a new thrust with government support.

The main idea is to reduce, then cut, foreign dependence on soya as (1) imported oil, and (2) imported meal. Solution: use defatted soybean meal for foods in India, and use whole soybeans in dairylike soybean products.

Closes with thanks to Akiko. He will send Bill some of the papers Bill needs. He looked though his manuscript briefly and made some suggestions. Send it to him for a careful read after the next update. He will check with literature he has in India. Let him know of companies that make plants for soy oil and lecithin, etc. He wants Akiko to come to India too. Address: PhD, Coordinator, All-India Coordinated Research Project on Soyabean (ICAR), G.B. Pant Univ. of Agriculture & Technology, Pantnagar, UP, 263145, India.

1951. Abdul Rahman, Hussein. 1986. An update in the manufacturing of traditional fermented and non fermented soyfoods in Malaysia. In: F.G. Winarno, ed. 1986. International Soyfoods Symposium. xiv + 403 p. See p. 59-73. Held 16-18 Sept. 1986 in Jogyakarta, Indonesia. [38 ref]
• ***Summary:*** Contents: Abstracts. Introduction. Present status of soybean utilization in Malaysia. Manufacture of traditional fermented soyfood in Malaysia. Manufacture of traditional non-fermented soyfood in Malaysia. Research and development of soyfood in Malaysia. Conclusion. Address: Extension Services, Food Technology Div., Malaysian Agricultural R&D Inst., P.O. Box 202, Serdang, Selangor, Malaysia.

1952. Karyadi, Darwin. 1986. Health significance of traditional fermented soybean, tempe. In: F.G. Winarno, ed. 1986. International Soyfoods Symposium. xiv + 403 p. See p. 333-47. Held 16-18 Sept. 1986 in Jogyakarta, Indonesia. [31 ref]
• ***Summary:*** Also published as an internal report, Nutrition Research and Development Center, Ministry of Health, Indonesia.

Contents: Introduction. Trends of consumption level in rural and urban communities. Historical notes on the use of tempeh and its health significance. Nutritional and health consideration. Hypocholesterolemic effect. Nutritional rehabilitation of diarrheal diseases. Complementarity effect for food supplementation. Summary. References. Address: Nutrition Research Development Center, Jl. Dr. Semeru, 26348, Bogor, Indonesia. Phone: 21763, 26348.

1953. Robertson, Laurel; Flinders, Carol; Ruppenthal, Brian. 1986. The new Laurel's kitchen: A handbook for vegetarian nutrition and cookery. Berkeley, California: Ten Speed Press. 512 p. Foreword by Sheldon Margen, M.D. Professor of Public Health Nutrition. University of California, Berkeley. Illust. Index. 23 cm. Original ed. published Sept. 1976. [234* ref]
• ***Summary:*** Contents: Preface (by Laurel). Introduction: The work at hand (Carol Flinders). Recipes and menus (includes 500 recipes): Bread, breakfast, lunch, dinner, salads, soups, vegetables, sauces & such, heartier dishes, grains & beans, desserts, menus. A handbook of nutrition: Introduction: The search for an optimal diet (Brian Ruppenthal), The New Laurel's Kitchen food guide. Special concerns: Pregnancy, infancy & early childhood, controlling your weight, nutrition in later years, sports (athletic activities), the vegan diet, diet against disease. The nutrients: The energy-yielding nutrients, vitamins & minerals, food processing, conserving nutrients

in the kitchen, suggestions for further reading, recommended dietary allowances, nutrient composition of foods. Address: Blue Mountain Center of Meditation, Petaluma, California.

1954. Winarno, F.G. ed. 1986. International Soyfoods Symposium. Organized by Food Technology Development Center, Bogor Agricultural University, Bogor, Indonesia. xiv + 403 p. Held 16-18 Sept. 1986 at the Hotel Garuda, Yogyakarta, Indonesia. No index. 29 cm. [Eng]
• ***Summary:*** This document contains 23 papers organized under the following subject headings: Symposium organizing committee: Chairman, F.F. Winarno. Table of contents. Foreword by F.G. Winarno. Welcome address by F.G. Winarno. Opening address by Susani K. Karta of American Soybean Assoc., Singapore. Inaugural address at the opening of International Soyfoods Symposium. Traditional soyfoods I. Traditional soyfoods II. Extrusion technology. Processing soy protein & oil. Application of soy proteins I. Application of soy proteins II. Preservation of soy products. Soy supplementary and weaning foods. Nutrition. Utilization: Economic benefit & marketing strategy. Address: Bogor, Indonesia.

1955. Winarno, F.G. 1986. Traditional fermented soyfoods. In: F.G. Winarno, ed. 1986. International Soyfoods Symposium. xiv + 403 p. See p. 3-19. Held 16-18 Sept. 1986 in Jogyakarta, Indonesia. [36 ref]
• ***Summary:*** Contents: Introduction. Tempe. Some tempe products. Flavor and color of tempe. Tempe and wholesomeness. Tauco. Kecap (soy sauce).

"Tempe was formerly considered an inferior food in part because of its costs, compared to other protein foods such as meats, fish and eggs. Over the last 15 years the attitude towards tempe has changed. Today, more attention has been given to tempe because it is an inexpensive source of proteins, vitamins and calories. The total annual production of Indonesian tempe is about 500,000 tons. However, tempe production is still a household art. Most of the 41,000 small cottage industries that make fresh tempe daily are family run and employ about 128,000 workers. Each small cottage industry employs about 3 workers, and uses approximately 11 pounds (5 kg) of dry soybeans per day to produce 21 pounds (10 kg) of fresh tempe. The larger cottage industries employ 10 to 20 workers and use 600 to 1,000 pounds (500 kg) of dry soybeans per day to produce tempe. The average retail price of tempe is about US $0.25 per kg in 1985."

Figures: 1. Usar made using traditional Hibiscus leaves. 2. Flow sheet: Indonesian tempe process. 3. Material balances in pilot plant process for production of tempe. 4. Flow sheet of tauco processing. 5. Flow sheet of kecap processing. Address: Food Technology Development Center, Bogor Agricultural Univ., P.O. Box 61, Bogor, Indonesia.

1956. Fangauf, K.W. 1986. Bedeutung der Sojabohne und Sojaprodukte fuer die Welternaehrung [Significance of the soybean and soya products for world nutrition]. *Schriftenreihe aus de Fachgebiet Getreidetechnologie* No. 8. p. 9-23. Sojaprodukte: Herstellung und Verwendung. [15 ref. Ger]
• ***Summary:*** Discusses history of the soybean, cultivation and composition, the world industry for soybean production, consumption, and products, world production of soy oil and competing oils, trends in the use of soy products (incl. soymilk and soymilk products, soy sauce, tofu, miso, and tempeh; table based on Shurtleff & Aoyagi 1983), results of Hamburg poll (American Soybean Assoc. 1982) on attitudes of German consumers toward qualities and use of soya (e.g., price, nutritional value, good protein source, versatile, healthful, recommended by a doctor, good for young people), conclusion. Address: American Soybean Assoc., Hamburg, West Germany.

1957. **Product Name:** Spicy Tempeh Chili.
Manufacturer's Name: Hain Pure Foods.
Manufacturer's Address: Los Angeles, Calif.
Date of Introduction: 1986. October.
Ingredients: Incl. Tempeh, soy sauce.
Wt/Vol., Packaging, Price: 15 oz can. $1.69.
How Stored: Shelf stable.
New Product–Documentation: Interview with Lonnie Stromnes. 1987. Sept. 3. He helped Hain develop the product. Hain was owned by Ogden for 4-5 years. Now it is owned by Pet of St. Louis, Missouri, a huge conglomerate.

1958. Ito, Hiroshi. 1986. Tenpe no nihon ni okeru kenkyû no ayumi. I. Tenpe to wa nani ka? [The course of tempeh research in Japan. I. What is tempeh?]. *Daizu Geppo* (*Soybean Monthly News*). Oct. p. 20-24. [Jap]
Address: Norin Suisan-sho Shokuhin Sogo Kenkyu-jo, Biseibutsu Riyo Kenkyushitsu-cho [Tsukuba, Ibaraki-ken, Japan].

1959. Moll, Lucy; Barrett, Mariclare. 1986. Then and now: Authors of the best [vegetarian] cookbooks. *Vegetarian Times.* Oct. p. 26-31, 46, 54. [10 ref]
• ***Summary:*** Includes: The Hurd's and Ten Talents, Ed Brown and The Tassajara Recipe Book, Francis Moore Lappé and Diet for a Small Planet, Louise Hagler and The Farm Vegetarian Cookbook plus Tofu Cookery, Annemarie Colbin and The Book of Whole Meals, Mollie Katzen and The Moosewood Cookbook, William Shurtleff & Akiko Aoyagi and The Book of Tofu, Laurel Robertson and Laurel's Kitchen, Kathy Hoshijo and Kathy Cooks Naturally, Anna Thomas and Vegetarian Epicure. Address: Chicago, Illinois.

1960. **Product Name:** Lemon Broil Tempeh.
Manufacturer's Name: White Wave, Inc.

Manufacturer's Address: 1990 North 57th Court, Boulder, CO 80301.
Date of Introduction: 1986. October.
Ingredients: Soy rice tempeh (cultured soybeans, water, brown rice), olive oil, soy oil, soy sauce, concentrated lemon juice, granulated garlic, onion powder.
Wt/Vol., Packaging, Price: 6 oz. Plastic wrapped.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1986. 3 inches square. Yellow and white on blue background. "Great on Sandwiches or Add to Stir Fry or Grill on Barbecue. Heat and serve. Pareve." Soyfoods Center product evaluation. Delicious! Interview with Lonnie Stromnes. 1987. Aug. 31. New Label. 1989. April. Ingredients: Soy Rice Tempeh, olive oil, soy oil, soy sauce, concentrated lemon juice, granulated garlic, onion powder.

1961. Demos, Steve. 1986. Deal to acquire Soyfoods Unlimited, Inc. New developments at White Wave (Interview). *SoyaScan Notes.* Nov. 13. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Steve plans to finalize the deal to acquire Soyfoods Unlimited (a tempeh maker in San Leandro, California) on Thursday, Nov. 20. Then he plans to go to India for a 25-day meditation intensive.

Why does he want to buy Soyfoods Unlimited? Mainly to get a distributorship in the California market, to establish White Wave's name and market position in California, and, above all, to get other White Wave products out there. Lonnie Stromnes will continue to work at Soyfoods Unlimited. Steve will visit California soon. Shurtleff invites him to visit Soyfoods Center (which is also in the Bay Area).

Steve's business is doing well. Tempeh sales are up 30% this year. He now sells more units of tempeh than of tofu. People in Boulder like it better. White Wave is strong and growing steadily. Address: Boulder, Colorado.

1962. Seminar on Traditional Foods and Their Processing in Japan. 1986. Tokyo: NODAI Research Institute, Tokyo Univ. of Agriculture. 4 p. Held on 13-25 Nov. 1986 at Tokyo University of Agriculture, Tokyo, Japan. [Ger]
• ***Summary:*** This document, which is an announcement of the seminar, contains two parts: (1) The 1-page introductory letter (28 cm), and (2) The 3-page Agenda (26 cm). The proceedings were published in 1987, edited by Fujiharu Yanagida.

The Agenda gives the opening session (Room A): Chairman I. Uritani. 11:00–11:30. Opening address by the chairman of organizing committee, Dr. Izuru Yamamoto, Director, Nodai Research Inst. Welcoming address by Dr. Takao Suzuki, President, Tokyo University of Agriculture. Address by representative of Japan Society for the Promotion of Science. (JSPS). Address by the president of the Society for Agricultural Education–Research Development Abroad (SAEDA), Dr. Jiro Sugi, Emeritus Professor, Tokyo Univ. of Agriculture.

11:30–11:45. Keynote address, Dr. Hiroyasu Fukuba, Professor, Ochanomizu University.

The following soy-related papers, which were published in the 1987 proceedings, are cited separately: Onchom, by Dedi Fardiaz. Miso, by Hisao Yoshii. Tofu, by Tokuji Watanabe. Indigenous fermented foods in Nepal, by Tika Karki. Improvement in traditional soy sauce fermentation, by Sri Hartadi. Address: Tokyo, Japan.

1963. Barrett, Mariclare. 1986. The cook's glossary of soyfoods. *Vegetarian Times.* Nov. p. 28-35. [10 ref]
• ***Summary:*** Gives good definitions, with a full-page color illustration by Emily Soltanoff, of: Soybeans, soynuts, soy flour and grits, soy oil, textured vegetable protein, soymilk, okara ("the pulp that remains after the soymilk has been strained"), soy yogurt and soy cheese, tofu, fermented soyfoods, tempeh, miso, natto, soy sauce.

The article begins: "For 60 seconds on a national television commercial, a small, round soybean rolls past a lineup of infant formula, bread, pizza, chili, salad dressing, ice cream [Tofutti], soymilk and cubes of tofu; meanwhile the narrator intones, 'The newest development in nutrition is actually one of the oldest foods known to man.' Through advertising, the concept of soyfoods is brought home to millions of Americans by the soy giant, Archer-Daniels-Midland Company." Address: Staff.

1964. Kawabata, Makoto; Taguchi, Kuniko; Ohtsuki, Kozo. 1986. Okara o shokuryo toshita natto oyobi tenpe no shokuhin kagaku [Food chemical evaluation of fermented okara products, okara-natto and okara-tempeh]. *Kyoto Furitsu Daigaku Gakujutsu Hokoku* (*The Scientific Reports of the Kyoto Prefectural University* (*Natural Science and Living Science*)) 37(Series B):9-15. Nov. (Chem. Abst. 107:38312). [13 ref. Jap; eng]
• ***Summary:*** Okara, a residue of water-extracted ground soybeans, is produced in large amounts as a by-product of commercial production of tofu and soymilk. Although it contains a large amount of dietary fiber plus 4.8% high quality protein, it has a poor taste and rough texture, and is relatively indigestible.

In this study, natto and tempeh were prepared from okara by fermentation with *Bacillus subtilis* (*natto*) and *Rhizopus oligosporus* (or *R. oryzae*).

Natto is a sticky paste with the characteristic flavor and odor of natto. Okara tempeh has a sausage-like texture, bound together by the fragrant white Rhizopus mycelium, which also covers its surface. Because of its good, bland flavor and because of its high content of dietary fiber, it can be fried in oil and used as a fiber-rich food; powdered or minced tempeh can be used to add fiber to cookies, bread, muffins, etc.

The riboflavin content of both products rose dramatically during fermentation; 33.1 times for okara natto and 32.7 times for okara tempeh. Vitamin B-6 also increased in both foods. Address: Lab. of Food Chemistry, Dep. of Food Science, Kyoto Prefectural Univ. [Japan].

1965. *Vegetarian Times.*1986. Top entries in the Vegetarian Times soyfoods recipe contest: The winners! Nov. p. 36-39.
• ***Summary:*** Some 125 recipes were submitted to the contest. The full recipe for each of the winners is given. For main dishes, the first prize went to Messilla Valley Tempitas (with tempeh), the second prize to Tofu Slices with Mushrooms, and the third prize was a tie between Kid's Favorite Tofu Loaf, and Tofu Manicotti with Sesame-Miso Sauce.

For desserts, the first prize went to Tofu Cheesecake, the second prize to Cranberry-Walnut Baked Apples with Maple-Custard Sauce (with soymilk), and the third prize to Creamy Peach Rice Pudding (with tofu).

In the "Other" category, first place winner was Smoked Tofu with Dipping, 2nd place was Bombay Chowder, and 3rd place was Tofu-Shallot Dip.

A color photo by Katherine Phelps shows the dish that won first place in each category.

1966. Aida, Kô; Ueda, Seinosuke; Murata, Kiku; Watanabe, Tadao. eds. 1986. Ajia no muen hakkô daizu shokuhin [Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation]. Japan: Takeshima Shigeru. 319 p. Held July 1985 in Tsukuba, Japan. Illust. (some color). No index. 27 cm. [400 ref. Eng; Jap]
• ***Summary:*** A pioneering symposium featuring tempeh and natto. About 70% of the book is in English and 30% in Japanese. A number of chapters are in Japanese with no English translations. Contains many typographical errors in the English sections.

Those interested in the early history of natto and other East-Asian fermented foods will find the discussion (in Japanese) on pages 174-78 to be very interesting. Address: Tsukuba, Japan.

1967. Asano, Machiko. 1986. Nihonjin no nattô, tenpe ni taisuru shikô chôsa [Survey of Japanese acceptance of natto and tempeh using taste tests]. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 285-90. Held July 1985 at Tsukuba, Japan. English-language summary in Symposium Abstracts, p. 79. [Jap]
• ***Summary:*** Percentage of people in different age groups who say they like natto/tempeh: Students (36.4/4.2), age 20-29 (39.5/15.8), age 30-39 (58.2/32.9), age 40-49 (61.3/38.7), age 50-59 (63.9/33.7), age 60+ (62.5/56.3). Also compares likes and dislikes by region. Address: Teikoku Joshi Daigaku.

1968. Djurtoft, Robert. 1986. Tempe from cowpeas introduced in Nigeria. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 144-64. Held July 1985 at Tsukuba, Japan. [Eng]
• ***Summary:*** First contact with Nigeria was made in 1974 by collaborator Mr. Jens Stoumann Jensen. The author visited Prof. A. Amolulu, Head of the Dept. of Human Nutrition, Univ. of Ibadan in June 1980. In 1981 DANIDA (Danish International Development Agency) granted the funds for a project called "Introduction of tempe products in West Africa." The real project began in Feb. 1981. Women in a Yoruba village were taught tempeh preparation. It was well received. Address: The Technical Univ. of Denmark, DK-2800 Lyngby.

1969. Fukukara, Noriko. 1986. Shûdan kyûshoku ni okeru tenpe no riyô [Use of tempeh in group feeding or institutional foodservice programs]. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 291-97. Held July 1985 at Tsukuba, Japan. English-language summary in Symposium Abstracts, 80. [Jap]
• ***Summary:*** Contains seven tables showing how students and faculty rate the following tempeh dishes on odor/smell, overall appearance, texture, flavor, congeniality with other foods, overall impression: Karinto (sweet), tempeh sandwich, Tatsuda-age (fried), tempeh soup, tempeh dog (like hot dog), tempeh salad, tempeh on noodles (Katsudon-fu). For every dish, the faculty liked it better than the students, which were consistently on the "dislike" side of neutral. The faculty liked the tempeh dog and tempeh sandwich best, but not that much. Address: Teikoku Joshi Daigaku [Japan].

1970. Haytowitz, David B.; Matthews, Ruth H. 1986. Composition of foods: Legumes and legume products. Raw, processed, prepared. *USDA Human Nutrition Information Service, Agriculture Handbook* No. 8-16. 156 p. Dec. See p. 126-152. By Nutrition Monitoring Division. [29 ref]
• ***Summary:*** Data are presented for 133 legumes and legume products. Of these, only 53 were included in *USDA Agriculture Handbook* No. 8, published in 1963. The following soy-based foods are included: Simulated meat products (bacon, meat extender, and sausage), raw soybeans, cooked boiled soybeans, roasted soybeans, dry-roasted soybeans, soybean products: miso, natto, tempeh, full-fat soy flour (raw, and roasted), defatted soy flour, low-fat soy flour, defatted raw soy meal, fluid soy milk, soy protein concentrate, soy protein isolate, soy sauce (shoyu, tamari, and HVP), raw tofu (firm {p. 147}, regular, dried-frozen/koyadofu, and fried) [Note 1. Tofu is called "tofu" and at "Soybean curd" it says, see "tofu." Note 2. Footnote 2 states that the calcium content of tofu curded with calcium sulfate is 683 mg/100 gm, compared with 205 mg/100 gm for tofu curded with nigari. As of May 1997 Soyfoods Center

believes that both these values are far too high; the two figures should be about 159 mg/100 gm (range 128-168) and 45 mg/100 gm respectively], okara, salted and fermented tofu (fuyu).

For each food the following information and number of values are given: Vertically: Proximate (7 values), Minerals (9), Vitamins (9), Lipids (Fatty Acids [Saturated (9), Monounsaturated (5), Polyunsaturated (7)], Cholesterol, Phytosterols), Amino acids (18). Horizontally: Amount in 100 gm edible portion (mean, standard error, number of samples), amount in edible portion of common measures of food (e.g. ½ cup or 1 cup), amount in edible portion of 1 lb of food as purchased.

Minerals include calcium, iron, magnesium, phosphorous, potassium, sodium, zinc, copper, and manganese (not aluminum).

Vitamins include ascorbic acid, thiamin, riboflavin, niacin, pantothenic acid, vitamin B-6, folacin, vitamin B-12, vitamin A.

Amino acids include tryptophan, threonine, isoleucine, leucine, lysine, methionine, cystine, phenylalanine, tyrosine, valine, arginine, histidine, alanine, aspartic acid, glutamic acid, glycine, proline, and serine.

For Adzuki beans (raw, cooked boiled, canned sweetened, and Yokan {yôkan–sugar-sweetened confection}) see p. 24-27.

For peanuts (all types raw, cooked boiled, oil-roasted, dry-roasted, Spanish raw, Spanish oil-roasted, Valencia raw, Valencia oil-roasted, Virginia raw, Valencia oil-roasted) see p. 109-18. For peanut butter (chunk style, smooth style), defatted peanut, and low-fat peanut flour, see p. 119-22. Address: USDA Human Nutrition Information Service.

1971. Hesseltine, C.W. 1986. Genus *Rhizopus* and tempeh microorganisms. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 20-26. Held July 1985 at Tsukuba, Japan. [12 ref]
• ***Summary:*** The genus *Rhizopus* belongs to the family Mucoraceae of the order Mucorales in the subclass Zygomycotina of the class Zygomycetes. The order mucorales is a group of filamentous, typically saprophytic fungi. The members of the Mucorales are among the most common fungi encountered. Address: NRRC, Peoria, Illinois.

1972. Ito, Hiroshi. 1986. Tenpe no nihon ni okeru kenkyû no ayumi. II. Tenpe no seizô-hô to seibun [The course of tempeh research in Japan. II. The tempeh production process and composition]. *Daizu Geppo* (*Soybean Monthly News*). Dec. p. 31-36. [Jap]
Address: Norin Suisan-sho Shokuhin Sogo Kenkyu-jo, Biseibutsu Riyo Kenkyushitsu-cho [Tsukuba, Ibaraki-ken, Japan].

1973. Jha, H.C. 1986. Novel isoflavonoides and its derivatives, new antioxidants derived from fermented soybeans (tempe). In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 199-204. Held July 1985 at Tsukuba, Japan. [12 ref. Eng; jap]
• ***Summary:*** The text is the narration of a slide show but the slides are not shown. Address: Inst. for Physiological Chemistry, Univ. of Bonn, Nusallee 11, D-5300, FRG [West Germany].

1974. Jutono, -. 1986. The microbiology of usar, a traditional tempe inoculum. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 50-60. Held July 1985 at Tsukuba, Japan. [8 ref]
• ***Summary:*** The traditional tempeh inoculum, usar is still widely used for tempeh preparation in Indonesia (Java). Usar prepared from the leaves of *Hibiscus similis* is considered the best, followed successively by those of *Hibiscus tiliaceus, Tectona grandis,* and *Bambusa species. Rhizopus* species are the dominant organisms.

Photos show: (1) The underside of *Hibiscus similis* leaf (with 5 cm scale). (2) A piece of usar prepared from *Hibiscus similis* leaf. The whitish area at the center of the leaf consists of mycelia, and the black dots are mostly sporangia of *Rhizopus* spp.

Tables: (1) Growth of *Rhizopus* spp. on leaves of several plant species (in the usar ecosystem). (2) Associations among usar's microorganisms. (3) Acid production by bacteria and yeast from usar. (4) Formation of chlamydospores by *Rhizopus* spp. in liquid cultures. (5) The appearance of usar in general and mould colonies in particular during storage. (6) The microbial population of usar. (7) The utilizability of usar for tempe fermentation after storage. Address: Faculty of Agriculture, Gadjah Mada Univ., Yogyakarta, Indonesia.

1975. Karyadi, Darwin. 1986. Nutritional implications of tempe in Indonesian rural community. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 112-24. Held July 1985 at Tsukuba, Japan. [22 ref]
• ***Summary:*** Tempeh consumption in both rural and urban communities in Indonesia is increasing. Its use should be popularized to nutritionally at-risk groups such as preschool children, and pregnant and lactating women. Address: Nutrition Research and Development Center, Ministry of Health, Komplek Gizi, Jl. Dr. Sumeru, Bogor, Indonesia.

1976. Ko Swan Djien. 1986. Some microbiological aspects of tempe starters. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 101-09. Held July 1985 at Tsukuba, Japan.

• ***Summary:*** Discusses the tempeh mold; traditional tempeh starters made of tempeh cake or mold culture on leaves, or small cakes of mainly rice flour; starters developed in laboratories (semi-pure culture and pure culture); and role of bacteria in tempeh fermentation. Address: Bandung Inst. of Technology, Indonesia; Agricultural Univ., Wageningen, Netherlands.

1977. Kozaki, Michio. 1986. Monsuun Ajia no hakkô shokuhin [The fermented foods of monsoon Asia]. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 5-8. Held July 1985 at Tsukuba, Japan. [Jap]
• ***Summary:*** A general review, including many fermented foods not containing soy. Address: Dep. of Agriculture, Tokyo Univ. of Agriculture.

1978. Moroe, Michio; Sato, Akiyoshi; Yoshida, Toshio. 1986. Tenpe no fureebaa [The flavor of tempeh]. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 210-18. Held July 1985 at Tsukuba, Japan. English-language summary in Symposium Abstracts, p. 69. [12 ref. Jap]
• ***Summary:*** Details from chromatographic analysis of volatile compounds in boiled soybeans, homemade tempeh incubated at 31ºC or 38ºC, commercial tempeh. Address: Takasago Koryo Kogyo K.K.

1979. Murata, Kiku. 1986. Formation of antioxidants and nutrients in tempe. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 186-98. Held July 1985 at Tsukuba, Japan. English summary in conference abstracts. [10 ref. Eng]
• ***Summary:*** Contents: Introduction. Preparation of tempe in our laboratory. Discovery of antioxidants in tempe. Effect of isoflavone Factor 2 in vitro and in vivo. Increase of B vitamins and free amino acids.

Why did Dr. Murata start work on the antihemolytic and antioxidative factors during her study at Dr. P. Gyorgy's laboratory in Philadelphia, Pennsylvania? The United Nations Protein Advisory Group (PAG) and FAO had chosen tempe as one of the best soybean foods for use as a vegetable protein source. When she visited Dr. Gyorgy's laboratory, rat feeding tests on stored tempe and unfermented soybean powder were underway. The tempeh in their laboratory was made using a modification of the pilot plant process described by Steinkraus, Van Buren, Hackler and Hand (1965).

Contains 5 tables and 15 figures (mostly graphs). Most of these appeared in previous publications. Address: Teikoku Gakuen, Moriguchi City, Japan.

1980. Nakao, Sasuke. 1986. Minzokugaku-sha to shite deatta koto domo [An ethnologist's recollections (on fermented soyfoods)]. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 179-83. Held July 1985 at Tsukuba, Japan. English-language summary in Symposium Abstracts, p. 64. [Jap]
• ***Summary:*** In 1962 the author was first introduced to kinema, a non-salted fermented soybean food, in eastern Nepal. Before that time on trips he had noticed that soybeans were commonly planted on the levees of paddy fields in Nepal, Sikkim, and Bhutan. In 1972 he proposed the hypothesis of the "triangular distribution" of non-salted fermented soybean foods, also known as the "natto triangle." Since proposal of the hypothesis, many other examples of non-salted fermented soybean foods in the area have been reported. They are "Soeda" of Bhutan, "Pe-Boutsu" of Burma, "Thua-nao" of northern Thailand and many other examples in China proper (PRC) and in the Miao Tribe of Kweichow (Guizhou) Province of China. "In these examples, the local names are much different and no common word is found. This may suggest that the existence of fermented soybeans is not the result of recent dispersals from a central place of origin, but may have happened in rather ancient times. Then I came to the further assumption that within the triangular area there may have been a complex common human culture from olden times.

"In processing the non-salted fermented soybean, the artificial inoculation of the boiled soybean is sometimes practiced like in tempe. In Bhutan it is reported that the starter for fermentation is the same one which is prepared for the fermentation of alcoholic beverages. The fundamental method of making alcoholic beverages in the Himalaya and southeastern Asia is to inoculate the boiled cereals with the starter and then the main fermentation takes place in solid state, not in water. The process in making the non-salted fermented soybean and the alcoholic beverages can be understood to be a similar one. So they must have originated from the similar culture complex."

Note: This is the earliest document seen (Dec. 2001) concerning "Soeda" of Bhutan, or "Pe-Boutsu" of Burma, both non-salted fermented soyfoods. Address: Professor Emeritus, Osaka Prefectural University.

1981. Noguchi, Kazuko. 1986. Tenpe no chôri–Nihon de no kokoromi [Tempeh cookery–Trials in Japan]. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 274-84. Held July 1985 at Tsukuba, Japan. English-language summary in Symposium Abstracts, p. 78. [Jap]
• ***Summary:*** Gives numerous tempeh recipes suited to Japanese tastes, and a nutritional analysis of each.

1982. Soewito, Agustina. 1986. The cooking of tempe–Indonesia. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 270-73. Held July 1985 at Tsukuba, Japan. [4 ref. Eng]
• ***Summary:*** Discusses and classifies ways tempeh is used in Indonesian cookery: Fried tempeh as a snack or side dish, Tempeh soups, Stewed Tempeh, Tempeh Barbecue, and Sambel. Gives a recipe for Sambal Goreng Tempe. Address: Indonesian Embassy.

1983. Steinkraus, Keith H. 1986. Production of vitamin B-12 in tempe. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 205-09. Held July 1985 at Tsukuba, Japan. [12 ref. Eng]
• ***Summary:*** "All commercial tempe samples tested to date have contained vitamin B-12 activity as shown by test assays either with *Ochramonas malhamensis,* a phagocytic protozoan whose growth is proportional to the amount of 'true' vitamin B-12 in the growth medium, or *Lactobacillus leichmanii,* whose growth is proportional to the amounts of both 'true' and 'pseudo' vitamin B-12 present in the medium. Vitamin B-12 is not a single chemical entity but consists of at least 4 closely related chemical structures each of which has specific physiological reactions within the human and other animals. Tempe producers and consumers should not place too much emphasis on the reported concentrations of vitamin B-12 in samples of tempe and the method of assay should always be stated. Although it may be assumed that the vitamin B-12 being assayed in tempe is cyanocobalamin, there is a need for a research study to determine the relative amounts of the 4 principal cobalamins that make up the vitamin B-12 group as they may or may not exist in tempe." Address: Prof. of Microbiology, Inst. of Food Science, Cornell Univ., Geneva, New York.

1984. Steinkraus, Keith H. 1986. Manufacture of tempe–Tradition and modern. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 9-19. Held July 1985 at Tsukuba, Japan. [14 ref]
• ***Summary:*** Largely a summary of existing literature. Address: Prof. of Microbiology, Inst. of Food Science, Cornell Univ., Geneva, New York 14456.

1985. Tanuwidjaja, Lindajati. 1986. Large scale tempe inoculum production. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 305-09. Poster session. Held July 1985 at Tsukuba, Japan. English summary in Conference Abstracts. [7 ref. Eng]
• ***Summary:*** Contents: Abstract. Introduction. Methods and materials: Microorganism, substrate, starter preparation, inoculum production, viable microorganism ("The viable mold propagule and bacterial count were determined by plate count method"), analysis. Results and discussion.

Making a large quantity of starter / inoculum accelerated mold growth and minimised contamination. Varying the pH of the starter from 3.0 to 6.0 had no effect on the quality of starter produced. To dry the starter down to 10% moisture took 15 hours at either 40ºC or 50ºC.

Tables show: (1) Total mold propagules and total bacterial count in the inoculum. (2) Growth of *Rhizopus oligosporus* LKN M3 on rice substrate. (3) Mold contamination during tempe inoculum production.

Figures show: (1) Effect of drying temperature (40ºC or 50ºC) on the moisture of the inoculum. (1) Effect of drying temperature (40ºC or 50ºC) on the drying rate of the inoculum. Address: National Inst. for Chemistry, Indonesian Inst. of Sciences, Bandung, Indonesia.

1986. Tsubaki, K. 1986. Historical survey of the studies on Mucorales in Asia. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 28-30. Held July 1985 at Tsukuba, Japan. [Eng]
• ***Summary:*** This is a survey of the major species of mucorales which are useful in applied microbiology. Taxonomically, they are classified in the sub-division Zygomycotia of the division Eumycota. Names of the genera include *Absidia, Mucor,* and *Rhizopus.* They are included in the Phycomycetes in older textbooks. "So far as I know, the first investigation of Mucorales from Asia was made by a French mycologist, Calmette, who first described an interesting species, *Amylomyces rouxii,* in 1882... His isolates came from the Chinese yeast. This species has been called *Mucor rouxii* in most textbooks so far." Two years later, in 1884, Eijkman considered this fungus to be a species of *Mucor,* but used a trinomial name, *Mucor amylomyces rouxii.* "Then many other important species of *Mucor* have been published including, *M. javanicus, M. praini,* etc. In the case of *Rhizopus,* the first species from Asia is *Rhizopus japonicus* so far which was isolated by Vuillemin in 1902. In Japan, studies of the mucoraceous fungi started by Saito in 1904. After that, Hanzawa reported a taxonomic study of *Rhizopus* in 1912 and 1914 describing twelve species. Hanzawa's work was continued by many mycologists." Address: Dep. of Biological Science, Univ. of Tsukuba, Japan.

1987. Winarno, F.G. 1986. Tempe making on various substrates–including unconventional legumes. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 125-43. Held July 1985 at Tsukuba, Japan. [42 ref]

• ***Summary:*** Discusses tempeh made from soybeans, winged beans, *Mucuna puriens* [velvet beans], *Canavalia ensiformis* [jack bean], *Leucaena,* sweet lupine, yellow peas, broad beans, cowpeas, horse beans, chickpeas. From bean fractions: okara, mungbean starch. From cereals: wheat, barley. And mixtures of the above. Also discusses oncom (onchom) and *usar* (traditional inoculum). There is a discussion in Japanese at the end. Address: Director, Food Technology Development Center–IPB, P.O. Box 61, Bogor, Indonesia.

1988. Yoshida, Shuji. 1986. Minzokugaku kara mita muen hakkô daizu to sono shûhen [The origin of non-salted fermented soybeans from the viewpoint of ethnology]. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 166-78. Held July 1985 at Tsukuba, Japan. English-language summary in Symposium Abstracts, p. 62-62. [20 ref. Jap]

• ***Summary:*** "Two of the earliest kinds of fermented soybeans were *shì* and *dòu-jiàng.* The former antedates the latter, because *shì* can be traced to the Han Dynasty (206 BC-A.D. 200), whereas *dòu-jiàng* does not emerge until the description in *Qimin Yaoshu* (A.D. 536-550). Good descriptions of *shì* and *dòu-jiàng* are given in *Qimin Yaoshu. Shì* is made as follows: A yellow mold is permitted to grow on boiled beans, which are then washed and wetted, after which they are fermented in a cellar for 10-12 days. *Shì* was eaten as a condiment.

"However, *shì* as a food would have appeared prior to *shì* as a condiment. *Sake* which was made from grain through mold fermentation, was originally not for drinking, but rather for eating. Such a primitive *Sake* is still used in Yúnnán. I suppose that a primitive *shì* also was eaten, and that the place of origin of *shì* was South China, according to the description in *Bencao Gangmu* (*shì* was commonly made in South China), and *Bówùzhì* (*shì* was exotic).

"Dòu-jiàng, which may have been first mentioned in *Bencao Gangmu* (1596), was a simple mold bean and was technologically more primitive than *shì,* although the existence of *dòu-jiàng* or a similar substance cannot be traced in the literature before *Qimin Yaoshu.* It seems that the first product of fermented beans would be *dòu-jiàng,* or a similar substance, and that its making would have been influenced by *sake* production. Later, *shì* as a food would have appeared and then *shì* as a condiment was produced, as we see from the *Qimin Yaoshu.*

"On the other hand, *dòu-jiàng* was developed from *ròu-jiáng,* preserved meat... *Natto, kinema* and *tempeh* would be identified as a substance similar to *dòu-jiàng,* which was a primitive fermented soybean product. Boiled beans became *dòu-jiàng* if they were covered by *Imperata cylindrica* grass, *kinema* if covered by certain leaves, *tempeh* if covered by leaves of *Hibiscus tiliaceus* or banana leaves, and *natto* if covered by ricestraw.

"We know that various kinds of plants are used for making *sake* or mold bran. The species used varies by place. Fermented soybeans occur within the *sake*-making area and only at the margin of the distribution. That means several new fermented soybean products like *shì* and *dòu-jiàng* were made in the center of the fermented soybean distribution, and the area gradually expanded toward the margins. They were accepted in areas close to the center, but the most primitive forms would have remained only in the marginal places, where new ones were not accepted."

A large chart (p. 169) shows the relatives and development of soy nuggets (*shi*)*;* it includes the names of various unsalted fermented soyfoods and soy condiments (with their geographical area in parentheses). Relatives (fermented soyfoods made from yellow soybeans): Akuni (Sema Naga, in the Himalayas in northeast India), kinema (Limbu, in eastern Nepal), pe-bout (Shan, in eastern Burma), itohiki natto (Japan), and tempeh (Indonesia). Stage 1. Itohiki natto became Chon Kujjiang [perhaps *chungkuk jang,* Korean-style natto] of the Zhanguo Warring States period (475-221 BC) in China. Stage 2A: Unsalted soy nuggets were originally used as a food, rather than as a seasoning. To these unsalted soy nuggets, koji was added to create homemade unsalted soy nuggets (*doushi,* of China), Stage 2B: Salt was added to the unsalted soy nuggets to make various salted foods (each with a firm texture like raisins): Daitokuji natto (Japan; with wheat flour added), *pe-ngapi* (upper Burma), and *seang* (Cambodia). Stage 3. Unsalted soy nuggets (*doushi*) developed into closely related danshi. Koji was added to danshi to make *rul-kre* (of Bhutan). Cooked soybeans were shaped into balls and fermented naturally to make miso-dama ("unsalted miso balls" [meju], Korea and Japan). Then salt was added to the miso-dama to make various seasonings (each with a consistency like applesauce or paste / miso): Korean soybean jang (*doen jang*)*,* Korean soy sauce (*kan jang*)*,* or soybean miso (*mamé miso,* Hatcho miso, Japan). Stage 4. Salt was added to unsalted soy nuggets (*shi*) to make salted soy nuggets, from which developed inyu (a fermented soy sauce made with black soy beans, in Taiwan), *inshi* (meaning unclear, of Taiwan), and taucho (*tauco,* of Indonesia). Stage 5. Koji was added to salted soy nuggets to make *shi* for food use, and *doushi* (of Sichuan, China). Stage 6. Flour was added to salted soy nuggets to make red pepper jang (*kochu jang,* Korea) and spicy soy nuggets (*doubanshi,* China).

Note: This chart may be easier to understand when viewed in chart form, however the logic and some of the products seem a bit unclear. It is also unclear which products are fermented with bacteria (like natto). Soyfoods Center has an English-language translation of this chart. Address: National Museum of Ethnology, Osaka (Kokuritsu Minzokugaku Hakubutsukan).

1989. Yuan, Gwo-Fang; Jong, Shung-Chang. 1986. The new species *Rhizopus azygosporus* for manufacture of tempeh. In: Kô Aida, et al. eds. 1986. Proceedings of the Asian Symposium on Non-Salted Soybean Fermentation. Japan: Takeshima Shigeru. 319 p. See p. 311. Poster session. Held July 1985 at Tsukuba, Japan. Originally published in 1984 in Mycotaxon 20:397-400. [1 ref]
• ***Summary:*** ATCC 48018 is characterized by the abundance of azygospores, while zygospores are wholly lacking. It was originally isolated by J.N. Hedger in Bogor, Java, Indonesia in 1976 from tempeh. It is the first obligate azygosporus strain found in the genus *Rhizopus.* Address: Mycology Dep., America Type Culture Collection, Rockland, Maryland.

1990. Zakaria, Fransiska; Muchtadi, Tien Ruspriatin. 1986. The role of tofu processing in development and the alleviation of malnutrition in West Java. *Food and Nutrition Bulletin* (*United Nations Univ.*) 8(4):32-41. Dec. [16 ref]
• ***Summary:*** The contribution of tofu to the diet, especially of low-income families in West Java, is reviewed. Suggestions are made for technological improvements (sanitation, production efficiency, yield, and diversification of soy-cake [tofu] utilization, chiefly as a food supplement).

"In West Java, as is common in Indonesia, people first buy rice as their staple food. If they have money left, they then buy other foods. Those that are generally chosen, in order of price from the cheapest to the most costly, are salted fish, tofu and fermented soybean products such as tempe and oncom, vegetables, fresh fish and other seafoods, poultry, milk and milk products, and meat and meat products." In West Java, people with an income of less than $40/month consumed 20 gm/person/day of tofu; the amount increased to 50 gm for those earning $100-$200/month, but was about 45 gm for those earning $300-$400/month. In West Java, tofu contains an average of 10.45% protein, compared with 17.0% for tempeh. Tofu and tempeh contribute 53% of the protein from side dishes in the diet of West Javanese people with incomes of less than $40/month, and 44% of the side dish protein for those with incomes of $100-$200/month. Address: Food Technology & Development Center (FTDC), Agricultural Univ., Bogor, Indonesia.

1991. **Product Name:** [Sojachouette {Roasted Snack Coated with Soya Grits}].
Foreign Name: Sojachouette. Soja Grille.
Manufacturer's Name: Athanor (Marketer).
Manufacturer's Address: 4, rue Toiras, 34000 Montpellier, France. Phone: 67.87.0608.
Date of Introduction: 1986.
Ingredients: Soybeans, peanut butter 15%, vegetable oil 3%, onion powder, potato starch 2%, sea salt.
Wt/Vol., Packaging, Price: 50 gm or 75 gm plastic bag.
How Stored: Shelf stable, 8 month shelf life.
Nutrition: Protein 40%, oil 26%, carbohydrates 24%, raw fiber 4%, water 2%, sea slat.
New Product–Documentation: Athanor Price List. 1988. Label. 1986. 3.25 by 2.25 inches. Red on white. "Organically grown" (*Issu de culture biologique*). Concerning the product name, it is a combination of "Soja" plus "chouette," which is a colloquial term meaning "fine" or "marvelous."

1992. Bean Supreme. 1986. Tofu, tempeh, soysage: Quality vegetable protein (Poster). P.O. Box 78084, 1 Wallingford St., Grey Lynn, Auckland, New Zealand. 59 x 42 cm.
• ***Summary:*** This large, glossy poster, dark purple on white, shows a sliced chub of soysage, two packs of tempeh, add a cake of tofu plus a knife, some soybeans, and a prepared dish. At the lower left: "Bean Supreme–The protein source. All natural. Cholesterol and lactose free. Low sodium. Low calories. No preservatives." Address: Auckland, New Zealand.

1993. Bediako-Amoa, Betty. 1986. Nutritive value of maize product fortified with winged bean tempeh. Nutrition Research and Development Center, Ministry of Health, Indonesia. (Internal Report). *

1994. Berghofer, Emmerich; Werzer, E. 1986. Herstellung von tempeh mit einheimischen bohnen [Production of tempeh with domestic beans]. *Chemie Mikrobiologie Technologie der Lebensmittel* 10:54-62. [Ger]*
• ***Summary:*** The author made tempeh from various beans including (*Vicia faba,* Ackerbohnen) on a laboratory scale. Address: Inst. fuer Lebensmitteltechnologie der Universitaet fuer Bodenkunde.

1995. **Product Name:** [Tempeh Sausage].
Manufacturer's Name: De Hobbit.
Manufacturer's Address: Waterstraat 4, B-9980 St. Laureins, Belgium.
Date of Introduction: 1986.
New Product–Documentation: Soya Bluebook. 1986. p. 92. Le Compas. 1986. March-April. No. 26. p. 26-27; Soya Bluebook. 1987. p. 73.

1996. Egounlety, M. 1986. Study of ogi supplemented with tempeh. Nutrition Research and Development Center, Ministry of Health, Indonesia. (Internal Report). *

1997. Fujiwara, S.; Inoue, K.; Hirota, T.; Kawanishi, G. 1986. [Studies on hydrolysis of soybean phytate by phytase from *Rhizopus sp.* EF-78]. *Reports of Research Laboratory, Snow Brand Milk Products Co.* No. 83. p. 31-41. [25 ref. Jap; eng]*
• ***Summary:*** Optimal conditions for the operation of phytase, isolated from *Rhizopus* species, on phytate from soybeans were determined. The improvement in digestibility of soymilk exposed to this phytase was also quantified.

Address: Technical Research Inst., Snow Brank Milk Products Co. Ltd., 1-1-2 Minami-dai, Kawagoe, Saitama 350, Japan.

1998. **Product Name:** Tempeh [Soy, Soy-Millet, Soy-Quinoa, or Soy-Rice].
Manufacturer's Name: Greenleaf Farm Foods, Inc.
Manufacturer's Address: Box 206, R.D. 2, Waymart, PA 18472. Phone: 717-937-4071.
Date of Introduction: 1986.
Ingredients: organically grown.
Wt/Vol., Packaging, Price: bulk, 3.5 gal plastic pails, 25 lb/pail.
How Stored: Refrigerated.
New Product–Documentation: Talk with Dr. Joseph Jaffer. 1989. Sept. 15. He started making tempeh in 1986.

1999. Hayford, A.E. 1986. Production and evaluation of cowpea tempe powder. Nutrition Research and Development Center, Ministry of Health, Indonesia. (Internal Report). *

2000. **Product Name:** [Tempeh].
Manufacturer's Name: Heuschen B.V. Affiliate of Heuschen-Schrouff B.V.
Manufacturer's Address: Dr. H. van Doorneweg 16, 5753 PM Deutne, Netherlands.
Date of Introduction: 1986.
New Product–Documentation: Soya Bluebook. 1986. p. 106. Talk with Sjon Welters. 1989. Aug. 13. A division of Heuschen made this tempeh themselves. Sjon does not know when it was introduced. Later, Heuschen sold this division; Sjon does not know the date of sale or the buyer. Note that Schrouff rhymes with "roof."

Label sent by Flora Yap from Germany. 2000. Aug. 15. This tempeh is made by "H&S" (Heuschen & Schrouff). CF. Landgraaf (Holland). No specific address is given. It arrives frozen in Germany. Weight: 250 gm retails in Germany for DM2.50. The label has black and white letters on light green, orange, and red backgrounds. The main text (in Dutch) reads: "Tempeh. Zuiver plantaardig. Naturel. Ingredienten: sojabohnen, water & entcultuur. voor 2 personen."

2001. Kim, C.T. 1986. Preliminary studies on fermented sorghum and soyabeans for the development of a tempeh-based fabricated food. Nutrition Research and Development Center, Ministry of Health, Indonesia. (Internal Report). *

2002. Kuboye, Adunola O. 1986. The nutritive value of maize-soy tempe. Nutrition Research and Development Center, Ministry of Health, Indonesia. (Internal Report). *

2003. **Product Name:** [Lima Tempeh in Shoyu].
Foreign Name: Lima Tempeh Shoyu.
Manufacturer's Name: Lima Foods (Marketer). Made from Tempeh made in Belgium by Jonathan.
Manufacturer's Address: Edgar Gevaertdreef 10, B-9830 Sint-Martens-Latem, Belgium.
Date of Introduction: 1986.
Ingredients: Tempeh-Shoyu: Organically grown soybeans, water, and tempeh culture-starter. Packed in water with shoyu and herbs.
Wt/Vol., Packaging, Price: 200 gm of product in a 340 gm glass jar.
How Stored: Shelf stable; refrigerate after opening.
New Product–Documentation: Leaflet. 1986. Lima Natural Gourmet Recipes from Europe. Contains a color photo of all products. Label reads: "Tempeh in soy sauce with ..." Eden Foods catalog. 1987. Nov. p. 18. "Lima tempeh is a Flemish country version of the traditional Indonesian delicacy."

Lima catalogue, price list, and color product brochure. 1989. Shows a color photo of a 200 gm jar labeled Tempeh.

Label sent by Anthony Marrese. 1990. March 22. 7.75 by 2.25 inches. Light green, orange brown, and dark brown on beige. CINAB organic certification symbol. Nature et Progres organic certification symbol. "Fermentation of organically grown soybeans. Use: Baked or fried, with vegetables, whole rice, spaghetti, in soup or on pizza. The black spots are due to the natural fermentation."

2004. **Product Name:** [Lima Tempeh].
Foreign Name: Lima Tempeh Nature.
Manufacturer's Name: Lima Foods (Marketer). Made in Belgium by Jonathan.
Manufacturer's Address: Edgar Gevaertdreef 10, B-9830 Sint-Martens-Latem, Belgium.
Date of Introduction: 1986.
Ingredients: Organically grown soybeans, and tempeh culture-starter.
Wt/Vol., Packaging, Price: 200 gm / 7 oz glass jar.
How Stored: Shelf stable; refrigerate after opening.
New Product–Documentation: Leaflet. 1986. Lima Natural Gourmet Recipes from Europe. Contains a color photo of all products. Label reads: "Tempeh in soy sauce with ..." Eden Foods catalog. 1987. Nov. p. 18. "Lima tempeh is a Flemish country version of the traditional Indonesian delicacy."

Lima catalogue, price list, and color product brochure. 1989. Shows a color photo of a 200 gm jar labeled Tempeh.

2005. **Product Name:** BLT with Fakin' Bacon (Tempeh).
Manufacturer's Name: Martha's Sandwiches.
Manufacturer's Address: Putney Rd. Brattleboro, VT 05301. Phone: 802-254-4778.
Date of Introduction: 1986.
How Stored: Unrefrigerated and perishable.
New Product–Documentation: Talk with Martha Brown. 1988. Aug. 31. This product was introduced in 1986. The Fakin' Bacon was purchased from Lightlife Foods. She sold the sandwiches only at Llama, Toucan & Crow in

Brattleboro, Vermont.

2006. Martoyuwono, Trisusanto D. 1986. The utilization of lablab beans for human foods (Abstract). *Dissertation Abstracts International, B* 46(9):2893-B.
• ***Summary:*** These beans were found to contain large amounts of haemaggalutinin (HG) and trypsin inhibitor (TI), both antinutritive factors. Tempeh made from lablab beans had considerably reduced HG and TI, and phytic acid and stachyose were reduced by 30% and 60% respectively. Globulin was the major protein present in the beans. Address: Univ. of New South Wales, Kensington, NSW, Australia.

2007. Moslehuddin, A.B.M. 1986. The effect of fermentation by *Rhizopus oligosporus* on the nutritional value of *Lathyrus sativus.* Nutrition Research and Development Center, Ministry of Health, Indonesia. (Internal Report). *
• ***Summary:*** *Lathyrus sativus* is the Lathyrus pea or chickling vetch.

2008. **Product Name:** [Marinated Tempeh Cutlets].
Foreign Name: Tempeh Bratling Mariniert.
Manufacturer's Name: Natuerliche Lebensmittel. Paul Stuart Zacharowicz.
Manufacturer's Address: Staudgasse 70, A-1180 Vienna, Austria. Phone: 0222/48 50 03.
Date of Introduction: 1986.
Ingredients: Fried (gebratenes) tempeh marinated in soy sauce, spices/seasonings.
How Stored: Refrigerated.
New Product–Documentation: Label. 1987. 5.5 x 4 inches. Black, gold, and red on white card stock. "Keep refrigerated. Can also be frozen. Tempeh cutlets are ready to serve (tellerfertig), cold as a snack or warm as a main course. Contains no chemical colorings or preservatives."

2009. **Product Name:** [Marinated Soy Tempeh].
Foreign Name: Soja Tempeh Mariniert.
Manufacturer's Name: Natuerliche Lebensmittel. Paul Stuart Zacharowicz.
Manufacturer's Address: Staudgasse 70, A-1180 Vienna, Austria. Phone: 0222/48 50 03.
Date of Introduction: 1986.
Ingredients: Tempeh marinated in soy sauce.
How Stored: Refrigerated.
New Product–Documentation: Label. 1987. 5.5 x 4 inches. Black, gold, and red on white card stock. "Keep refrigerated. Can also be frozen. Marinated tempeh is well suited for frying, baking, steaming, smoking, or grilling. Tastes excellent with vegetable and grains, or cold on bread. Contains no chemical colorings or preservatives."

2010. **Product Name:** Tempeh.
Manufacturer's Name: Nature's Miracle Food Manufactory.
Manufacturer's Address: P.O. Box 23, Earlwood, NSW 2206, Australia.
Date of Introduction: 1986.
New Product–Documentation: Label. 1986, undated. 5.5 by 7 inches. Brown, yellow and red. "High protein. Rich in vitamin B-12. You'll love it. Complete protein food. Excellent meat substitute. Nature's miracle."

2011. **Product Name:** Noble Bean Tempeh and Tahini Spread (Savory Spread for Sandwich or Dip with Umeboshi Plums).
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: 18320 Euclid Ave., Cleveland, OH 44112.
Date of Introduction: 1986.
Ingredients: Tempeh (Organic soybeans, water, Rhizopus culture), tahini, onion, parsley, barley miso, lemon juice, umeboshi paste, cider vinegar, olive oil, garlic powder.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated.
New Product–Documentation: Label. 1987. Oval 4 by 2.75 inches. Blue, red, green, and yellow on white. Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7.

2012. **Product Name:** Noble Bean Bogie Roll (Pita Pocket with Tempeh).
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: 18320 Euclid Ave., Cleveland, OH 44112.
Date of Introduction: 1986.
Ingredients: Whole wheat pita, dill pickle, Tempeh and Tahini Spread (Tempeh [organic soybeans, water, Rhizopus culture], tahini, onion, parsley, barley miso, lemon juice, umeboshi paste, cider vinegar, olive oil, garlic powder), and sprouts.
Wt/Vol., Packaging, Price: 5 oz.
How Stored: Unrefrigerated and perishable.
New Product–Documentation: Label. 1987. Oval 4 by 2.75 inches. Red, green, blue, and yellow on white. Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7.

2013. **Product Name:** Noble Bean Tempeh Chili.
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: 18320 Euclid Ave., Cleveland, OH 44112.
Date of Introduction: 1986.
Ingredients: Tempeh, tomato sauce, kidney beans, water, tomatoes, whole wheat flour, onion, green pepper, tamari, sesame oil, parsley, garlic, spices.
Wt/Vol., Packaging, Price: 16 oz.

How Stored: Refrigerated.
New Product–Documentation: Label. 1987. 4.25 inches diameter, self adhesive. Blue, green, yellow, and red on white, with logo of Jack and the Beanstalk. "No Cholesterol." Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7.

2014. **Product Name:** Noble Bean Swedish Tempeh Balls.
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: 18320 Euclid Ave., Cleveland, OH 44112.
Date of Introduction: 1986.
Ingredients: Tempeh, whole wheat flour, vegetable soup stock, soymilk, corn oil, onion, tamari, parsley, spices.
Wt/Vol., Packaging, Price: 16 oz.
New Product–Documentation: Label. 1987. Ink stamp. Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7.

2015. **Product Name:** Noble Bean Garbanzo Tempeh.
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: 18320 Euclid Ave., Cleveland, OH 44112.
Date of Introduction: 1986.
Ingredients: Incl. organic garbanzo beans.
New Product–Documentation: Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7.

2016. **Product Name:** Noble Bean Black Soybean Tempeh.
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: 18320 Euclid Ave., Cleveland, OH 44112.
Date of Introduction: 1986.
Ingredients: Incl. organic black soybeans.
New Product–Documentation: Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7.

2017. Nout, M.J.R.; Bonants-van Laarhoven, T.M.G. 1986. Growth of *Staphylococcus aureus* during a non-sterile semi-traditional tempe process. In: Proceedings of the 14th International Congress of Microbiology. See p. 6-9. Held at Manchester, U.K. *
Address: Agricultural Univ., De Dreijen 12, 6703 BC Wageningen, Netherlands.

2018. Ravelomanana, Rahariosa. 1986. Essai d'amélioration de la valeur nutritionelle d'un regime à base de manioc par la technique du tempe-mixte: tempe manioc-soja [Attempt to improve the nutritional value of a diet based on manioc/cassava by the technique of mixed tempeh: manioc-soy tempeh]. Nutrition Research and Development Center, Ministry of Health, Indonesia. (Internal Report). [Fre]*

2019. **Product Name:** Sloppy Mo (Made with 4-Grain Tempeh; Later Renamed Tempeh Sloppy Joe).
Manufacturer's Name: Southwest Soy Foods.
Manufacturer's Address: 2889 Trades West Rd., Santa Fe, NM 87501. Phone: 505-471-8979.
Date of Introduction: 1986.
Ingredients: Tempeh (pulp [okara] from organically grown soybeans, rolled oats, bulghur, sunflower seeds, vinegar, Rhizopus oligosporus culture), water, wheat, onions, celery, green peppers, tomato paste, molasses, safflower oil, vinegar, herbs, spices, salt.
Wt/Vol., Packaging, Price: 20 oz.
How Stored: Frozen in tofu tubs.
New Product–Documentation: Talk with Richard Jennings of Southwest Soyfoods. 1990. Aug. 2. This tempeh-based version of Sloppy Joe was launched in one flavor in about 1986. Made with the scraps from the tempeh burger, crumbled.

Label for "Tempeh Sloppy Joe" brought by Richard Jennings. 1990. Sept. 20. 3.5 by 3 inches. Self adhesive. Reddish brown on yellow. Illustration of burger-like product between two buns. "Real Fast Foods. All natural ingredients. Heat & serve."

2020. **Product Name:** Bar-B-Q Tempeh Burgers.
Manufacturer's Name: Southwest Soy Foods.
Manufacturer's Address: 2889 Trades West Rd., Santa Fe, NM 87501. Phone: 505-471-8979.
Date of Introduction: 1986.
Ingredients: Tempeh (pulp [okara] from organically grown soybeans, rolled oats, bulghur, sunflower seeds, vinegar, Rhizopus oligosporus culture), water, tomato paste, molasses, tamari (water, soybeans, salt), vinegar, safflower oil, herbs, spices, natural smoke flavor.
Wt/Vol., Packaging, Price: 10 oz.
How Stored: Frozen or refrigerated.
New Product–Documentation: Talk with Richard Jennings of Southwest Soyfoods. 1990. Aug. 2. This was an unfried, square tempeh burger, launched in about 1986, and marinated in a barbecue sauce. The tempeh was fermented in trays. Richard made a roll with many spikes protruding (sort of like a lawn aerator), which he would roll across the tempeh to perforate it in many places to facilitate absorption of the thick marinade. After being marinated, it was baked, cut, packaged, and frozen. It was introduced at the same time as Sloppy Mo; the broken pieces and scrap tempeh from the burgers were used in the Sloppy Mo/Joe.

2021. Taguchi, K.; Kawabata, M.; Ohtsuki, K.; Tanaka, Y. 1986. [Changes in dietary fiber of natto and tempeh during fermentation]. *Nihon Eiyo Shokuryo Gakkai-shi* (*J. of the Japanese Society of Nutrition and Food Science*) 39(3):203-08. [15 ref. Jap; eng]*
• ***Summary:*** Total dietary fiber in both natto and tempeh decreased slightly during fermentation. Pectic substances

in natto increased 14%, and the relative amounts of the component sugars (arabinose, galactose and galacturonic acid) increased during the fermentation, while no significant change was observed in the amount of dietary fiber and the component sugars in the oxalate insoluble residues. The hemicellulose fraction decreased in the tempeh during fermentation, but a marked increase of glucosamine was observed in the oxalate insoluble residues. The increase may reflect the contribution of mycelia polysaccharides to the dietary fiber of tempeh. Address: Dep. of Food Science, Kyoto Prefectural Univ., Kyoto 606, Japan.

2022. Truesdell, Delores Desear. 1986. Vitamin B-12 content of miso and tempeh. MSc thesis, Florida State University. vi + 74 leaves. 29 cm. *
• ***Summary:*** Includes bibliographic references (leaves 58-74).

2023. **Product Name:** [Tempeh, and Tempeh in Jars (in Broth)].
Foreign Name: Tempe, Tempe Estofado.
Manufacturer's Name: Vegetalia, S.L.
Manufacturer's Address: Sant Andreu, s/n, Castellcir, Barcelona, Spain. Phone: 93/866-8298.
Date of Introduction: 1986.
Wt/Vol., Packaging, Price: In glass jar.
New Product–Documentation: Booklet titled *Recetario* published in 1992 by Vegetalia. It gives the company address and phone as "Castellcir, Tel. 93-866 61 61." The introduction states that Vegetalia was formed in April 1986 by Salvador Sala, Carmen and Tomás. As of 1992, the company is 6 years old. These products are listed on p. 32.

Form filled out by Salvador Sala. 2001. May 29. Vegetalia, S.L. began making tempeh 15 years ago.

2024. Widowati, S.; Damardjati, D.S. 1986. Evaluasi mutu tempe gude dan kedelai dalam beberapa formula campuran [Evaluation of the quality of pigeon pea and soybean tempeh in several mixed formulas]. In: Seminar Hasil Penelitian Tanaman Pangan, Bogor. Vol. 1. Palawija. See p. 126-29. [Ind]*
Address: Indonesia.

2025. **Product Name:** [Tempeh, and Tempeh Paté].
Foreign Name: Tempeh, Paté de Tempeh.
Manufacturer's Name: Zuaitzo.
Manufacturer's Address: Calle Diputacion 5* Piso, Calle Correria 39 Bajo, 01001 Vitoria-Gasteiz, Spain. Phone: 945/28 86 30.
Date of Introduction: 1986.
Ingredients: Biological [organically grown] white soybeans, apple vinegar, culture [fermento].
Wt/Vol., Packaging, Price: 275 gm.
New Product–Documentation: Letter on letterhead. 1986. Sept. 10. "I've been working in the last four years making tofu, seitan, and tempeh, in a craftsman way, in the north of Spain, in the Basque country." Letter from Javier Arocena. "I started to work with soy in 1982 on a family scale and in 1984 on an industrial level. I started to sell tempeh and Paté de Tempeh in Nov. 1987." Note that this disagrees with statement from previous letter. Label. 1987. 3 by 4 inches. Self adhesive. Light green on white. "Tempeh. Torta de Judias de Soja Fermentadas."

2026. Artz, W.E.; Swanson, B.G.; Sendzicki, B.J.; Rasyid, A.; Birch, R.E.W. 1986. Protein-procyanidin interaction and nutritional quality of dry beans. *ACS Symposum Series* No. 312. p. 126-37. Robert L. Ory, ed. Plant Proteins: Applications, Biological Effects, and Chemistry (American Chemical Society). [38 ref]
• ***Summary:*** "Digestibility and PER of tempeh prepared with red beans [probably azuki beans, but no scientific name is given] and corn were less than the digestibility and PER of soybean tempeh... *Rhizopus oligosporus* fermentation did not improve digestibility or nutritional quality of dry black beans." Address: Food Science and Human Nutrition, Washington State Univ., Pullman, Washington 99164-6330.

2027. Beuchat, Larry R. 1986. Oncom (Fermented peanut press cake). In: N.R. Reddy, M.D. Pierson, and D.K. Salunkhe, eds. 1986. Legume-Based Fermented Foods. Boca Raton, FL: CRC Press. viii + 254 p. See p. 135-144. Chap. 8. [36 ref]
• ***Summary:*** Contents: Introduction. Fermentation process. Changes in composition. Nutritive value. Summary. Address: Prof., Dep. of Food Science, Univ. of Georgia, Agric. Exp. Station, Experiment, GA.

2028. Colbin, Annemarie. 1986. Food and healing. New York, NY: Ballantine Books. 351 p. Foreword by Robert S. Mendelsohn, M.D. Index. 23 cm. [207* ref]
• ***Summary:*** A very interesting, wholistic look at food trips and philosophies–with a preference for macrobiotics. Discusses miso, natto, tempeh, and tofu. Pages 169-72 discuss beans, including soybeans. Beans are said to be contractive, acid-forming, warming, and a buildup food. "Folklore has it that appreciable quantities of soybeans and their products, especially tofu, can lower, or cool, sexual energy. Research done at the universities of Illinois and Kansas has shown that soybeans may interfere with the absorption of zinc. As zinc is one of the minerals most strongly associated with the healthy functioning of the sex glands, this bit of folk wisdom appears realistic."

Chapter 12, titled "Food as Medicine," discusses healing foods and tells how to prepare them, including miso soup (p. 253; contractive, alkalinizing, warming, breakdown). Miso soup is considered a good food to help cure the common cold, to neutralize the negative effects of excess sugar

consumption, and to combat problems of inflammation of the digestive tract (ulcers, colitis, spastic colon, etc.); ulcers are problems of excess acidity.

Chapter 14, titled "The Effects of Food on Sex," notes that "Scientific studies have found that individual foodstuffs have an effect on sexuality via their chemical constituents... soybeans (including tofu) contain traces of antithyroid factors; as the thyroid regulates sexual desire, activity, and fertility, when consumed in large enough quantities these foods could possibly inhibit sexuality by lowering thyroid energy. Oriental folk rumor, which I've been unable to verify, has it that tofu 'cools the sex organs' and is used by monks for the specific purpose of aiding them in maintaining celibacy. In this light, it's interesting to note that the traditional Japanese diet, high in thyroid-depressing soybean products, also contains appreciable amounts of seaweeds, rich in thyroid-stimulating iodine."

In the Foreword, Dr. Mendelsohn writes: "Coming from a background of modern medicine, I, as well as hundreds of thousands of other M.D.s, was carefully educated in nutritional ignorance–indeed in disdain for food. The hospital 'dietician' was not–and is not even today–a teacher of physicians. The dietician's traditional purpose in life has always been to serve as a 'referral' for a patient who bothered the physician with too many questions about food. The very title of this book *Food and Healing* represents a joining of two concepts that most doctors regard as unrelated."

A photo (p. 351) shows Annemarie, who was born in Holland and brought up in Argentina on a European vegetarian diet. After her arrival in the United States in 1961, she was introduced to macrobiotics. She lives in New York City with her two daughters, and directs the Natural Gourmet Cookery School there. Address: 365 West End Ave., New York City, NY 10024. Phone: 212-580-7121.

2029. Committee for Soybean (The). 1986. The Philippines recommends for soybeans. Los Baños, Laguna, Philippines: Philippine Council for Agriculture and Resources Research and Development. 111 p. Technical Bulletin Series No. 14A. Revision of 1976 edition. [51 ref. Eng]

• ***Summary:*** Written by The Soybean Committee (Dr. Florendo C. Quebral, a plant pathologist at UPLB, chairman), this work focuses on recent technologies for soybean production. A foreword by Ramon V. Valmayor, Executive Director of PCARRD, notes: "The importance of soybean has been stressed continuously. To encourage its widespread production, the Ministry of Agriculture and Food (MAF) launched the Soybean Production Program in Mindanao. Likewise, PCARRD initiated and coordinated the implementation of Soybean Pilot Production Project in 1983 to demonstrate the feasibility of growing soybean profitably in Luzon."

Contents: Foreword. Acknowledgments. The Soybean Committee. Introduction. Production management. Marketing. Soybean cropping system. Crop protection. Seed production. Processing and utilization: Raw materials for industry, soybean as food. References. Appendixes. List of tables. Lists of figures.

Table 1 shows soybean production in the Philippines from 1974 to 1985. Area in hectares grew from 2,780 ha in 1974 to a peak of 11,250 ha in 1976 and was 8,479 ha in 1985. Production grew from 2,214 tonnes in 1974 to a peak of 11,466 tonnes in 1982 and was 8,430 tonnes in 1985. Yield grew from 0.80 tonnes/ha in 1974 to a peak of 1.05 in 1982 and was 0.99 in 1985. Local production does not begin to supply local demand. In 1984 380,691 tonnes of soybeans and products were imported. Most of the imports were soybean meal.

Table 2 shows imports and exports of tausi (salted, fermented soybeans), oil cake (huge imports), soy sauce (large exports), soy oil (refined; large imports), soybean paste, taho (soymilk curds, often sold topped with a little brown sugar), bean cheese (tokwa [tofu]), hypoallergenic soy food, crude soy oil. Page 50 shows all current uses of soybeans in the Philippines, and p. 51 gives the nutritional composition of Philippine soyfoods. Note the terms Geerligs cheese (Tahu; 92.7% moisture and 2.9% protein), Soybean curd (Tahuri; 61.3% moisture and 11.4% protein), Fermented soybean cheese (Tausi; 51.5% moisture and 13.8% protein), and Soybean cheese (Tokwa; 77.0% moisture and 12.9% protein).

Recipes are given for preparing soy sauce, miso, tahu (soymilk curds), tokwa (soybean cheese, or firm tofu), tao-si (salted, fermented soybeans), soybean milk, and soybean coffee. Descriptions are given for sufu, tempeh, soy flour and grits, soy protein concentrates and isolates.

Note: In the section on nutritional composition, two words are incorrectly defined. The term "Tahuri" actually refers to tofu in brine, and "tausi" refers to salted, fermented soybeans. Address: PCARR.

2030. Frost, G.M. 1986. Commercial production of enzymes. *Developments in Food Proteins* 4:57-134. Chap. 3. (B.J.F. Hudson, ed. London and Englewood, New Jersey: Applied Science Publishers). [197* ref]

• ***Summary:*** The production of isolated enzymes on an industrial scale began less than 100 years ago. However the action of enzymes (fermentation) for changing and preserving foods has been exploited for thousands of years. Many traditional fermentations involve digestion by extracellular enzymes prior to fermentation by whole organisms. Enzymes are sold mainly to the food, beverage, and detergent industries. The present world market is valued at approximately £200 million. Most applications now involve hydrolytic enzymes, but future growth of other types seems probable. Most commercial enzymes are made by submerged cultivation of highly developed strains

of microorganisms using specially optimized processes. Industrial enzymes, though rarely highly purified, are manufactured to exacting microbiological specifications. Enzymes for diagnostic and pharmaceutical use require more sophisticated purification methods.

The first artificial use of an enzyme was probably the addition of calf stomach extract to milk to cause coagulation when making cheese. In the West, the main use of fermentation is in making alcoholic beverages–wine, beer, etc. In East Asia, traditional fermentations are more concerned with improving the nutritional value, flavor, and texture of various foods–such as tempeh.

During the past century Asian and Western applications have been merged. For example, in 1894 Takamine in Japan used *Aspergillus oryzae,* the main organism in the soy sauce fermentation, to make Takadiastase, "an amylolytic enzyme which was first used for human consumption as a digestive aid." Takamine also established a business in the USA and new applications for his enzymes were found. His company still exists (though under a different name) and is still marketing essentially the same enzyme preparations.

Includes a long section on "Enzymes used in food." Address: John & E. Sturge Ltd., Selby, North Yorkshire, UK.

2031. Gandjar, Indrawati. 1986. Soybean fermentation and other tempe products in Indonesia. *Mycologia Memoir* No. 11. p. 55-66. Chap. 4. (C.W. Hesseltine and Hwa L. Wang, eds. Indigenous Fermented Food of Non-Western Origin. Berlin & Stuttgart: J. Cramer.) Previously published in 1981 in USDA Miscellaneous Publication FL-MS-333. [14 ref]
• ***Summary:*** Contents: Introduction. Kecap (Indonesian soy sauce). Taoco (Indonesian chiang, a yellowish-brown porridge that is very popular in Western Java). Soybean tempe (*tempe kedelai*). Tempe gembus (okara tempe). Non-soybean tempe–made from velvet beans (*tempe benguk*), jack beans (*tempe koro pedang*), winged bean (*tempe kecipir*), pigeon pea (*tempe gude*), wild tamarind (*tempe lamtoro*), peanut presscake (*tempe bungkil kacang*), and coconut presscake (*tempe bongkrek*).

"Tempe is an important source of protein in the Indonesian diet. At present the intake of soybean tempe per person per day is within the range of 40 to 50 g while the recommendation is 100 g per person per day... The awareness of the people that soybean tempe is nutritious results in a higher demand of this product. In the city of Jakarta, about 6000 tonnes of soybeans are processed monthly; 2500 tonnes for soybean tempe [tempeh], and 3500 tonnes for tahu [tofu]."

Table VI shows the nutritional composition of some leguminous seeds and tempe products. Table VII shows the amino acid content of the seeds and the tempeh of 4 non-soybean legumes. Address: Dep. of Biology, Faculty of Mathematics and Natural Sciences, Univ. of Indonesia, Jakarta, Indonesia.

2032. Hesseltine, C.W.; Wang, H.L. 1986. Indigenous fermented foods of non-Western origin. *Mycologia Memoir* No. 11. 351 p. Berlin and Stuttgart: J. Cramer. Published for the New York Botanical Garden in Collaboration with The Mycological Society of America. Illust. Index. 24 cm.
• ***Summary:*** Contains 18 chapters by various authors. Each chapter that mentions soy is cited separately. Address: NRRC, Peoria, Illinois.

2033. Hesseltine, C.W. 1986. Microorganisms involved in food fermentations in tropical Asia. In: Susono Saono and F.G. Winarno, eds. 1986. Proceedings of International Symposium on Microbiological Aspects of Food Storage, Processing and Fermentation in Tropical Asia. x + 344 p. See p. 189-204. Held 10-13 Dec. 1979 at Cisaru, Bogor, Indonesia. Illust. 24 cm. [18 ref]
• ***Summary:*** Three pioneers of the taxonomy of molds used in fermented foods were Drs. R. Nakazawa, K. Saito, and C. Thom. Fermentations can be classified as Homofermentations (only one species of microorganism is necessary to produce the product; e.g. natto, onchom, tempeh, fermented tofu), Heterofermentations (more than one is required; e.g. Chinese yeast, or ragi), Homomultifermentations (two or more strains of the same species are used together; e.g. miso, shoyu, soy yogurt).

Tables show: (1) Representative strains of cultures in Oriental food fermentations: Miso–*Aspergillus oryzae, A. sojae, Saccharomyces rouxii, Pediococcus halophilus.* Tempeh–*Rhizopus oligosporus.* Sufu–*Actinomucor elegans, Mucor dispersus.* Address: NRRC, Peoria, Illinois.

2034. Hesseltine, C.W.; Wang, Hwa L. 1986. Food fermentation research and development. *Mycologia Memoir* No. 11. p. 9-22. Chap. 1. (C.W. Hesseltine and Hwa L. Wang, eds. Indigenous Fermented Food of Non-Western Origin. Berlin & Stuttgart: J. Cramer). [13 ref]
• ***Summary:*** The following fermented soyfoods are discussed: Miso, shoyu, natto, hamanatto, sufu, tamari, ontjom, tempeh. Address: USDA/NRRC, 1815 N. University St., Peoria, Illinois 61604.

2035. Hesseltine, C.W. 1986. Future of fermented foods. *Mycologia Memoir* No. 11. p. 303-16. Chap. 17. (C.W. Hesseltine and Hwa L. Wang, eds. Indigenous Fermented Food of Non-Western Origin. Berlin & Stuttgart: J. Cramer.) Previously published in 1981 in USDA Miscellaneous Publication FL-MS-333. [11 ref]
• ***Summary:*** Contents: Introduction. Positive factors for increased use of fermented foods. Trends in production of fermented foods. Factors that may effect the wider use of fermented foods in the West. Literature cited. Address: USDA/NRRC, 1815 N. University St., Peoria, Illinois 61604.

2036. Hoshijo, Kathy. 1986. The art of dieting without dieting! Recipe and guidebook. The Self-Sufficiency Association, 2525 South King St., Honolulu, Hawaii 96826. Or: P.O. Box 1122, Glendale, California 91209. xiv + 729 p. Illust. Index. 24 cm.
• ***Summary:*** A whopper of a cookbook, with 300 easy-to-prepare lacto-vegetarian recipes (no eggs) from the star of the PBS television series "Kathy's Kitchen." Kathy has 6 healthy children (see color photo on rear cover) and 5 years of experience on television teaching Americans how to eat healthy foods. Each recipe contains a detailed (full-page!) nutritional analysis.

This book contains a wealth recipes using soyfoods. For example, the index lists 57 recipes for tofu and tofu mayonnaise, 13 recipes for tempeh, 9 recipes for yuba, 6 recipes for miso, and 4 recipes for soybeans (including soymilk). One section titled "Soyfriends" (p. 63) explains: "In eliminating meat from my diet, one food that has become a real friend in the kitchen is soybeans and by-products made from soybeans. From a nutritional standpoint, soybeans are a good nutritional replacement for meat as they are the only legume which contains all essential amino acids... Soybeans by themselves have a Net Protein Utilization about equal to that of beef and chicken." Address: Honolulu, Hawaii; and Glendale, California.

2037. McCarty, Meredith. 1986. American macrobiotic cuisine. Turning Point Publications, 1122 M Street, Eureka, CA 95501-2442. 110 p. Illust. Index. 28 cm. [6 ref]
• ***Summary:*** Page 7 and Chapter 7, titled "Beans and Soyfoods," give basic descriptions of tempeh, miso, soy sauce, soymilk, and tofu. Recipes include Summer's Mixed Vegetable Quiche (with tofu), Tofu Egg Foo Young, and Baked Tempeh with Lemon-Mustard Sauce. Tofu recipes elsewhere in the book include Green Goddess Dressing, Nutty Noodle Bake, Pasta Patricio, and Sour Cream. Also contains information on sea vegetables. Address: Eureka, California. Phone: 707-445-2290.

2038. McDougall, Mary A. 1986. The McDougall health-supporting cookbook. Vol. 2. Piscataway, New Jersey: New Century Publishers. iii + 157 p. Index. 23 cm.
• ***Summary:*** This is a vegan cookbook whose 250 original recipes are designed to support The McDougall Plan, which is a diet low in fat and sodium, high in complex carbohydrates. Since soyfoods are relatively high in fat, they are used sparingly and the recipes are marked by a symbol of a crown. Low sodium soy sauce is used in many recipes. Soy-related recipes include: Scrambled tofu (p. 2-3). Tofu salad dressing (p. 7-8). Dijon tofu dip (p. 9). Onion soup dip (with tofu, p. 9). Dilly tofu dip (p. 9-10). Miso soup (p. 39). Creamed tofu soup (p. 41). Tempeh Creole (p. 62-63). Rice-tofu stuffing mix (p. 88). Tempeh and grain casserole (p. 91). Tofu loaf (p. 96-97). Baked tofu cubes (p. 97-98). Spinach-tofu burgers (p. 99-100). Where's the meat loaf? (with tofu, p. 101-02). Oat burgers (with tofu, p. 102-03). TVP stuffing mix (p. 109). Okara cookies (p. 126). Tofu banana pudding (p. 132). The section titled "Update on ingredients" (p. 133-35) includes a description of: Worcestershire sauce (Sharwood's–natural and without anchovies), umeboshi plum sauce, tamari or soy sauce, okara, tempeh, kombu, and tahini. A portrait photo on the rear cover shows Mary McDougall.

Note: Not long after this book was published, New Century Publishers changed its name to New Win Publishing, Inc. and moved to Clinton, New Jersey. As of 2000 this book is published by Putnam/Penguin. Address: P.O. 14039, Santa Rosa, California 95402.

2039. Pierson, M.D.; Reddy, N.R.; Odunfa, S.A. 1986. Other legume-based fermented foods. In: N.R. Reddy, M.D. Pierson, and D.K. Salunkhe, eds. 1986. Legume-Based Fermented Foods. Boca Raton, FL: CRC Press. 254 p. See p. 219-31. Chap. 13. [43 ref]
• ***Summary:*** Contents: Introduction. Ugba. Inyu and Kecap. Waries. Kenima. Meitauza. Philippine Tao-si. Fermented cowpeas and chickpeas. Address: 1-2. Dep. of Food Science and Technology, Virginia Polytechnic Inst. and State Univ., Blacksburg, VA; 3. Dep. of Botany, Univ. of Ibadan, Ibadan, Nigeria.

2040. Rachim, Abdul. 1986. Indonesia: Notes on the soybean food industry under producers' co-operatives in Indonesia. *CGPRT* No. 4. p. 244-54. Includes 7 tables and figures.
• ***Summary:*** Contents: Background. Indonesian soybean foods. Fermented products: Tempe, oncom, tauco, kecap. Non-fermented products: Tofu, soymilk. Function and role of Kopti (and BULOG). Traditional processing industry: Current situation of small-scale home industry, further studies on the food industry / marketing system.

The Food Balance Sheets of the Central Bureau of Statistics show that 90% of Indonesia's soybeans are used for food. Most of the human consumption is in the form of a variety of popular processed foods: tempe, tahu (tofu), tauco, and a number of other less popular foods: soybean sprouts (tauge), sere in Bali, yuba, soybean milk, fried soybeans (eaten as a snack), beans boiled in the pod (also a snack), and the beans cooked as a vegetable or as an ingredient in soups. Only one factory (Sari Hasuda, in Yogyakarta) produces soybean milk. It is enriched with nonfat dried milk, vitamins, and minerals.

To coordinate and improve the economic viability of the small tofu and tempeh producers, a cooperative system, called Kopti (*Koperasi Produsen Tempe dan Tahu Indonesia;* Indonesian Tempe / Tofu Processors' Co-operative) was founded in 1979. The main function of Kopti is to procure and distribute soybeans to its members, the number of which has increased from 25 in 1980 to 286 in May 1985. It handles

about 407,160 tons/year. The purchase price of soybeans is as follows (Rupiah/kg): From USA 415, from China 425, from Indonesian farmers 475-80. Certificate [certified] seeds cost 550-75.

Tofu, tempe, kecap, tauco and oncom processing is primarily done in small factories. 3 studies have been made on the size of these factories and the quantities they process: as part of the 1974 Industrial Census of the Central Bureau of Statistics (CBS); by Winarno, et al., in 1976; and by the study team on Soybean Commodity System (SCS) in the Garut area of West Java in 1984. The findings of these 3 studies are presented in Table 2.

"We should be cautious in comparing their results, however, because of biases in the collection of the information. The CBS study, for instance, was part of an industrial census, which divided processors into two categories: small-scale industries (5-19 labourers), and home factories (1-4 labourers, some of whom may be family members). However, there may also be wide variations in the industry in different parts of the country.

"Despite these limitations, it seems that the volume of soybean processed by each unit has increased appreciably, probably reflecting a favorable growth of the industry. Yet the number of labourers per unit has remained small, and is probably diminishing. This may be because of the use of mechanical crushers or dehullers for both tempe and tofu productions." Address: Research Asst., ESCAP CGPRT Centre, Bogor, Indonesia.

2041. Reddy, N.R.; Pierson, Merle D.; Salunkhe, D.K. eds. 1986. Legume-based fermented foods. Boca Raton, Florida: CRC Press. viii + 254 p. Illust. Index. 26 cm. [585 ref]
• ***Summary:*** An overview with information on nutrition and processing of fermented soyfoods. Contents: 1. Introduction. 2. Soy sauce. 3. Miso. 4. Sufu. 5. Natto. 6. Tempe. 7. Fermented soybean milk and other fermented legume milk products. 8. Oncom (fermented peanut press cake). 9. Idli. 10. Dhokla and Khaman. 11. Dawadawa. 12. Papads. 13. Other legume-based fermented foods. 14. Future of legume-based fermented foods. Address: 1-2. Dep. of Food Science & Technol., Virginia Polytechnic Inst. and State Univ., Blacksburg, VA; 3. Vice-Chancellor, Mahatma Phule Agricultural Univ., Rahuri, Maharashtra State, India.

2042. Tofu Shop (The). 1986. Soyfood specialties: Fresh–natural–nutritious–delicious (Leaflet). Arcata, California. 1 p. Single sided. 8½ x 11 inches.
• ***Summary:*** This marketing flyer is printed with black ink on light brown paper. Each of the following is described in one of six equal-sized rectangular boxes (2 rows of three each), each with a Japanese crest: (1) Handmade tofu & soymilk. (2) Baked tofu cold-cuts. (3) Light tofu salads. (4) Delicious tofu desserts. (5) Tempeh (new!). (6) About our products. Address: 768 18th St., Arcata, California 95521. Phone: (707) 822 7409.

2043. Wang, H.L.; Fang, S.F. 1986. History of Chinese fermented foods. *Mycologia Memoir* No. 11. p. 23-35. Chap. 2. (C.W. Hesseltine and Hwa L. Wang, eds. Indigenous Fermented Food of Non-Western Origin. Berlin & Stuttgart: J. Cramer.) Previously published in 1981 in USDA Miscellaneous Publication FL-MS-333. [6 ref]
• ***Summary:*** Discusses the early history of numerous types of chu [ch'ü] (similar to koji, with a substrate of wheat, barley, millet, and/or rice), chiang [jiang] (salted sauce), shi or tou-shi (fermented beans) [soy nuggets], chiang-you, tou-yu and shi-tche (the liquid from shi [soy nugget sauce]; "It is a very dark but clear liquid and was the most popular seasoning in the sixth century"), tou-fu-ru (fermented tofu or sufu), La-pa-tou (Mucor fermented beans), Mei-tou-tcha (Meitauza, fermented okara), tsu (vinegar), yan-tsai (salted vegetables).

The three main sources of early information on fermented soyfoods are: (1) *Shih chi* [pinyin: *Shiji* by Sima Qian] (90 B.C., historical record). (2) *Ch'i-min yao-shu* [pinyin: *Qimin yaoshu,* by Jia Sixie, AD 544, "Important arts for the people's welfare"] (+6th century agricultural encyclopedia). (3) *Pen-ts'ao kang-mu* [pinyin: Bencao gangmu, by Li Shizhen, AD 1596, "The great pharmacopoeia"] (16th century botanical encyclopedia).

Concerning shi or tou-shi [soy nuggets]: The first written record "appeared in the *Shi-chi* (the historical records) written by Szuma Chien in the second century B.C., which stated that shi as sold next to salt, indicating shi was already a popular food seasoning." In the *Qimin yaoshu* (6th century AD) the method of preparing shi is described in detail. Temperature is said to be the most important factor in making shi, and June was found to be the best month for preparing this fermented seasoning. A detailed description of the process is given.

The *Bencao gangmu* (16th century AD) described many types of shi made at different localities, and give the medicinal use of each.

"In more recent times, shi can be classified into three general types." (1) *Aspergillus oryzae* mold type, which is the traditional type, also known as tou-shi, and is the most common type, prepared as described above, but using pure cultures of *Aspergillus oryzae.* Today the fermentation is carried out at 25ºC in wooden barrels. "In some areas, the washed, molded beans are mixed with 16-18% salt and fermented at 35ºC for 30 days." (2) *Mucor* mold type, which is usually made in Szechuan in wooden trays. The process is described. The mold is *Mucor racemosus* Fresenius. (3) *Bacillus* bacteria type, called shui-tou-shi [pinyin: shui-dou-chi], is probably the same product as natto in Japan [except that it is salted]. To make shui-tou-shi: Clean, soak, and boil soybeans until soft. Place in a cloth bag and cover with straw [an excellent natural source of *B. subtilis*]. After incubation for 1-2 days at 25-30ºC the soybeans will be

covered with viscous substances. The quality of the product is ascertained by the stickiness of the beans. Mix the sticky soybeans with minced ginger and salt, then pack tightly into jars, and age for one week. They are now ready to consume. "The organism responsible for this fermentation has been identified as *Bacillus* species.

Note: Is the third type salted? If it is, it would seem to be an intermediate form between tou-shi (soy nuggets, salted) and natto (unsalted). If it is not, it would seem to be Chinese natto. Address: 1. USDA/NRRC, 1815 N. University St., Peoria, Illinois 61604; 2. Inst. of Microbiology, Academia Sinica, Beijing, China.

2044. Wang, H.L.; Hesseltine, C.W. 1986. Glossary of indigenous fermented foods. *Mycologia Memoir* No. 11. p. 317-44. Chap. 18. (C.W. Hesseltine and Hwa L. Wang, eds. Indigenous Fermented Food of Non-Western Origin. Berlin & Stuttgart: J. Cramer). [29 ref]
• ***Summary:*** The section titled "Fermented Legume Products" defines chao (Vietnamese fermented tofu), chiang-chu (Chinese koji), ch'ou-toufu and ch'ou-toufu-ru (fermented tofu), Damsuejang and doenjang (Korean miso), furu, sufu, hon-fan or red sufu (fermented tofu), in-shi ("Fermented black soybeans from China" [soy nuggets]), in-yu (Type of Chinese soy sauce made from black soybeans), kanjang (Korean soy sauce), kenima [sic, kinema], ketjap or kecap (Indonesian soy sauce from black soybeans), meitauza or mei-tou-cha (fermented okara), meju (maiju or maeju; Korean soybean koji), natto, oncom (onchom or oncom), see-iu (see-iew; Thai soy sauce made from whole soybeans); soy sauce, soybean paste, tahuri (tahuli; Filipino fermented tofu. See sufu), tao-chieo (tao-jiao; Thai miso), taohu-yi (Fermented tofu from Thailand. See sufu), taokoan, tempe (many types), thua-kab (dry thua-nao), thua-merk (wet and cooked thua-nao), thua-nao (Thai natto), tosufu (see sufu), toufu-ru (fermented tofu), tsue-fan (tsui-fan, chee fan; fermented tofu).

Note 1. This is the earliest English-language document seen (July 2011) that contains the term "Fermented black soybeans" or "Fermented black soybeans from China," or that uses these terms to refer to *in-shi.*

Under "Fermented Cereal-Legume Products" we find: chiang, chiang-yu (chau-yu, Chinese soy sauce), fermented soybeans (soy nuggets), hamanatto, kochujang (kochu chang), miso, shoyu, tamari, taotjo (tao-tjo, tao dji; Fermented soybeans from Indonesia or Thailand [No! *Tao-tjo* is Indonesian-style miso and *tao dji* is Indonesian soy nuggets]), tao-tjung or tou-chiang (chiang), tao-yu (tou-yu; Chinese soy sauce), tauco (taocho, taoco, taucho; Indonesian miso), tou-pan-chiang (Chinese fava bean miso), tou-shi (toushih; Chinese soy nuggets), toyo (Filipino soy sauce). Note 2. This is the earliest English-language document seen (March 2009) that uses the word "taocho" to refer to Indonesian-style miso.

Fermented Vegetable Products include: Chiang-tsai (chiang-tsay; Vegetables in China pickled in chiang or soy sauce or tien-mien-chiang), miso-zuke. Address: USDA/NRRC, 1815 N. University St., Peoria, Illinois 61604.

2045. Wang, Hwa L. 1986. Nutritional quality of fermented foods. *Mycologia Memoir* No. 11. p. 289-301. Chap. 16. (C.W. Hesseltine and Hwa L. Wang, eds. Indigenous Fermented Food of Non-Western Origin. Berlin & Stuttgart: J. Cramer.) Previously published in 1981 in USDA Miscellaneous Publication FL-MS-333. [44 ref]
• ***Summary:*** Contents: Effect of fermentation on compositional changes of substrates. Protein quality and digestibility. Complementary effect of mixed proteins. Vitamins. Antibiotics. Conclusion. Literature cited. Address: USDA/NRRC, 1815 N. University St., Peoria, Illinois 61604.

2046. Wang, Hwa L. 1986. Uses of soybeans as foods in the West with emphasis on tofu and tempeh. *ACS Symposium Series* No. 312. p. 45-60. Robert L. Ory, ed. Plant Proteins: Applications, Biological Effects, and Chemistry (American Chemical Society). [34 ref]
• ***Summary:*** Similar to her article titled "Tofu and tempeh as potential protein sources in the Western diet" (March 1984). Address: Northern Regional Research Center, Agricultural Research Service, USDA, Peoria, Illinois 61604.

2047. Winarno, F.G.; Reddy, N.R. 1986. Tempe. In: N.R. Reddy, M.D. Pierson, and D.K. Salunkhe, eds. 1986. Legume-Based Fermented Foods. Boca Raton, FL: CRC Press. viii + 254 p. See p. 95-117. Chap. 6. [77 ref]
• ***Summary:*** Contents: Introduction. Methods of preparation. Nutrient composition. Nutritional quality. Antinutritional and/or toxic factors. Tempeh and tempeh-like foods from other legumes. Conclusions. Address: 1. Director, Food Technology Development Center, Prof. and Head, Food Science Dep., Bogor Agricultural Univ., Bogor, Indonesia; 2. Dep. of Food Science and Technology, Virginia Polytechnic Inst. and State Univ., Blacksburg, VA.

2048. Winarno, F.G. 1986. Tempe bongkrek [Tempe bongkrek]. Jakarta, Indonesia: Kantor Menteri Muda Urusan Pengatan Produksi Pangan. iv + 60 p. Illust. 21 cm. [Ind]*
• ***Summary:*** Includes bibliographic references (p. 58-59). Address: Director, Food Technology Development Center, Prof. and Head, Food Science Dep., Bogor Agricultural Univ., Bogor, Indonesia.

2049. Wood, B.J.B. 1986. Introduction of new fermented foods into Western culture. In: C.W. Hesseltine and H.L. Wang, eds. 1986. Indigenous Fermented Food of Non-Western Origin. Berlin: J. Cramer. 351 p. See p. 251-58. Chap. 14. [6 ref]

Address: Dep. of Applied Microbiology, Univ. of Strathclyde, Glasgow, Scotland.

2050. *Kecamatan Tempeh dalam Angka* (*Statistics on Tempeh by Districts, Indonesia*).1986? Serial/periodical. Published in Indonesia by Kantor Statistik Kabupaten Lumajang, Mantri Statistik Kecamatan Tempeh (Lumajang Statistics Bureau, Statistics Administrator of Tempeh District). Frequency: Annual. 21 cm. [Ind]*
• ***Summary:*** Gives statistics on tempeh production in Indonesia.

Note 1. Lumajang is an ancient city located in East Java province, Indonesia. It shares a border with Malang on the west. Administration: Lumajang is divided into 21 sub-districts and 202 smaller areas.

Note 2. Concerning administrative divisions of Indonesia from large to small. (a) A province (Indonesian *Provinsi*) is headed by a governor. As of May 2011 Indonesia has 33 provinces, five of which have special status. Provinces include West Java, Central Java, Yogyakarta, East Java, Bali, etc. (b) Regency (Indonesian: *Kabupaten*) and City (Indonesian: *Kota*) is a local level of government beneath that of province. Both regency and city are the same level, having their own local government and legislative body. The difference between a Regency and a City lies in differing demographics, size and economics. Generally the regency has larger area than city, and city has a non-agricultural economic activities. A regency is headed by a regent (Indonesian: *Bupati*), and a city is headed by a mayor (Indonesian: *Walikota*). Regent or mayor and members of representative bodies are elected by popular vote for a term of 5 years. Indonesia has 405 regencies and 97 cities. (c) Sub-district: Each regency or city is divided into sub-districts. Each sub-district (Indonesian: *Kecamatan*) is headed by a "Camat." Camats are civil servants. Indonesia has 6,543 sub-districts. (d) The next smaller level is the village (*desa*) or *kelurahan.* The village has rural connotations. Each village is headed by a village head (Indonesian: *Kepala Desa*), who is elected by popular vote. The *kelurahan* is more urban, has less power than a village, and is headed by a *Lurah,* who is a civil servant. Indonesia has 75,244 villages or *kelurahans.* Address: Indonesia.

2051. **Product Name:** [Meatless Tempeh Meatballs].
Foreign Name: Tempeh-Buletten.
Manufacturer's Name: Morgenland Pflanzenkost.
Manufacturer's Address: Kurze Strasse 1, D-3406 Lenglern, West Germany.
Date of Introduction: 1986?
New Product–Documentation: Manufacturer's catalog. 1987. Kleine Warenkunde. Yellow. 4 pages. Describes each of the 13 soyfood products. "Tempeh is an Indonesian specialty soyfood that is fermented with a special mold culture. Easily digested and rich in protein and vitamin B, tempeh enables you to conjure up the most interesting recipes. Tempeh Buletten are made with rice, whole wheat flour, vegetables, sunflowerseeds, and exotic seasonings. Sold 2 per pack."

2052. **Product Name:** [Tempeh Chips].
Foreign Name: Tempeh-Chips.
Manufacturer's Name: Morgenland Pflanzenkost.
Manufacturer's Address: Kurze Strasse 1, D-3406 Lenglern, West Germany.
Date of Introduction: 1986?
New Product–Documentation: Manufacturer's catalog. 1987. Kleine Warenkunde. Yellow. 4 pages. Describes each of the 13 soyfood products. "Thin tempeh strips are fried until crisp, and vacuum packed."

2053. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Svadesha R. Urban. Made in Munich by Byodo Naturkost.
Manufacturer's Address: Ostpreussenstr. 22, D-8000 Munich 81, West Germany. Phone: 089 / 93 90 05.
Date of Introduction: 1986?
How Stored: Refrigerated.
New Product–Documentation: Talk with Svadesha R. Urban, company founder. 1990. June 13. After moving to Ostpreussenstr., he started selling tempeh, which was made by Byodo Naturkost.

2054. **Product Name:** [Tofu Spread with Tempeh].
Foreign Name: Tofu Pastete mit Tempeh?.
Manufacturer's Name: Svadesha R. Urban.
Manufacturer's Address: Ostpreussenstr. 22, D-8000 Munich 81, West Germany. Phone: 089 / 93 90 05.
Date of Introduction: 1986?
How Stored: Refrigerated.
New Product–Documentation: Talk with Svadesha R. Urban, company founder. 1990. June 13. After moving to Ostpreussenstr., he introduced new versions of the product, one with herbs and one with tempeh. He also started selling tempeh, which was made by Byodo Naturkost.

2055. Schlimper, Cilica. 1987. What is tempeh? *Soyfoods* (*ESFA*) 1(1):18-20. Jan. [Eng]
• ***Summary:*** Contents: Introduction. Qualities (Incl. tables showing vitamins and minerals). Tempeh production. Second generation products. Address: Director, Sales and Promotion, Athanor Co.

2056. *Soyfoods* (*ESFA*).1987. ESFA objectives. 1(1):31. Jan.
• ***Summary:*** 1. To prevent consumer deception, ESFA encourages soyfoods producers to establish voluntary standards for the various soyfoods. 2. To work with regulatory agencies in laying out the basis of requirements

for the soyfoods on labeling, marketing, and health issues. 3. To provide reliable information to dietitians, press people (the media), and generally speaking to all people looking for information on soyfoods. 4. To promote utilization of soyfoods for their food value. "By soyfoods, we refer among others to the oriental traditional products directly derived from the soybeans, such as soybean milk, tofu, tempeh, soya sauce, and soybean sprouts."

Those interested in joining the European Soy Foods Association should contact Guy Coudert, ESFA, 12 Avenue George V, 75008, Paris, France. Subscriptions to *Soyfoods* magazine (published by ESFA), 4 issues per year, are 300 French francs. Address: Paris.

2057. Vandemoortele, Philippe. 1987. Editorial. *Soyfoods* (*ESFA*) 1(1):2. Jan.
• ***Summary:*** Contents: What are soyfoods? Why was the Association founded? What will the Association do to achieve its goals. What can a member expect from the Association?

"Soyfoods cover all products deriving from the whole soybean produced according to a traditional process and manufactured into soya milk, tofu, tempeh, miso, soya sauce, soya sprouts and other products. Why was the European Soyfoods Assoc. founded? Until only a few years ago, only industrial soya protein such as defatted and fullfat flour, concentrates, isolates, and textured protein were used in the food industry. They are mainly used for their functional properties rather than for their nutritional characteristics." Now there is a growing interest in soyfoods. The ESFA will organize a Soyfoods Conference every 2 years. Address: President of the ESFA (European Soyfoods Assoc.).

2058. *Toyo Shinpo* (*Soyfoods News*).1987. Kôji-kin baiyô okara aji, kaori, shokkan ryôkô. Okara shori ni idomu. Okara hanbaagu tanpaku na aji de katasa yoshi (ryo) [Culturing okara with koji molds. The taste, fragrance, and texture are good. Processing okara by chilling. Okara hamburger–light taste and good firmness]. Feb. 2. p. 2. [Jap; eng+]
• ***Summary:*** In this experiment, raw okara, white rice, bran, and konnyaku powder were cultured with koji molds (*Aspergillus oryzae*), *Rhizopus* molds (*kumonosu kabi*), and one other type. Afterwards, the mixture was used in deep-fried tofu burgers (*ganmo*), croquettes, and hamburgers. The best results occurred when ground pork was mixed in to make a hamburger. The end product had a light taste and a nice firm texture.

2059. Flinders, Carol. 1987. Tempeh is cholesterol-free substitute for chicken. *News* (*Indianapolis, Indiana*). Feb. 11.
• ***Summary:*** A brief introduction to tempeh with two vegetarian recipes: Tempeh a la king. Tempeh cacciatora [cacciatore]. Note: *Cacciatore* means "hunter" in Italian. A small photo shows Carol Flinders. Address: Petaluma, California 94952.

2060. Lytel, Laurie. 1987. Soy Plant bankruptcy: collectivism gone haywire. *Crain's Detroit Business.* Feb. 16. p. 1, 6.
• ***Summary:*** The collective, established in 1976, filed for Chapter 7 bankruptcy in early January. The company has lost money for at least 4 years, the result of disorganized management. Last year's revenues were $168,000 and expenses $180,000. The company makes 8,500 lb/week of fresh tofu, plus tempeh and soymilk.

2061. Flinders, Carol. 1987. Laurel's Kitchen. *Washington Post.* Feb. 18. p. E3.
• ***Summary:*** A vitamin B-12 deficiency is a rare but very serious problem. "Another way to get vitamin B-12 is to eat tempeh or miso every day"–although neither is a completely reliable source. "Other fermented foods, such as natto and even shoyu, may contain B-12, but it shouldn't be counted upon." Address: [California].

2062. Appropriate Foods, Inc. 1987. Eat Appropriately! [Catalog and price list]. 292 Liberty Ave., Brooklyn, NY 11207.
• ***Summary:*** The following lines are carried and distributed: Appropriate Foods, New York Soy Deli, The Soy Source, Emperor's Best, Cedar's Mediterranean Foods, Grainaissance (amazake and mochi), Infinity Foods (amazake puddings), Integrity Baking Co., Jofu, Maine Coast Sea Vegetables, Malka's Foods (Blueberry Tofu Pie), Miso Master, Nasoya Foods, New England Country Dairy, Ray's Seitan Wheat Meat, Soya Kaas, Stonyfield Farms (Yogurt), Sunshine Burgers. Address: Brooklyn, New York.

2063. Ismunadji, M.; Zulkarnaini, I.; Somaatmadja, S. 1987. Nutritional disorders of soybean in Indonesia. *CGPRT* No. 10. p. 167-74. Feb. J.W.T. Bottema, F. Dauphin, and G. Gijsbers, eds. Soybean Research and Development in Indonesia. [11 ref]
• ***Summary:*** Nutritional disorders of soybean are common in Indonesia. Visual symptoms, such as leaf chlorosis (potassium deficiency), stunted growth, and malformation of leaves are often observed in the field. Molybdenum and phosphorus deficiencies, aluminum toxicity, and acid mineral soils (corrected by careful liming) are common problems on specific soil types.

Soybean is the most important grain legume crop grown in Indonesia. It is used for food and feed and plays an important role in the Indonesian diet as a source of protein. Soybean protein is much cheaper than protein from animal sources. Soybean-based food such as tempe, tahu, soy sauce and taucho are very popular. Indonesia is not yet self-sufficient in soybean and imports are close to a half million tons/year. The Government is promoting soybean production

by acreage expansion and intensification. Address: Bogor Research Inst. of Food Crops (BORIF).

2064. Moeljopawiro, Sukarti; Gordon, D.T.; Fields, M.L. 1987. Bioavailability of iron in fermented soybeans. *J. of Food Science* 52(1):102-05. Jan/Feb. [24 ref]
• ***Summary:*** Soybeans contain appreciable amounts of iron but its availability is poor, in part because of phytic acid and fiber present in the plant. The relative biological value (RBV, a measure of bioavailability) of iron increased from 60.1% in boiled nonfermented soybeans to 86.7% by lactic acid producing microorganisms and 87.5% in tempeh. Thus fermentation increases the bioavailability of iron. This is probably because the enzymes from the microorganisms hydrolyze the complex form and/or insoluble form of the iron. Tempeh molds produce active phytase, which hydrolyzes phytic acid, which in turn reduces iron availability. Address: Dep. of Food Science & Nutrition, Univ. of Missouri, Columbia, MO 65211.

2065. Murata, K.; Kusakabe, I.; Kobayashi, H.; Akaike, M.; Park, Y.W.; Murakami, K. 1987. Studies on the coagulation of soymilk-protein by commercial proteinases. *Agricultural and Biological Chemistry* 51(2):385-89. Feb. [5 ref. Eng]
• ***Summary:*** 17 proteinases from microorganisms, plants, and animals were tested as coagulants for soymilk. Those which did coagulate soymilk were bromelain, papain, trypsin and proteinases from *Bacillus amyloliquefaciens, B. subtilis, B. polymyxa, Streptomyces griseus, S. caespitosus, Aspergillus oryzae, A. sojae, Endothia parasitica, Rhizopus* species, and *Mucor miehei.* Ineffective were rennin, pepsin, and proteinases from *Aspergillus saitoi.* Soymilk clotting activity fell as the pH rose from 5.9 to 6.7. Temperature optima for the enzymes varied from about 50ºC for *Rhizopus sp.* to 85ºC for *Bacillus subtilis* and *B. thermoproteolyticus* and as high as 95ºC for papain. Address: Research Development Sect., Kibun Food Chemifa Co. Ltd., Takinogawa 7-38-15, Kita-ku, Tokyo 114, Japan.

2066. **Product Name:** Organic Tofu [Smoked], Organic Tempeh.
Manufacturer's Name: Oasis Wholefoods.
Manufacturer's Address: Unit 3C, Dart Complex, Steamer Quay Rd., Totnes, South Devon, England.
Date of Introduction: 1987. February.
Ingredients: Cultured soya beans.
Wt/Vol., Packaging, Price: 8 oz (227 gm).
How Stored: Frozen.
New Product–Documentation: Letter from Simon Bailey. 1988. Oct. 10. Company name is now Oasis Wholefoods. Phone: 0803-863167. They now make Organic Tofu (plain & smoked), Tofuburger, Organic Tempeh. In Dec. 1987 Francis Checkley sold the company to I.J. Mohammed.

Letter from I.J. Mohammed. 1991. Sept. 30. The smoked tofu was introduced in Feb. 1987 and the organic tempeh in Aug. 1987.

Label for Organic Tempeh sent by I.J. Mohammed. 1991. Sept. 30. 4 by 8 inches. Green on yellow. Illustration of palm trees. "Cultured soya beans. Low in saturated fats. High in protein. Cholesterol free. Salt free." Three recipes are given in condensed form in small type.

2067. **Product Name:** Tofu, Pressed Tofu, Herbal Tofu, and Tempeh.
Manufacturer's Name: Okanagan Soyfoods.
Manufacturer's Address: Lumby, BC, Canada. Phone: 604-547-2257.
Date of Introduction: 1987. February.
New Product–Documentation: Talk with company. 1989. March 7. Talk with Greg Lundh. 1989. April 28. This company went out of business 10 days ago. Greg Warry of BC started the company. He bought a lot of equipment, then couldn't make the payments. He sold the company in the autumn of 1988 to his ex-partner. Several people ended up running it; a man named John from California, who had an Oriental wife, and a lady named Bee (Beatrice Berry?). Talk with a lady who hopes to buy the company. 1989. Oct. 30. Okanagan Soya Foods, located in a small place out in the country and run by Beatrice Berry, now makes about 2,000 cakes/month of tofu. The new owners want to make about 2,000 cakes/week when they start.

2068. Samson, R.A.; Kooij, J.A. van; Boer, E. de. 1987. Microbiological quality of commercial tempeh in the Netherlands. *J. of Food Protection* 50(2):92-94. Feb. [13 ref]
• ***Summary:*** A total of 110 samples were examined. Most (98%) of the samples had an aerobic plate count above 10 million CFU/gm (Colony forming units per gram). Numbers of *Enterobacteriaceae* exceeded 100,000 CFU/gm in 67% of the samples, whereas numbers of lactic acid bacteria exceeded 10 million CFU/g in 81% of the samples. *Staphylococcus aureus* was found in 13%, *Bacillus cereus* in 11% and *Escherichia coli* in 3% of the samples at levels of 100,000 CFU/gm. *Yersinia enterocolitica* was found in 6 samples, whereas *Salmonella* was absent in 25 g of all the samples examined. Many (69%) of the samples had a yeast count above 100,000 CFU/g. *Trichosporon beigelii* was the most frequent yeast species. Besides *Rhizopus oryzae* and *Rhizopus oligosporus,* which obviously represent the mold species responsible for the fermentation, *Mucor indicus* was often associated with the mycoflora of the tempeh. The reasons for the poor microbiological quality are discussed and some recommendations are proposed. Address: 1. Centraalbureau voor Schimmelcultures, P.O. Box 273, 3740 AG Baarn, Netherlands; 2. Food Inspection Service, The Hague, Netherlands.

2069. Layton, Lyndsey. 1987. Tempeh maker changes name

to LightLife Foods. *Recorder* (*Greenfield, Massachusetts*). March 10. p. 3.
• ***Summary:*** Effective April 1, Tempehworks will be known as Lightlife Foods Inc. The 8-year-old company recently began its product expansion when it introduced Cookie Heaven, a ready to bake cookie batter made from whole wheat dough, without sugar or preservatives and sweetened with fruit juices. Address: Recorder staff.

2070. Smith, Susan. 1987. From tofu to Tofruzen. . . White Wave of Boulder finds uses for soybeans. *Daily Camera* (*Boulder, Colorado*). March 17.
• ***Summary:*** Founded in 1977, White Wave now has 25 employees and expects revenues of $1.6 million in 1987, growing to $5 million by 1990. It is America's largest producer of tempeh. Tofruzen Inc. of Denver recently raised $1.6 million in a public stock offering. White Wave plans a public stock offering later this year. Address: Camera Business Writer, Boulder.

2071. Cooper, Derek. 1987. Tempeh–"the greatest food since yoghurt." *Listener* (*The*) (*London*). March 26. p. 20. [2 ref]
• ***Summary:*** "This July, nutritionists from all over the world will be converging on Java for a teach-in on the scientific and culinary aspects of tempeh, organized by the United Nations University." Address: UK.

2072. Brown, Judy. 1987. Suiting America's tastebuds: The new American soyfoods. *Whole Foods.* March. p. 37-40, 42-43. [1 ref]
• ***Summary:*** An overview, drawing heavily (with acknowledgment) on Shurtleff & Aoyagi's *Soyfoods Industry and Market* for statistics. Address: Alban & Associates, San Francisco, California.

2073. Imuda, Ikuyo. 1987. Jidai o sakidori suru tenpe ryôri. Machi no chiisana resutoran kara [Tempeh recipes that are ahead of their time, from Healthy Kan, a small natural foods restaurant in Tokyo]. *Daizu Geppo* (*Soybean Monthly News*). March. p. 39-41. [Jap]
• ***Summary:*** The restaurant is two blocks (3 minutes) from the Ichigaya Station on the Sobu Line in Tokyo. Phone: 263-4023. Tempeh recipes include "Tempeh jiru teishoku" (¥800). Tempeh is a tasty, nutritious soybean food from Indonesia. The menu includes "Brown rice, soup with fried tempeh, side dishes." The restaurant also serves a tofu cheesecake for ¥300. Address: Restaurant owner and nutritionist.

2074. **Product Name:** Organic Tempeh, Organic Seasoned Tempeh.
Manufacturer's Name: Nutrisoy Pty. Ltd.
Manufacturer's Address: 255 Forest Road, Arncliffe 2205, NSW, Australia.
Date of Introduction: 1987. March.
Ingredients: Seasoned: Organic soybean, water, cider vinegar, sea salt, garlic, coriander and culture (*Rhizopus oligosporus*).
Wt/Vol., Packaging, Price: 300 gm in plastic bag.
How Stored: Refrigerated.
New Product–Documentation: Labels with dates sent by Tony Wondal of Nutrisoy. 2005. April 26. He started making and selling these products in March 1987. Seasoned: Blue, yellow and red on white. On the front panel: "Nutritious. Cholesterol free... For a high energy breakfast, quick lunch, or hearty main meal. No artificial flavouring, colouring, or preservatives. Improved quality. Fitness food."

2075. **Product Name:** Emperor's Best Amaranth Tempeh (With Soybeans).
Manufacturer's Name: Soy Source (Appropriate Foods, Inc.).
Manufacturer's Address: 292 Liberty Ave., Brooklyn, NY 11207.
Date of Introduction: 1987. March.
Ingredients: Organic soybeans, amaranth, Rhizopus oligosporus culture.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated.
New Product–Documentation: Label. 1987. March 1. 3 by 4 inches. Black on silver. Soya Newsletter. 1987. 1(3):6. 8 oz for $1.40 retail. Interview with Robert Werz. 1987. Sept. 9.

2076. **Product Name:** Emperor's Best Garbanzo Tempeh (Contains No Soy).
Manufacturer's Name: Soy Source (Appropriate Foods, Inc.).
Manufacturer's Address: 292 Liberty Ave., Brooklyn, NY 11207.
Date of Introduction: 1987. March.
New Product–Documentation: Label. 1987. March 1. 3 by 4 inches. Black on gold. Soya Newsletter. 1987. 1(3):6. 8 oz for $1.89 retail. Interview with Robert Werz. 1987. Sept. 9.

2077. **Product Name:** Emperor's Best Rye Caraway Tempeh (with Soybeans).
Manufacturer's Name: Soy Source (Appropriate Foods, Inc.).
Manufacturer's Address: 292 Liberty Ave., Brooklyn, NY 11207.
Date of Introduction: 1987. March.
Ingredients: Organic soybeans, rye, caraway seeds, Rhizopus culture.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated.
New Product–Documentation: Label. 1987. March 1. 3 by 4 inches. Black on yellow. Interview with Robert Werz. 1987. Sept. 9.

2078. **Product Name:** Emperor's Best Brown Rice Tempeh (Contains No Soy).
Manufacturer's Name: Soy Source (Appropriate Foods, Inc.).
Manufacturer's Address: 292 Liberty Ave., Brooklyn, NY 11207.
Date of Introduction: 1987. March.
Ingredients: Brown rice, Rhizopus culture.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated.
New Product–Documentation: Label. 1987. March 1. 3 by 4 inches. Black on pink. Interview with Robert Werz. 1987. Sept. 9.

2079. **Product Name:** Amaranth Tempeh.
Manufacturer's Name: Soyfoods Unlimited, Inc. (Marketer). Made in Boulder, Colorado, by White Wave, Inc.
Manufacturer's Address: San Leandro, CA 94577.
Date of Introduction: 1987. March.
Ingredients: Organic soybeans (grown in accordance with Section 26569.11 of the California Health and Safety Code), amaranth, barley, millet, water, tempeh culture (Rhizopus oligosporus).
Wt/Vol., Packaging, Price: 8 oz (227 gm). In perforated plastic big inside printed plastic bag.
How Stored: Refrigerated or frozen.
Nutrition: Per 4 oz.: Calories 184, protein 16 gm, carbohydrates 20 gm, sodium 23 mg, fat 4 gm.
New Product–Documentation: Label. 1987, undated. 5.5 by 6.5 inches. Green letters with yellow printed on plastic bag. "Foods for Health. Amaranth. Legendary Aztec staple food. Delicately nutty seed. High in amino acid lysine. Recipe for Amaranth Tempeh Stroganoff on back." Interview with Lonnie Stromnes. 1987. Aug. 31.

2080. **Product Name:** Tempeh Temptations: Marinated Tempeh Filets.
Manufacturer's Name: Western Soy Complements, Inc.
Manufacturer's Address: Santa Cruz, CA 95062.
Date of Introduction: 1987. March.
Ingredients: Soybean tempeh (made with organic soybeans and brown rice according to CA Health and Safety Code Section 26569.11), shoyu (a natural soy sauce), fresh ginger, garlic, spices, peanut or safflower oil.
Wt/Vol., Packaging, Price: 7 oz vacuum packed. Retails for $1.69 (8/88 Berkeley, CA).
How Stored: Frozen.
New Product–Documentation: Label. 1988. 2.5 by 3.25 inches. Orange, black, and white. "A cutlet. A burger. For salad. Stir fries. Heat 'n' eat. Complete protein. Delicious cold, too! Perfect for toaster or microwave." Talk with Jeremiah Ridenour. 1988. Aug. 31. This is a fried and marinated product that was launched in March 1987.

Product with Label purchased at Safeway supermarket in Lafayette, California. 1990. Dec. 3. The ingredients have changed: Soy-rice tempeh is used instead of soy tempeh, and canola oil instead of peanut or safflower oil. It is now a 6 oz. vacuum pack that retails for $1.79.

2081. **Product Name:** Santa Cruz Tempeh. Soy-Rice [Three Seed with Sunflower, Sesame & Poppy Seeds].
Manufacturer's Name: Western Soy Complements.
Manufacturer's Address: 1560 Mansfield Ave., Suite D, Santa Cruz, CA 95062. Phone: 408-479-05968.
Date of Introduction: 1987. March.
Ingredients: Organically grown* soybeans, filtered water, organically grown* brown rice, sunflower seeds, sesame seeds, poppy seeds, brown rice flour, Tempeh culture (R. oligosporus), vinegar. * = Organically grown in accordance with section 26569.11 of the California Health and Safety Code. safflower oil.
Wt/Vol., Packaging, Price: 8 oz vacuum packed. Retails for $1.59 (8/88 Berkeley, CA).
How Stored: Frozen.
New Product–Documentation: Products with Labels purchased in Berkeley, California. 1988. Aug. 30. 2.75 by 5 inches. Black, white and brown. "A cultured soyfood. Preparation: Use as a protein-rich staple food: slice, fry, bake, or steam. Season to taste. Occasional black or grey spots are part of the tempeh culture and not indicative of spoilage."

Note that this company is at the same address as Wildwood Natural Foods of Santa Cruz.

2082. **Product Name:** Sea Veggie Tempeh.
Manufacturer's Name: White Wave, Inc.
Manufacturer's Address: 1990 North 57th Court, Boulder, CO 80301.
Date of Introduction: 1987. March.
Ingredients: Organically raised soybeans, water, hiziki [sic., hijiki] and arame (sea vegetables), culture (Rhizopus oligosporus grown on a vegetable medium).
Wt/Vol., Packaging, Price: 8 oz perforated plastic bag in a printed plastic bag.
How Stored: Refrigerated or frozen.
Nutrition: Per 4 oz: Calories 184, protein 16 gm, fat 4 gm, sodium 36 mg, carbohydrates 16 gm.
New Product–Documentation: Label. 1987, undated. 5.5 by 6.5 inches square. Pea green and white on turquoise background. Pareve. Back panel reads: "This tempeh is well suited for stir-fry dishes, stews, and soups, imparting just a subtle flavor of the sea." Recipe for Tempeh & Vegetable Stir Fry on back. Interview with Lonnie Stromnes. 1987. Aug. 31.

2083. **Product Name:** Sesame Peanut Tempeh.
Manufacturer's Name: White Wave, Inc.

Manufacturer's Address: 1990 North 57th Court., Boulder, CO 80301. Phone: 303-443-3470.
Date of Introduction: 1987. March.
Ingredients: Tempeh (made with soybeans organically grown in accordance with section 26569.11 of the California Health and Safety Code and brown rice), natural soy sauce, garlic, onion, spices.
Wt/Vol., Packaging, Price: 6 oz (170 gm). Vacuum packed in poly pouch.
How Stored: Frozen or refrigerated.
Nutrition: Per 3 oz.: Calories 190, protein 9 gm, carbohydrates 6 gm, fat 3 gm, sodium 466 mg.
New Product–Documentation: White Wave Order Form. 1988. April. Talk with Steve Demos. This product, whose main ingredient is soybeans, was introduced at the same time as Sea Veggie Tempeh. He chose the colors for the artwork in the airport in New York on his way to India.

2084. Anfiteatro, Dominic. 1987. Tempeh in Australia (Interview). *SoyaScan Notes*. April 11. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Dominic began to make tempeh commercially in very early 1980 at his Clear Light Wholefoods, a vegetarian restaurant in Adelaide. Started in 1977, it was the first "health shop" in Adelaide. Tempeh was his first commercial soyfood product. He learned how to make it from Shurtleff & Aoyagi's books. He made tempeh in a little room next to the restaurant and sold it over the counter. Once he saw the potential of tempeh he sold the restaurant to Ananda Marga and specialized in making tempeh. He started his company Light Wave Wholefoods in 1983. He has spoken to many people and thinks his was the first commercial tempeh in Australia. According to the History of Tempeh (Shurtleff & Aoyagi), commercial production began in Australia in 1980. He does not know Cyril and Elly Cain, who were making tempeh by July 1982.

He says the biggest tempeh company in Australia, the Mighty Bean Company in Queensland, produces about 2 tons a month. Dominic now makes about 50 kg/week in Adelaide. Address: Adelaide, Australia.

2085. Bhavanishankar, T.N.; Rajashekaran, T.; Murthy, V.S. 1987. Tempeh-like product by groundnut fermentation. *Food Microbiology* 4(2):121-25. April. [10 ref]
• ***Summary:*** Peanuts were partially defatted using a hydraulic press, then the skins were removed. After being soaked and drained, the seeds were autoclaved at 15 lb pressure for 20 minutes, then cooled to room temperature and inoculated with tempeh starter (*Rhizopus oligosporus* culture). The tempeh fermentation increased the nutritive value of the peanuts by increasing the soluble solids, amino nitrogen, and soluble nitrogen. Address: Dep. of Microbiology and Sanitation, Central Food Technological Research Inst. (CFTRI), Mysore 570 013, India.

2086. Business Communications Co., Inc. 1987. Mass merchandised "healthy" foods. 25 Van Zant St., Norwalk, CT 06855-1781. 162 p. April. Price: $1,500.
• ***Summary:*** In this expensive ($1,500) market study, there is a chapter titled "The Soyfoods Market," which has the following segments: Summary of market segment. The tofu market. Soy-based frozen desserts. Soy-based beverages. Soy-based yogurt-like products. Other soy-based prepared foods. Fermented soy products. "A move toward the consumption of convenient, good-tasting foods with a healthful image is the food trend of the eighties. There is a strong relationship between healthful foods and the consumer's need for convenience. In the future, food manufacturers can expect the growth of 'healthy' foods to outpace that of the total food market, as more consumers pursue a healthful lifestyle...

"BCC defines the 'healthy' food market as those segments of food categories that are generally accepted by the consumer as having a healthful image. Total retail sales of all product segments included in this analysis were estimated to have reached $88 billion in 1986." Address: Norwalk, Connecticut. Phone: 203-853-4266.

2087. Koritala, S.; Hesseltine, C.W.; Pryde, E.H.; Mounts, T.L. 1987. Biochemical modification of microorganisms: A preliminary survey. *J. of the American Oil Chemists' Society* 64(4):509-13. April. [17 ref]
• ***Summary:*** Some soybean oil was consumed by many microorganisms, and some was also hydrolyzed to free fatty acids. *Aspergillus oryzae,* two strains of *Amylomyces rouxii,* and *Rhizopus oligosporus* hydrolyzed the oil completely (95%). Address: USDA/NRRC, Peoria, Illinois 61604. Phone: 309-685-4011.

2088. Nout, M.J.R.; de Dreu, M.A.; Zuurbier, A.M.; Bonants-van Laarhoven, T.M.G. 1987. Ecology of controlled soyabean acidification for tempe manufacture. *Food Microbiology* 4(2):165-72. April. [12 ref]
• ***Summary:*** The acidification during soaking can be controlled by recycling part of the soak water from a previous batch as an inoculum, resulting in a soak water pH of 4.1 to 4.9 depending on the soaking temperature and recycling rate. Soaks at 19ºC and 25ºC were dominated by *Lactobacillus plantarum.* Isolates of *L. plantarum* added as an inoculum to freshly started soaks were able to acidify the beans to pH less than or equal to 4.30 yielding tempeh of a good quality in which bacilli and *Enterobacteriaceae* could not be detected. *Pediococcus* species dominated the soaks at 37ºC, and though able to acidify soybeans, inhibited the growth of *Rhizopus oligosporus;* hence no tempeh could be formed. "Our findings indicate that a simple recycling process can result in predictable acidification during soaking of soyabeans, contributing to the shelf-life and safety of

tempe." Address: Dep. of Food Science, Agricultural Univ., De Dreijen 12, 6703 BC Wageningen, Netherlands.

2089. *Soya Newsletter* (*Bar Harbor, Maine*).1987. Tempehworks becomes Lightlife Foods. March/April. p. 4.
• ***Summary:*** On 1 April 1987 Tempehworks, Inc. of Greenfield, Massachusetts, changed its name to Lightlife Foods, Inc. President Michael Cohen said that the new name "represents the broader range of natural, low-calorie, cholesterol-free food products that will embody the focus of our manufacturing and marketing efforts over the coming years."

2090. *Soya Newsletter* (*Bar Harbor, Maine*).1987. White Wave acquires Soyfoods Unlimited. March/April. p. 4.
• ***Summary:*** The acquisition took place on 1 Dec. 1986. Manufacturing will be consolidated at White Wave's plant in Colorado. Soyfoods Unlimited's offices in California will serve as a sales and distribution center for both companies' products. "White Wave, founded in 1977, now employs 25 people and distributes tofu and tempeh products nationwide." Sales were over $1 million in 1986, and expected to be $1.6 to $2 million in 1987. "The company recently signed an exclusive 5 year supplier agreement with Tofruzen, a Colorado-based distributor of nondairy frozen desserts."

2091. Truesdell, Delores D.; Green, N.R.; Acosta, P.B. 1987. Vitamin B-12 activity in miso and tempeh. *J. of Food Science* 52(2):493-94. March/April. [17 ref]
• ***Summary:*** The U.S. Pharmacopoeia microbiological assay with *Lactobacillus leichmanii* (ATCC 7830) was used to determine vitamin B-12 activity in light rice miso, dark rice miso, barley miso, tempeh, and tempeh burger. Unpasteurized misos had the highest B-12 content, averaging 0.21 micrograms/100 gm. Vitamin B-12 activity in miso ranged from a high of 0.25 micrograms/100 gm in barley miso to a low of 0.15 micrograms/100 gm in light rice miso.

Pasteurized tempeh contained 0.12 micrograms/100 gm and tempeh burger contained 0.06 to 0.11 micrograms/100 gm. The variation in vitamin B-12 activity found in these products may be due to different conditions used or produced during fermentation. Collaborative studies and assessment of vitamin B-12 pseudoform (analog) activity are needed before these foods can be considered a source of vitamin B-12. Address: Dep. of Nutrition & Food Science, College of Home Economics, Florida St. Univ. Tallahassee, FL 32306.

2092. *Toyo Shinpo* (*Soyfoods News*).1987. Miete kita tenpe buumu [Tempeh boom becoming more noticeable in Japan]. May 1. p. 7. [Jap; eng+]
• ***Summary:*** In Tokyo, Marusan Ai's tempeh is sold in the Mitsukoshi department store. There has been no tempeh sold in the Kyoto-Osaka (*Kansai*) area before January of this year. After the 1985 Asian Symposium on Non-Salted Soybean Fermentation, professor Murata went to the Mitsukoshi department store in Osaka, which is 314 years old and one of the biggest department stores in Japan. With Murata's strong persuasion, the manager of the Mitsukoshi food department decided to sell tempeh in their freezer case starting in January of 1987. It is currently selling in small numbers, but has attracted some regular customers. The manager said, "Even if we don't sell many of them [tempeh cakes], we would like to carry them just for the few regular customers." He wants the manufacturers to promote tempeh more forcefully. Mitsukoshi sells tempeh for ¥250/250g in a special film-package designed for frozen foods. The Marusan Ai tempeh is made in their main plant and is shipped to the Mitsukoshi store by frozen transportation.

2093. *Toyo Shinpo* (*Soyfoods News*).1987. Shitte okitai tenpe no chishiki [Important tempeh information that we should know]. May 1. p. 7. [Jap; eng+]
• ***Summary:*** This article explains what tempeh is, why it is important, its uses, nutritional value, and some information on tempeh use in the U.S. This would be all new to most Japanese readers.

2094. **Product Name:** [Bio Mets Athanor Vegetable Curry {With Tempeh}].
Foreign Name: Bio Mets Athanor Curry Végétal.
Manufacturer's Name: Athanor SARL.
Manufacturer's Address: ZAE La Biste "Atelier 9," 34670 Baillargues, France. Phone: 67 87 0608.
Date of Introduction: 1987. May.
Ingredients: Tempeh, onions or leeks, carrots, white turnips, cauliflower, raisins, soy sauce, pure sunflowerseed oil, spices and aromas, unrefined seasalt.
Wt/Vol., Packaging, Price: 250 gm plastic tray in a paperboard box. FOB Price 12.35 FF.
How Stored: Refrigerated.
Nutrition: Per 100 gm: Calories 111, lipids 7.9 gm, protein 6.0 gm, carbohydrates 3.9 gm.
New Product–Documentation: Label. Received 1988. May. Paper box, 5.5 by 4 by 1 inches. Multi-colored illustration of curry on front panel with sun logo. "100% Plant Protein. Preparation based on tempeh and vegetables. Ready in several minutes."

2095. **Product Name:** [Bio Mets Athanor Vegetable Blanquette (Tempeh Stewed in White Sauce)].
Foreign Name: Bio Mets Athanor Blanquete Végétal.
Manufacturer's Name: Athanor SARL.
Manufacturer's Address: ZAE La Biste "Atelier 9," 34670 Baillargues, France. Phone: 67 87 0608.
Date of Introduction: 1987. May.
Ingredients: Tempeh, carrots, onions or leeks, mushrooms, soymilk, apple cider, arrowroot, sunflowerseed oil, aromas, unrefined seasalt.

Wt/Vol., Packaging, Price: 250 gm plastic tray in a paperboard box. FOB price 12.95 FF.
How Stored: Refrigerated.
Nutrition: Per 100 gm: Calories 171, lipids 15.9 gm, protein 4.2 gm, carbohydrates 2.7 gm.
New Product–Documentation: Label. Received 1988. May. Paper box, 5.5 by 4 by 1 inches. Multi-colored illustration of blanquette on front panel with sun logo. "100% Plant Protein. Preparation based on tempeh and vegetables. Ready in several minutes."

2096. **Product Name:** [Bio Mets Athanor Vegetable Ragout {With Tempeh}].
Foreign Name: Bio Mets Athanor Ragoût Végétal.
Manufacturer's Name: Athanor SARL.
Manufacturer's Address: ZAE La Biste "Atelier 9," 34670 Baillargues, France. Phone: 67 87 0608.
Date of Introduction: 1987. May.
Ingredients: Tempeh, haricot beans, carrots, onions or leeks, tomato paste, aromas, soy sauce, sunflowerseed oil, unrefined seasalt.
Wt/Vol., Packaging, Price: 250 gm plastic tray in a paperboard box. FOB price 12.15 FF.
How Stored: Refrigerated.
Nutrition: Per 100 gm: Calories 92, lipids 6.3 gm, protein 6.1 gm, carbohydrates 2.6 gm.
New Product–Documentation: Note: *Webster's Dictionary* defines ragout (derived from the French *ragoût,* and first used in about 1664) as "Well-seasoned meat and vegetables cooked in a thick sauce."

Label. Received 1988. May. Paper box, 5.5 by 4 by 1 inches. Multi-colored illustration of ragout on front panel with sun logo. "100% Plant Protein. Preparation based on tempeh and vegetables. Ready in several minutes."

2097. **Product Name:** [Bio Mets Athanor Vegetable Bolognaise {With Tempeh}].
Foreign Name: Bio Mets Athanor Bolognaise Végétal.
Manufacturer's Name: Athanor SARL.
Manufacturer's Address: ZAE La Biste "Atelier 9," 34670 Baillargues, France. Phone: 67 87 0608.
Date of Introduction: 1987. May.
Ingredients: Tempeh, onions or leeks, carrots, tomato paste, soy sauce, sunflowerseed oil, aromas, unrefined seasalt.
Wt/Vol., Packaging, Price: 250 gm plastic tray in a paperboard box. FOB price 11.85 FF.
How Stored: Refrigerated.
Nutrition: Per 100 gm: Calories 54, lipids 2.5 gm, protein 5.6 gm, carbohydrates 2.3 gm.
New Product–Documentation: Label. Received 1988. May. Paper box, 5.5 by 4 by 1 inches. Multi-colored illustration of Bolognaise on front panel with sun logo. "100% Plant Protein. Preparation based on tempeh and vegetables. Ready in several minutes."

2098. **Product Name:** [Bio Mets Athanor Mixed Salad {With Tempeh}].
Foreign Name: Bio Mets Athanor Salade Composée.
Manufacturer's Name: Athanor SARL.
Manufacturer's Address: ZAE La Biste "Atelier 9," 34670 Baillargues, France. Phone: 67 87 0608.
Date of Introduction: 1987. May.
Ingredients: Tempeh, carrots, onions or leeks, cider vinegar, olive oil, garlic, unrefined seasalt.
Wt/Vol., Packaging, Price: 250 gm plastic tray in a paperboard box. FOB price 11.65 FF.
How Stored: Refrigerated.
Nutrition: Per 100 gm: Calories 100, lipids 6.8 gm, protein 4.1 gm, carbohydrates 4.3 gm.
New Product–Documentation: Label. Received 1988. May. Paper box, 5.5 by 4 by 1 inches. Multi-colored illustration of the tempeh salad on front panel with sun logo. "100% Plant Protein. Preparation based on tempeh and vegetables. Ready in several minutes."

2099. Bhatnagar, P.S. 1987. Project coordinator's report. In: All India Coordinated Research Project on Soybean (India Council of Agricultural Research). Eighteenth annual workshop: Proceedings & Technical Programme. National Research Centre for Soybean, Khandwa Road, Indore 452 001, India. See p. 2-23. Held at Univ. of Agricultural Sciences, Dharwad (Karnataka) 1-3 May 1987.
• ***Summary:*** In 1985-86 some 994,000 tonnes of soybeans (1.3 million hectares) were produced in India. The yield was 755 kg/ha, far below the world average of 1,700 kg/ha. Of this, 78.7% was produced in Madhya Pradesh, and 15.6% in Uttar Pradesh. Yet soybean demand in India is 3.5 million tonnes, due largely to the rapid growth of the soybean oil industry. This is helping greatly in reducing India's dependence on imported oil. He summarizes progress in soybean research, genetics, breeding, seed production, production technology, seed physiology, microbiology, plant pathology, entomology, utilization, and economics. Address: Director, NRCS.

2100. Mounts, T.L.; Wolf, W.J.; Martinez, W.H. 1987. Processing and utilization. In: J.R. Wilcox, ed. 1987. Soybeans: Improvement, Production, and Uses. 2nd ed. Madison, Wisconsin: American Society of Agronomy. xxii + 888 p. See p. 819-66. Chap. 21. [154 ref]
• ***Summary:*** Contents. 1. Soybean oil. 2. Soybean protein. 3. Soybean processing. 4. Soybean oil processing. 5. Food uses of soybean oil. 6. Nonfood uses of soybean oil. 7. Defatted soybean protein processing. 8. Utilization of defatted soybean protein products. 9. Full-fat soybean products. Address: 1-2. NRRC, Peoria, Illinois; 3. USDA-ARS, Beltsville, Maryland.

2101. Paredes-López, O.; Harry, G.I.; Montes-Rivera, R. 1987. Development of a fermentation procedure to produce a tempe-related food using common beans as a substrate. *Biotechnology Letters* (*Kew, England*) 9(5):333-38. May. [19 ref]
• ***Summary:*** Common black beans (*Phaseolus vulgaris*) were found to be an acceptable substrate for making tempeh using *Rhizopus oligosporus.* The initial pH of the substrate was 5.8. The fermentation was conducted at 37ºC with a relative humidity of 70% for 72 hours. Address: 1. Unidad Irapuato, CIEA-Inst., Politecnico Nal., Apdo. Postal 629, 36500 Irapuato, Gto., Mexico; 2-3. Centro de Investigaciones Agricolas de El Bajio, INIFAP, Celaya, Gto., Mexico.

2102. *Soybean Update.*1987. American Soybean Association and three Indonesian groups organizing soyfoods workshop in Jakarta July 16 to promote first class image for soyfoods. June 15. p. 3.
• ***Summary:*** The Indonesia Hotel and Restaurant Association, the Food and Beverage Association, and the University of Trisakti are joining forces with ASA. Staff from leading hotels, restaurants, and caterers are expected to attend. They will learn innovative ways to incorporate soyfoods such as tempeh and tofu into menu items. First class restaurants rarely feature soyfoods.

2103. Kennedy, Shawn G. 1987. A soy-based business flourishes in Brooklyn [Appropriate Foods]. *New York Times.* June 24. p. C6.
• ***Summary:*** Robert Werz, a carpenter, started making tempeh patties in a corner of the kitchen of a friend's catering business. After 6 months he set up in Nassau County. Today, with 6 employees, he produces about 10,000 lb/month of tempeh. Half is sold to health food distributors and half delivered to 100 stores in Metro New York. The company also makes soymilk and tofu products (quiches, tortellini, and salads). In March the company moved from Franklin Square, Long Island, to an East Brooklyn Industrial Park; there was more space at lower rent.

When Mr. Wertz became a vegetarian more than 14 years ago [i.e., before 1970], the only place he could buy tofu was in Chinatown. Appropriate Foods is owned by Robert Werz and Shelley Martin.

2104. Jahnke, Pamela. 1987. It's not burger, its Betsy's Tempeh–and its new on mid-Michigan market. No cholesterol, high in protein, say producers. *State Journal* (*Lansing, Michigan*). June 29.
• ***Summary:*** Betsy Shipley and her husband Gunter Pfaff are both vegetarians. She is a library clerk at MSU [Michigan State University] and he is a retired MSU employee. They hope to produce 500 lb/month of vegetarian hamburger. Added barley gives tempeh a nuttier flavor. Address: Michigan.

2105. Ariyaratne, K.G.S. (Mrs.). 1987. Tempeh–The soya health food. *Soyanews* (*Sri Lanka*) 9(1):6-8. Jan/June. [1 ref]
• ***Summary:*** Discusses: Tempeh nutrition, how to make tempeh, how to store or preserve tempeh, preparation of foods with soy tempeh. The favorite preparation is to prepare tempeh like dry fish with tomatoes and other condiments. Address: Agricultural instructress, Sri Lanka.

2106. Bhatnagar, P.S. 1987. All India Coordinated Research Project on Soybean (Indian Council of Agricultural Research). Project coordinator's report & summary tables of experiments 1986-87. National Research Centre for Soybean, Khandwa Rd., Indore 452 001, India. xxii + 336 p. 27 cm.
• ***Summary:*** Contents: Project coordinator's report: Desired production of soybean is within our reach, by Dr. P.S. Bhatnagar (p. i-xxii). Summary tables of varietal trials (breeding and genetics, p. 1-144). Station trials. Agronomy. Seed physiology. Soil microbiology. Plant pathology. Entomology. Agricultural economics. Quality aspects and utilization. Appendixes. Summary reports. Breeding trials: Northern hill zone, northern plain zone, central zone, southern zone. Agronomy trials: Northern hill zone, northern plain zone, southern zone. Soil microbiology. Plant pathology. Entomology. Preliminary performance of some germplasm lines. Pest complex of soybean crop at Indore. Uniform method of disease rating. Statement showing staff position in the project. Budget allotment, expenditure and percent utilization in the project.

The National Research Centre for Soybean, Indore, has under it five main centers: 1. G.B. Pant University of Agriculture and Technology, Pantnagar, UP. 2. J.N. Krishi Vishwa Vidyalaya-Regional Research Station, Sehore, MP. 3. University of Agricultural Sciences, Bangalore, Karnataka. 4. Indian Agricultural Research Institute, New Delhi. 5. Marathwada Agricultural University, Parbhani, Maharashtra. In addition, there are 10 Sub Centres and 5 Voluntary Centres.

This report is largely about soybean breeding, variety development, and agronomy, with almost nothing about utilization. The utilization chapter contains 3 reports, only the last of which has any conclusions! (1) "Studies on feeding of tempeh to determine its effect on growth and blood picture of pre-school children." The tempeh was made with 55 parts sunflower seeds and 45 parts soybeans. It was most acceptable to children when coated with sugar syrup. (2) "Studies on the partial substitution of ground meat preparations with edible grade defatted soybean meal." (3) "Studies on the acceptability of soymilk blended dahi." 60 parts soymilk were blended with 40 parts cow's milk and made into yogurt using various pure cultures. Address: Indore, India.

2107. Johnson, Kirk. 1987. Hidden fats in whole foods diets.

East West. June. p. 62-68.
• ***Summary:*** A full-page table (p. 65) titled "How the substitutes stack up" shows total fat and serving size for the following categories: Dairy products. Substitute dairy products. Meat. Substitute meat products. Frozen dinners. Miscellaneous. The substitute dairy products include: Tofu Cream Chie (21st Century). Soya Kaas (soy cheese from American Natural Snacks). Tofutti (Tofu Time). Le Tofu (Brightsong Foods). Ice Bean (Farm Foods). Tofu, silken (Nasoya). Tofu, soft (Nasoya). Tofu, firm (Nasoya). Soybean margarine (Willow Run). Soymilk (Edensoy). Soymilk (Health Valley). Soymilk (Vitasoy).

Substitute meat products include: Fakin' Bacon (Tempehworks). Tofu Wieners (Yves). Tofu Pups (Tempehworks). Vegie Burger (Bud, Inc.). Tofu Burger (Bud, Inc.). Gardenburger (Wholesome & Hearty). Tofu Sausage (Vegetable Protein Co.). Tempeh, 3-grain (Tempehworks). Seitan ("wheat meat").

Meatless frozen dinners include: Tofu Lasagna (Legume). Meatless Pepper Steak with Kofu & Noodles (Legume). Sweet and Sour Tofu (Legume).

Miscellaneous products include: Nasoyannaise (Nasoya Foods). Salad dressing, Creamy Tofu (Nasoya). Miso.

2108. Kokke, Robert; Sudo, Narini. 1987. Indonesia no kenko shokuhin, tenpe [Indonesia's health food, tempeh]. *Daizu Geppo* (*Soybean Monthly News*). June. p. 4-18. [50 ref. Jap]
• ***Summary:*** Contains a lengthy and well documented history of tempeh plus an original bibliography of 50 references. Perhaps the best publication on tempeh seen to date in Japanese. Address: 1. United Nations University (Kokusai Rengo Daigaku), Development Programming; 2. Consultant.

2109. Monteiro, Shri P. Vincent. 1987. Studies on feeding of tempeh to determine its effect on growth and blood picture of pre-school children. In: All India Coordinated Research Project on Soybean. 1987. Project Coordinator's Report & Summary Tables of Experiments 1986-87. See p. 257-58.
• ***Summary:*** Tempeh was prepared using a blend of soybean and sunflower seeds (45:55). It was made into hot chips, coated with sugar powder or sugar syrup. The latter was more acceptable. Address: Bangalore, Karnataka, India.

2110. **Product Name:** Betsy's Tempeh. Vegetarian Patties (Meatless Burgers).
Manufacturer's Name: S&P Farm.
Manufacturer's Address: 14780 Beardslee Rd., Perry, MI 48872. Phone: 517-675-5213.
Date of Introduction: 1987. June.
New Product–Documentation: Label. 1986, dated. 4 by 5 inches. Red and green on yellow background. "Cultured soybeans with barley. 12 easy-to-use, pre-cooked patties. Cholesterol free. Preservative free." Plant opened 21 June 1987.

Letter from Betsy Shipley. 1988. March 3. "Enclosed are two articles from the local papers (Towne Courier, 24 June 1987, p. 5) from our open house and an article from the New Alchemy Institute (Journal, spring 1987, p. 7). Sales to date are slow. I have the product in two food co-ops and a local Krogers store;... My next step is to set up demonstrations in people's homes with interested people. When giving out samples of the tempeh in a pasta sauce, people like it and usually buy a package; unfortunately there doesn't seem to be a lot of repeat business. We will continue to plug away at it."

Talk with Gunter Pfaff. 1990. Sept. 11. The soy and barley patties sell better than the grated tempeh, and the barley aids the production process. His company hopes to take the burger national, and expand their plant or build a new one. They are starting a research project with state funding in cooperation with a local university.

Recipe cards (photocopied on beige paper with black ink) for Tempeh Patties sent by Betsy and Gunter. 1991. Aug. 19. Sweet & sour tempeh (with 4 x 2 oz). Tempeh Patties, cubed. Tempeh stew. Betsy's Tempeh Patties are easy to use: Marinade, burgers, fastest pattie. On the back of each card is a different interesting message.

2111. **Product Name:** Betsy's Tempeh. A Vegetarian Alternative for Ground Meat (Grated Tempeh).
Manufacturer's Name: S&P Farm.
Manufacturer's Address: 14780 Beardslee Rd., Perry, MI 48872.
Date of Introduction: 1987. June.
New Product–Documentation: Label. 1986, dated. 4 by 5 inches. Red and green on yellow background. "Cultured soybeans with barley. Grated. Easy-to-use. Pre-cooked. Cholesterol free. Preservative free. Use in soups, chili, lasagna, spaghetti sauce, sloppy joes, spreads, tacos." Plant opened 21 June 1987.

Recipe cards (photocopied on beige paper with black ink) for Betsy's Grated Tempeh, sent by Betsy and Gunter. 1991. Aug. 19. Gunter's Bavarian tempeh. Dim sum. Betsy's chili. Sarah's stuffed peppers. Easy spaghetti, easy pizza, easy on the Earth. Party spread (non-dairy). Tempeh sloppy joes. Anne's quick enchiladas. Betsy's tempeh, grated–is easy to use. Seasoned tempeh, seasoned tempeh marinade.

2112. **Product Name:** Curried Rice Salad with Tempeh.
Manufacturer's Name: Western Soy Complements.
Manufacturer's Address: 1560 Mansfield Ave., Suite D, Santa Cruz, CA 95062. Phone: 408-479-05968.
Date of Introduction: 1987. June.
New Product–Documentation: Talk with Jeremiah Ridenour. 1988. Aug. 31. This product was launched in June 1987 for the Santa Cruz market. It Sept. he started private labeling it for Wildwood Natural Foods. Label. 3 by 2

inches. Metallic red and black on gold. Logo of birds flying over a forest silhouette. "Ready to eat foods, naturally."

2113. Torii, Yasuko. 1987. New developments with tempeh in Japan (Interview). Conducted by William Shurtleff of Soyfoods Center, July 1. 2 p. transcript.
• ***Summary:*** Torigoe-Seifun stopped making tempeh in mid-1987. They had a hard time popularizing it. Marusan's tempeh is not selling well. They, too, are thinking of stopping. Mr. Kanasugi and the Natto Assoc. are trying to cooperate with Marusan. They suggest selling "tempeh miso," made as follows: Mix 10 kg tempeh, 10 kg barley koji or rice koji, and 1 kg salt. Grind in a meat grinder and let stand at room temperature in the summer for 1 month. The result is a sort of Finger Lickin' Miso. Barley koji works best, and the resulting tamari is delicious. Mr. Kanasugu hopes some miso maker will make this. Only Mr. Kanasugi is doing tempeh research. He makes this miso in his restaurant daily. He also makes a spread like peanut butter. Mr. Ose is still making tempeh but his business, Udai, is not doing well. No one is left at the Ministry of Agriculture with an interest in tempeh: Mr. Katoh went to work with FAO in Rome and Ohta went to Showa Seiyu.

Why did tempeh fail to catch on in Japan? 1. It was poorly marketed. 2. The ads and Torigoe aimed at the older generation who still know how to deep fry foods. 3. It is not clear whether the attempted tie-in with natto was helpful or harmful. Natto is a convenient fast food. Now tempeh is not even sold at Natural House, the natural foods supermarket. Organic soybeans from Living Farms are now widely used in Japanese miso and natto. Address: Kamitsuchidana 324, Ayase-shi, Kanagawa-ken 252, Japan. Phone: 0467-76-0811.

2114. Gleason, Jane. 1987. Survey of consumers and extension personnel who have been trained in home-level soy processing. *Soybean Marketing in Sri Lanka, Monthly Report.* July. p. 1.
• ***Summary:*** Soyfoods are desired by many vegetarians and because they are less expensive than fish, eggs, and meat, for which they are seen as an alternative. They are not seen as a substitute for other legumes. Every person interviewed purchases TVP (or Soya Meat) on a regular basis. Those with low incomes purchase it for its economy and taste, and even those with more money who can afford fish and meat buy it for its taste. "This product has become very well integrated into Sri Lankan diets." The soyfoods taught at the SFRC training program are not as often consumed on a regular basis. The soyfoods most often prepared at home by extension workers are pittu, roti, and the soy mixture; tofu, tempeh, and soymilk are less likely to be prepared. Regular consumers are less likely to prepare soyfoods at home. For rural people the major constraint on soyfood preparation is inaccessibility of ingredients. Soy flour and soy splits are not available anywhere outside of Gannoruwa. Products in which there is the most interest if they were available are soy-fortified kola kanda (an indigenous drink made of rice flour, green leaves, and coconut), soy dhal, and snack foods. Soy flour is liked in roti and string hoppers.

2115. **Product Name:** Homestyle Tempeh Vegetarian Sandwiches [Tempeh "No Chicken," or Tempeh "No Chicken" Sub].
Manufacturer's Name: Homestyle Foods (Formerly Sonoma Specialty Foods).
Manufacturer's Address: Santa Rosa, CA 95403.
Date of Introduction: 1987. July.
Ingredients: Sandwich: Wholewheat bread, Homestyle Tempeh "No Chicken" Salad, sprouts, eggless mayonnaise. Note: Sub adds lettuce.
Wt/Vol., Packaging, Price: 7.5 oz (sandwich) or 6 oz (sub).
How Stored: Refrigerated.
New Product–Documentation: Labels. 1987. 2 by 3 inches. Black or red on white.

2116. **Product Name:** [Taifun Tempeh, and Smoked Tempeh].
Foreign Name: Taifun Tempeh, und Tempeh geraeuchert.
Manufacturer's Name: Life Food.
Manufacturer's Address: Stuehlinger Strasse 9, D-7800 Freiburg, West Germany. Phone: 0761/50 61 55.
Date of Introduction: 1987. July.
Ingredients: Smoked: Organically grown soybeans, tempeh starter, smoke.
Wt/Vol., Packaging, Price: 200 gm poly bag. Retails for DM 4.50.
How Stored: Refrigerated.
New Product–Documentation: Label sent by Anthony Marrese. 1989. Nov. 3.5 by 1.5 inches. Dot matrix printed on a white self-adhesive label. Refrigerate at 4ºC or below. Marrese notes that they currently make 20 kg/week of tempeh.

Note: This is the world's earliest known smoked tempeh.

2117. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Sojatopf. Renamed Soto in April 1989.
Manufacturer's Address: Friedrich-Ebert-Str. 40, D-8323 Trostberg, West Germany. Phone: 08621-62538.
Date of Introduction: 1987. July.
Wt/Vol., Packaging, Price: 200 gm.
New Product–Documentation: Letter (fax) from Harry Whitford. 1990. May 30. Gives full details on product based on interview with Gerhard (Oskar) Schramm. The company currently purchases its tempeh from Byodo. On 1 Jan. 1990 the company moved to Wolfbergerstr. 47, D-8211 Breitbrunn am Chiemsee, West Germany.

2118. **Product Name:** Homestyle Tempeh "No-Chicken" Salad.
Manufacturer's Name: Homestyle Foods (Formerly Sonoma Specialty Foods).
Manufacturer's Address: 2317 Bluebell Dr., Santa Rosa, CA 95403.
Date of Introduction: 1987. August.
Ingredients: Tempeh (organic soybeans, culture), celery, soy oil, soy milk, relish, soy sauce, mustard, vinegar, garlic, parsley, spices, and honey; Improved recipe (1988). Tempeh (organic soybeans*, culture), celery, soy oil, soy milk, mustard, tamari, vinegar, sesame, relish, garlic, parsley, natural spices and honey. * Grown in accordance with CA H&S Code 26569.11.
Wt/Vol., Packaging, Price: 8 oz plastic tub.
How Stored: Refrigerated.
Nutrition: Per 2.66 oz.: Calories 155, protein 7.5 gm, carbohydrates 7.4 gm, fat 10.7 gm, fiber 2.0 gm, sodium 0.25 gm, cholesterol 0.
New Product–Documentation: Label. 1987. 4.5 inches diameter. Red and blue on white plastic lid. "Natural. Non-Dairy. Cholesterol Free. No Preservatives. Use on sandwiches, in Dips and Salads." Interview with Benjamin Hills. 1987. Sept. 7. In 8 oz plastic tubs. Label. 1988. In both 8 and 15 oz tubs. Red, black, and yellow on white. "New! Non-Dairy. Cholesterol-Free. Ready to Eat. Natural. No Preservatives. Nutritious." Spot in Health Foods Business. 1988. April.

2119. Ito, Hiroshi. 1987. Tenpe no nihon ni okeru kenkyû no ayumi. III. Tenpe to onchomu no chigai [The course of tempeh research in Japan. III. Differences between tempeh and onchom]. *Daizu Geppo* (*Soybean Monthly News*). July/Aug. p. 26-30. [2 ref. Jap]
• ***Summary:*** Describes how to make onchom from okara, peanuts, and velvet beans, and discusses its biochemistry and fermentation, cookery, digestion, and nutritional composition. Address: Tokyu Nogyo Daigaku Kyoju, Jozo-ka, Chomi Shokuhin Kenkyushitsu.

2120. Nout, M.J.R.; Beernink, G.; Bonants-van Laarhoven, T.M.G. 1987. Growth of *Bacillus cereus* in soyabean tempeh. *International J. of Food Microbiology* 4(4):293-301. Aug. [6 ref]
• ***Summary:*** This bacterium can cause spoilage in tempeh. But acidification of the soybeans during soaking to pH 4.85 using natural acidification from the fermentation, or to pH 4.4 by addition of lactic acid prevented its growth. Acidification to pH 5.5 by addition of acetic acid inhibited both *B. cereus* and *R. oligosporus,* the desirable tempeh mold. Mixed inocula of *R. oligosporus* and either *Lactobacillus plantarum, L. casei subsp. alactosus,* or *L. fermentum* produced tempeh of excellent quality. Mixed inocula containing lactobacilli were, however, unable to prevent *B. cereus* growth and subsequent spoilage when added to unacidified soybeans of pH 6.6. Thus soybean acidification by biological or chemical means is essential. Address: Agricultural Univ., De Dreijen 12, 6703 BC Wageningen, Netherlands.

2121. Nout, M.J.R.; Bonants-van Laarhoven, T.M.G.; Jongh, P. de.; Koster, P.G. de. 1987. Ergosterol content of *Rhizopus oligosporus* NRRL 5905 grown in liquid and solid substrates. *Applied Microbiology and Biotechnology* 26(5):456-61. Aug. [22 ref. Eng]
• ***Summary:*** Ergosterol content has been suggested as a measure of mycelial growth in solid substrate fermentations (SSF), including soybeans. However, since ergosterol content was influenced by the substrate composition, the amount of aeration, and the growth phase of the mycelium, it was concluded that ergosterol should actually not be used as a chemical index for the quantification of biomass growth in SSF with limited mass transfer, as in tempeh or oncom production. Address: Dep. of Food Science, Agricultural Univ., Veghel, Netherlands.

2122. Pollard, Jean Ann. 1987. The new Maine cooking. Lance Tapley, Publisher, P.O. Box 2439, Augusta, ME 04330. 288 p. See p. 22-24, 94, 202-15, 221. Illust. Index. 28 cm.
• ***Summary:*** Mostly recipes, arranged by season, including tofu (13), tempeh (6), miso (1), plus how to make tofu at home. Address: Winslow, Maine.

2123. Posner, Howard. 1987. 21st century whole foods cook book, featuring tempeh, tofu, corn masa: Healthy food for the whole world. 21st Century Foods Inc., 30A Germania St., Jamaica Plain, MA 02130. 54 p. Aug. No index. 22 cm. [5 ref]
• ***Summary:*** Contains 71 recipes: 40 tempeh recipes, 28 masa recipes, and 3 tofu recipes. Contents: Acknowledgments. Introduction. What is tempeh? Nutritional information. How to prepare and cook tempeh. 1. Tempeh. 2. Corn masa. 3. Algae. Address: Jamaica Plain, Massachusetts.

2124. Shurtleff, William. 1987. History of Appropriate Foods Inc. and The Soy Source. Lafayette, California: Soyfoods Center. 3 p. Unpublished manuscript, based on a interviews with Robert Werz, Sept. 9.
• ***Summary:*** "Appropriate Foods was founded by Robert Werz in the fall of 1980 as a tempeh manufacturer. Born on 29 Dec. 1952, he had been a vegetarian since about 1970. Quite early he developed an affinity for soyfoods. He had been enjoying tofu since the early 1970s, when it was only available from Chinatown. He first heard about tempeh in 1975 from a friend in California, then first tasted it in about 1977. In 1979 he began to make tempeh part time at home in Sea Cliff, New York, for himself and a few friends while

working as a carpenter and a boat builder. He also sold some of this tempeh to one store, Rising Tide, as a test market.

"In 1980 Werz decided to try making tempeh as a part time business. So in October 1980 he founded Appropriate Foods, Inc. He rented a small kitchen (down 2 long flights of stairs in the Bayside Jewish Center) from a friend who was a kosher caterer in Bayside, New York. Commercial production of Tempeh Brothers Tempeh started there in Nov. 1980. When Werz first made tempeh at home and at the temple, he had a partner, David Sibek; friends called them "tempeh brothers." Hence the product name. The only other tempeh sold in the area was that made by The Tempeh Works in Greenfield, Massachusetts.

"In the spring of 1981 Werz and Sibek decided to make tempeh a full-time business. They were distributing their products to about 10 health food stores and making about 20 pounds of tempeh each batch, 200 pounds a week. So they rented an old meal packing plant, complete with tile walls and floor drains, at 137 New Hyde Park Rd., Franklin Square, Long Island, New York.

In Feb. 1982 tempeh production started at the new location, and soon the company had two small distributors in New York. But now there were 12 tempeh brands on the market. In about June the distributors dropped 'Appropriate Foods' products. So they built an insulated box in the back of a pickup truck and began to deliver their own products. From this painful experience Werz learned a key lesson: "In the food business, distribution is everything." If a company does not have control over the distribution of its products, it is extremely vulnerable.

Werz and Sibek quickly realized that they had to expand their product line, so in June 1982 they started making three new products: (1) Tempeh Brothers brand Soyfurters, a cake of tempeh sliced lengthwise into 4 sticks, marinated, and seasoned with liquid smoke, to sort of resemble hot dogs; (2) No Cow brand Soymilk (the soybeans were ground in a motor-driven Corona mill) in plain, cinnamon-honey, and carob-honey flavors; and (3) Tempeh Brothers brand Tempehburgers.

In the summer of 1982 the company added Tempeh Brothers brand Super Tempeh and Soy-Rice-Sesame Tempeh, and dropped the Soyfurters. Dave Sibek left in early 1983."

"In Feb. 1984 Werz and a partner, Shelley Martin, started a second business, The Soy Source, to allow Appropriate Foods to start selling their products, under The Soy Source Brand, to supermarkets. Their first products were shoyu (Japanese-style soy sauce) and tamari (wheat-free soy sauce). The first new tofu product in the new line (launched in Feb. 1985) was Perfect Pasta brand Tofu Tortellini (frozen). The tofu was purchased from Nasoya and the product made by the pasta maker. In Sept. 1985 Vegetarian Gourmet Traditional Pot Pie with Tempeh and Tofu Quiche, both frozen, were added to the new line."

"On 1 Dec. 1986 Appropriate Foods completed its move to a larger building in the East Brooklyn Industrial Park at 292 Liberty Ave., Brooklyn, New York. Production began there in March 1987. In mid-March four new tempehs were launched as gourmet items, with silver and gold labels, under the Emperor's Best Brand: Garbanzo Tempeh (with no soy), Soy & Amaranth Tempeh, Rye-Caraway-Soy Tempeh, and Brown Rice Tempeh (with no soy). A nice article in the *New York Times* (24 June 1987) noted: "Today, with six employees, the company produces about 10,000 pounds of tempeh a month. About half is sold to health food distributors and the rest is delivered to about a hundred stores and restaurants in the metropolitan area.

"As of September 1987 products made under the Appropriate Foods brand include Soy Tempeh, Super Tempeh, Soy-Rice-Sesame Tempeh, Tempeh Burgers, Soymilk, and Tofu Salads. Garbanzo Tempeh and Amaranth Tempeh are sold under the Soy Source gourmet brand. Soy Source is still an independent company with its own books. The distribution arm of the company, called Appropriate Foods Distributing, is trying to broaden its line. The future seems to lie in 'crossover products,' sold in supermarkets."

The company is now one of America's largest tempeh manufacturers. They have developed many innovative tempeh and tofu second generation products. Address: Lafayette, California.

2125. **Product Name:** [Tempeh].
Foreign Name: Tempi.
Manufacturer's Name: Centro de Soya, Soy Dairy.
Manufacturer's Address: Barrio San Bartolo, Molino Belen, Solola, Guatemala; Apartado Postal 118, 07091 Solola.
Date of Introduction: 1987. September.
Ingredients: Soybeans, water, vinegar, Rhizopus culture.
Wt/Vol., Packaging, Price: Packaged in 1 and 2 lb. plastic bags (doubled). Retails for Q. 2.50 per lb.
How Stored: Blanched and frozen.
New Product–Documentation: Interview with Laurie Praskin. 1987. Nov. 30. Tempeh was introduced in 1987 and is made by Amado and his partner, Felipe. Letter from Amado del Valle. 1988. March 16. The product is called "tempi" (mis-pronunciation through The Farm influence). 100 lb have been made to date. "Production has been stopped momentarily, but at the beginning of April it will start again as we will then have an adequate amount of spores and the necessary equipment. We have insistent orders from various restaurants."

Note: Plenty International (Jan. 1994) notes that this company is now named Alimentos San Bartolo, located at Apartado Postal 118, Solola, San Bartolo, Guatemala. Phone: 502-514896.

2126. *Ie no Hikari.*1987. Mamenoko osusume no nattô ryôri

[Natto dishes recommended by the Mamenoko restaurant]. Sept. p. 68-70. [Jap]
• ***Summary:*** This restaurant, specializing in natto and tempeh cookery, is run by Mr. Goro Kanasugi of the Japan Natto Assoc. The restaurant's cute name means "Child of the Bean."

2127. *Plenty Bulletin* (*Summertown, Tennessee*).1987. Business school grads help build soy dairy in the Caribbean. 3(3):1-4. Sept.
• ***Summary:*** A food processing kitchen and soy cafe was constructed on the northeast coast of Dominica on the Carib Indian Reserve by locals with help from 8 MBA volunteers from the Wharton School of Business [at the Univ. of Pennsylvania in Philadelphia]. Carib farmers are now selling soybeans to the Plenty Soy Center in Roseau, Dominica's capital. Each week the Center produces 100 lb of tofu, 25 lb of soysage, 20 lb of tempeh, 30-50 gallons of soy ice cream, and 30-40 gallons of soymilk. Most of these soyfoods are sold through two co-ops that are managed by Plenty-trained Dominican staffs: the Ebeneezer Women's Co-op in Marigot and the Kairi Soy Co-op on the outskirts of Roseau.

At the Soy Development Center in Roseau, Plenty Canada offers 2 six-week classes each year in home, village, or small industrial scale soyfoods processing. The staff also conducts two 16-hour training courses on other parts of the island mainly for home preparation of soyfoods. Fifteen farmers are growing ¼ acre each of soybeans. In Jamaica, Country Farmhouse Lifeline, a soyfoods production center in Kingston, makes 150 lb/week of tofu.

2128. **Product Name:** Fresh Tempeh.
Manufacturer's Name: Plenty Canada Soya Utilization Project.
Manufacturer's Address: 88A Kotugodella Vidiya (Postal Box 95), Kandy, Sri Lanka.
Date of Introduction: 1987. September.
Ingredients: Split soybeans, tempeh culture.
Wt/Vol., Packaging, Price: 300 gm plastic bag retails for Rs. 4/50.
Nutrition: 19% protein.
New Product–Documentation: Form filled out by Jane Gleason. On 23 March 1988 she visited the Plenty Canada Soya Food Centre. For details see Chocolate Milk (Aug. 1987).

2129. Snyder, Harry E.; Kwon, T.W. 1987. Soybean utilization. New York, NY: Van Nostrand Reinhold Co. xii + 346 p. Illust. Index. 23 cm. An AVI Book. [381 ref]
• ***Summary:*** Contents. Preface. 1. Production, marketing, and sources of information: Introduction, agricultural production, marketing, sources of information. 2. Morphology and composition: Morphology, chemical composition. 3. Processing of soybeans: Preparation, flaking, expellers, solvent extraction, oil refining, protein products. 4. Quality criteria for soy products: Protein and oil products. 5. Functional properties of soy proteins: Interactions of soy proteins with water, interactions of soy proteins with lipid, foaming, commentary on functionality. 6. Nutritional attributes of soybeans and soybean products: Inherent attributes of soybeans, changes due to processing.

7. Oriental soy food products: Traditional nonfermented soybean food products, traditional fermented soybean food products. 8. Soybean-supplemented cereal grain mixtures: Protein-rich food mixtures containing soy flours, composite flours containing soy flour, cereal blends containing soybeans. 9. Soy protein food products: Baked goods, meat products, dairy products, other foods containing soy protein. 10. Soybean oil food products: Salad and cooking oils, mayonnaise, and prepared salad dressings, shortenings, margarines and related products, soybean lecithin products. 11. Grades, standards, and specifications for soybeans and their primary products: Grades of soybeans, specifications for soybean meals and flours, trading specifications for soybean oils, specifications for lecithins, standards for the use of soy protein products in other foods. References in each chapter. Glossary.

This book is well written (though largely a repetition of previous works) in the area of modern soy protein products. It is weak and poorly researched in the area of "Oriental Soy Food Products," which comprises only 1 chapter (22 pages) of the total, making the book unbalanced. The author of this chapter seems to be almost completely unaware of the many major developments in the Western world during the past 10 years.

Note the following Korean soyfood terms: Fresh soybean = Put Kong. Toasted soy powder = Kong Ka Ru. Soy sprouts = Kong Na Moal. Soymilk = Kong Kook or Doo Yoo. Yuba (Soymilk film) = no name. Tofu (Soy curd) = Doo Bu. Tempeh (Fermented Whole Soybeans) = no name. Natto = Chung Kook Jang. Soy sauce = Kan Jang. Miso (Soy Paste) = Doen Jang. Fermented tofu (Fermented Soy Curd) = no name. Fermented okara (fermented soy pulp) = no name.

Note: This is the earliest English-language document seen (Dec. 2005) that uses the term "Toasted soy powder" to refer to roasted soy flour. Address: 1. Prof., Food Science Dep., Univ. of Arkansas, Fayetteville, AR; 2. Principal Research Scientist, Div. of Biological Science & Engineering, Korea Advanced Inst. of Science and Technology, Seoul, South Korea.

2130. Kelly, Gerald R. 1987. Island dining: Fast needn't mean junk. *Martha's Vineyard Times* (*Vineyard Haven, Massachusetts*). Oct. 8.
• ***Summary:*** Mark Ripa is the proprietor of Vineyard Natural Foods, where over 50 different sandwiches are made every day for sale to regular customers or passers by. The standard soup is miso soup. Lynn Burkhart, who creates the gourmet

part of the store, plans to serve Tofu Vegetable Pies, a kind of quiche made without eggs, and a light bean and spinach soup made with tempeh–a soybean product. The menu features Indonesian curried tofu. Ripa says "that soy milk is the natural food store's bestseller because of the number of people who cannot–or will not–tolerate milk from cows."

Photos show: (1) The Smoothie bar inside the store. (2) The menu, showing the ingredients in Indonesian curried tofu.

2131. *Toyo Shinpo* (*Soyfoods News*).1987. Ichi nichi 1000 shoku mo deru nattô ryôri. Nattô ryôri senmon ten "Mamenoko" [One thousand natto dishes sold daily. Natto cookery specialty shop–Mamenoko]. Oct. 11. p. 2. [Jap; eng+]

• ***Summary:*** Goro Kanasugi is president of Kanasugi Shokuhin Kogyo Ltd. at Shimomachi 3-6, Omiya-shi, Saitama-ken, Japan. Phone 0486-41-1425. He opened this restaurant, Mamenoko, in 1975. His son is currently running the business. The natto menu consists of natto croquettes, natto gyoza (pot stickers), tororo natto soup, yamaimo no natto age (fried natto with glutinous yam), maguro no natto kake (with tuna) and ika natto (natto with squid). He serves 1,000 of these dishes a day at the restaurant. He also has a health foods shop next to the restaurant and sells second generation tempeh products such as brown rice bread with tempeh, dango, croquettes and kabayaki teishoku. About 10 of these items are sold daily. His tempeh saka manju, which sells 500-600 (sometimes 1,000) cakes a day, goes for 60 yen per cake. The article includes a photo of the shop.

2132. Schecter, Andy. 1987. Early history of Northern Soy (Interview). *SoyaScan Notes*. Oct. 26. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** The Zen Center kitchen at Rochester, New York used to import tofu from Toronto [in Ontario, Canada]. Then in about 1975 Jay Thompson, who worked in the kitchen, saw an article by William Shurtleff in *Mother Earth News* offering a free chapter from a book in progress describing how to make tofu. When the chapter arrived, the kitchen crew started making tofu in the Zen Center kitchen. The tofu makers were Jay Thompson, Martha (last name unknown), Greg Weaver, Greg Mello, and Andy Schecter. They would make about 20 pounds of tofu once or twice a week.

After 3-4 months they moved the operation in the basement of the Zen Center, where it was more efficient. Again they made about 20 pounds of tofu a batch, at least once a week and during sesshins [sic] as often as 2-3 times a week. All of the tofu was consumed within Zen Center. None was sold commercially.

Then in late 1976 Greg Mello and Greg Weaver started talking about starting a commercial business independent of Zen Center and outside of it. They took their tofu to Oriental food stores and the owners showed interest. So they bought a large stainless steel cooking pot and other utensils. But in late 1976 there were some arguments, so Greg Weaver suggested that Greg Mello do it alone. So they parted.

At that point Andy Schecter was planning on leaving the Zen Center staff. He got together with Greg Mello and they found a 900 square foot space at 277 North Goodman Street in Rochester. In January 1977 they established the company called The Tofu Shop and began construction of the plant. They bought an oil-fired boiler, built a platform for the cooking pot, built presses, curding barrels, etc. In May 1977 production began. Their first product was tofu, followed shortly by a generic (unbranded, unlabeled) soymilk in plain and carob-honey flavors, put up in quart canning jars.

In late 1977 Greg Mello decided to leave. So in January 1978 Andy brought in Greg Weaver. In mid-1978 Weaver and Schecter realized that tofu sales were slow since most people did not know what it was or what to do with it. So they decided to open a soy deli to introduce prepared tofu dishes to the public. Weaver took charge of the deli, which opened in November 1978 under the name "The Tofu Shop" at 686 Monroe Ave. The startup costs were about $20,000. Since the manufacturing branch of the partnership was now without a name, they decided to call it Northern Soy. And since Schecter felt that he would need more managerial help in running Northern Soy, he brought a third partner, Norman Holland, in around November 1978.

The three partners all owning two businesses didn't get along very well, so they decided to separate the two businesses. Weaver would own the deli as an independent business, while Schecter and Holland would own Northern Soy. Since the name The Tofu Shop legally belonged to Northern Soy, Weaver was asked to find another name. After briefly trying "The Tofu Gardens," he settled on "The Lotus Cafe." This deli, the fifth soy deli to open in America, was a pioneer in developing delicious tofu and tempeh recipes and marketing them in an attractive way. Featured in a cover story in the first issue of Soycraft (later Soyfoods) magazine (summer 1979), it offered both sit-down (20 seats) and take-out service, featuring hot vegetarian lunches and dinners. By 1982 it was the largest soy deli in America in terms of average weekly sales ($4,800) and maximum weekly sales ($6,500). Names of 30 of its most popular tofu and tempeh recipes are given in the books *Tofu & Soymilk Production* (1979) and *Report on Soyfoods Delis, Cafes & Restaurants,* both by Shurtleff and Aoyagi.

Tempeh production was started [in about Nov. 1977] by Earl Lepper in his home. Then at some point in 1979 or 1980 he moved the operation into a corner of The Tofu Shop. Eventually he decided to sell his tiny business to The Tofu Shop so he could move to California.

The Lotus Cafe closed in August of 1984 or 1985, in debt and after Weaver's unsuccessful attempt to sell it. Weaver went to work for a computer literacy firm. All 3 are still bachelors. Address: 30 Somerton St., Rochester, New

York.

2133. East West Journal. comp. 1987. Shopper's guide to natural foods. Garden City Park, New York: Avery Publishing Group. x + 204 p. Illust. Index. 28 cm. [66* ref]
• ***Summary:*** The book from the editors of the *East West Journal* is mainly a series of articles published in *East West Journal* or special articles by individual authors. Contents: 1. Introduction to natural foods. 2. Grains. 3. Breads, pastas & seitan. 4. Vegetables. 5. Sea vegetables. 6. Labeling and standards. 7. Fruits. 8. Seeds & nuts. 9. Beans (incl, tofu, tempeh, miso, azuki). 10. Beverages. 11. Condiments (incl. tamari, shoyu, vinegar, salt, umeboshi). 12. Cooking ingredients. 13. Pressure cookers. Address: New York; Massachusetts.

2134. **Product Name:** Organic Soybean Tempeh.
Manufacturer's Name: Eat Your Beans.
Manufacturer's Address: Route 1, Box 83, Williamsport, TN 38487.
Date of Introduction: 1987. October.
Ingredients: Soybeans, vinegar, cultured rhizopus oligosporus.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated.
New Product–Documentation: Label. 1987, undated. 3 by 5 inches. Black on beige, photocopy.

2135. **Product Name:** Joan's Tempeh [Millet & Soy, and Rice & Soy].
Manufacturer's Name: Joan Anderson & Co.
Manufacturer's Address: 414 Seaside St., Santa Cruz, CA 95060. Phone: 408-425-4666.
Date of Introduction: 1987. October.
New Product–Documentation: Talk with Joan Anderson. 1988. Aug. 27. She has made tempeh at home for about 10 years, but first started to sell it to friends in the fall of 1987. Sales are growing and she hopes to expand. She has no labels yet. She prefers grain & soy varieties; does not make a basic soy, feeling that it is too heavy.

2136. **Product Name:** Tempehworks Garden Vegetable Tempeh.
Manufacturer's Name: Lightlife Foods, Inc.
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01302. Phone: 413-772-0991.
Date of Introduction: 1987. October.
Ingredients: Organic soybeans, water, green pepper, sweet red pepper, carrots, celery seed, sea salt, tempeh culture.
Wt/Vol., Packaging, Price: 8 oz vacuum pack. Retails for $1.79.
How Stored: Refrigerated, 45 day shelf life. Or frozen.
Nutrition: Per 4 oz.: Calories 142, protein 17.9 gm, fat 4.5 gm, carbohydrates 8.6 gm.
New Product–Documentation: Leaflet (see next page) and Label. 1987. 3 by 6.25 inches. Dark green, light green, yellow, orange, and white. Soya Newsletter. 1987. Sept/Oct. p. 6. Spot in Natural Foods Merchandiser. 1988. Jan. p. 49.

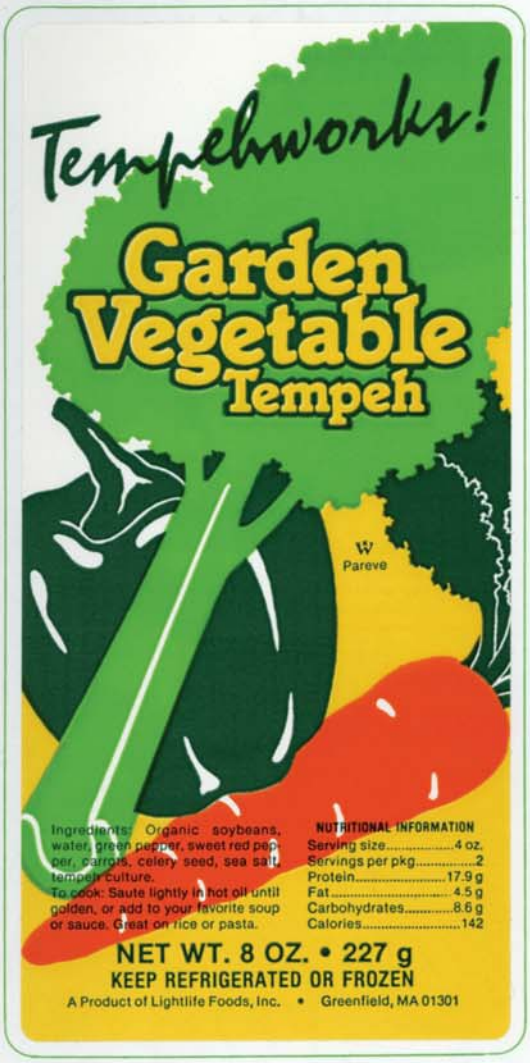
2137. **Product Name:** Tempehworks Macro Power Tempeh.
Manufacturer's Name: Lightlife Foods, Inc.
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01302.
Date of Introduction: 1987. October.
Ingredients: Organically grown soybeans, carrots, sea vegetables, scallion, aduki beans, sesame, miso.
Wt/Vol., Packaging, Price: 8 oz vacuum pack. Retails for $1.79.
How Stored: Refrigerated, 45 day shelf life. Or frozen.
New Product–Documentation: Leaflet. 1987. Lightlife Foods. "New Products Coming From Lightlife this Fall." Soya Newsletter. 1987. Sept/Oct. p. 6.

2138. **Product Name:** Tempehworks Quinoa Tempeh with Sesame.
Manufacturer's Name: Lightlife Foods, Inc.
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01302. Phone: 413-772-0991.
Date of Introduction: 1987. October.
Ingredients: 7/92: Organically grown soybeans*, water, quinoa, sesame seeds*, tempeh culture. * = Grown in accordance with Section 26569.11 of the California Health and Safety Code.
Wt/Vol., Packaging, Price: 8 oz. vacuum pack. Retails for $1.59 (7/92, Maryland).
How Stored: Refrigerated or frozen.
Nutrition: Per 4 oz.: Calories 198, protein 19 gm, fat 8 gm, carbohydrates 14 gm.
New Product–Documentation: Leaflet showing Label. 1987. The National Academy of Sciences has called quinoa (pronounced KEEN-wa) "one of the best protein sources in the vegetable kingdom." The Incas [of Peru] called Quinoa "the mother grain."

Product ("Organic Quinoa-Sesame Tempeh") with Label purchased at Fresh Fields, Rockville Pike, Maryland. 1992. July. 20. Label is 4 by 9.25 inches. Green, orange, and black on light greenish-yellow. "Low in fat. Low in sodium. Zero cholesterol. 1% for peace. UPC indicia. May be sold frozen six months after date. Occasional gray spots on tempeh are a result of the natural culturing process and do not affect the quality of the product."

2139. Mozzer, Patricia. 1987. Vegetarian cooking for diabetics. Summertown, Tennessee: The Book Publishing Co. 144 p. Illust. Index. 23 cm. [28 ref]
• ***Summary:*** Containing over 100 vegetarian dishes and many color photos of recipes, this vegan cookbook features many based on tofu, tempeh, and soybeans. These foods are

NEW NEW NEW



A delicate blend of green pepper, sweet red pepper, carrots, celery seed, soybeans and a pinch of sea salt. This tempeh is as flavorful as it is colorful and is great fried, or in combination with a sauce over rice or pasta. Garden Vegetable Tempeh is packed 12 × 8 oz./case.

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introduced in a section on legumes (p. 20-21). Soy-related recipes include: Tofu salad I and II (p. 71). Tofu potato salad (p. 72). Tofu vegetable soup (p. 76). Tofu tomato soup (p. 78). Tofu sandwiches (p. 80-81). Tofu pita pizzas (p. 81).

In the recipe section on Main Dishes, a section titled "Tofu, tempeh, and soybeans" (p. 84-99) contains: Cashew-carrot Parmesan (with tofu). Far East fried rice (with tofu or tempeh). Savory tofu casserole. Tofu-vegie pie. Oriental tofu. Tofu-mushroom pot pies. Tofu quiche. Tofu pizza. Tempeh stuffed eggplant. Soybean-mushroom pilaf. Soyburgers with mushroom stuffing. Tempeh Parmesan. Tofu lasagne. Tofu macaroni and cheese. Sesame tofu. Crepes with tofu-ratatouille filling (p. 112).

Diabetes mellitus affects about 11 million Americans. There is no known cure. "Proper diet is the cornerstone for any successful diabetes management plan. Generous intakes of starchy foods rich in fiber are essential to good diabetes control."

2140. Murrieta Foundation. 1987. Murrieta Hot Springs vegetarian cookbook. Revised and expanded including Spa Cuisine. Summertown, Tennessee: The Book Publishing Co. 232 p. Color plates. Index. 23 cm.
• ***Summary:*** This is a vegetarian (but not a vegan) cookbook. The index contains listings for 26 tofu recipes, 5 miso recipes, and 2 tamari recipes. There are definitions of "liquid aminos" (HVP), miso, tamari, tempeh, and tofu. Many of the recipes are favorites from the Oasis Restaurant at the Hot Springs, where the three basic lacto-ovo vegetarian diets (as taught by Dr. Randolph Stone, 1890-1982, founder of Polarity Therapy) are The Purifying Diet, The Health Building Diet, and the Gourmet Vegetarian Diet. Address: Murrieta Hot Springs, California.

2141. Northern Soy Inc. 1987. Products: Names and ingredients. 30 Somerton St., Rochester, NY 14607. Manufacturer's catalog.
• ***Summary:*** Lists 8 tofu or tempeh products, Soyboy or Harvest Light brands. Address: Rochester, New York.

2142. **Product Name:** Tempeh Sticks (Deep-fried without Batter).
Manufacturer's Name: Plenty Canada Soya Utilization Project.
Manufacturer's Address: 88A Kotugodella Vidiya (Postal Box 95), Kandy, Sri Lanka.
Date of Introduction: 1987. October.
Ingredients: Fresh tempeh, chicken soup cubes, white flour.
Wt/Vol., Packaging, Price: Each stick is 6 inches long and retails for Rs. 1/-.
New Product–Documentation: Form filled out by Jane Gleason. On 23 March 1988 she visited the Plenty Canada Soya Food Centre. For details see Chocolate Milk (Aug. 1987).

2143. Shurtleff, William. 1987. History of White Wave, Inc. Lafayette, California: Soyfoods Center. 11 p. Oct. Unpublished manuscript, based on interviews with Steve Demos from June 3 to Oct.
• ***Summary:*** A detailed history of this pioneering, very creative, and rapidly growing company. Contains production and sales statistics at each major phase of growth. Early days: White Wave was founded and started making tofu in September 1977 by Steve Demos in Boulder, Colorado.

Born on 24 April 1949 in Philadelphia, Pennsylvania, Demos attended Bowling Green State University in Bowling Green, Ohio, majoring in political science and philosophy and graduating in the fall of 1970. He was introduced to tofu in the summer of 1970, when he was traveling in a van in northern California with a friend, who bought some at an Oriental food store. Demos found it to be a good source of protein, and liked the flavor.

Right after graduation Demos took two trips to India. During the first in 1971, with Pat Calhoun, he became a vegetarian after witnessing the meat bazaar in Afghanistan. In early 1972 he took a longer trip to India, again with Pat Calhoun. It included 10-day Buddhist meditation course with a teacher from Burma, Goenka, who became his spiritual teacher. He also lived for 1-3 months in a cave near Rishikesh (in the foothills of the Himalayas in northern India), doing Hatha Yoga and meditation. There were monkeys in the forest trees, tame peacocks, a stream 10 yards in front of the cave that dropped into a bathing pool, and many sadhus (Indian holy men) practicing in other caves nearby. Then in 1974 he started a health food store [named Touch the Earth] in La Haska, Pennsylvania, where he grew acquainted with many new foods such as miso, sea vegetables, and *gomashio* (sesame salt). After 9 months he sold the store and returned to India again. He was now actively involved in meditation.

After that trip, Demos started living on the East Coast in New Hampshire. By 1974 he began buying tofu in Boston, Massachusetts, then made it a few times in the kitchen and used it in cooking for a yoga studies group, which had purchased a farm. He was in charge of food and he had learned how to make tofu from the *Ten Talents* cookbook. In March 1976, after a trip to India, he was in Santa Barbara, California, at a 76-day meditation retreat with teacher Robert Hover. He made tofu, starting at 4:00 each morning in a commercial kitchen, for 100-150 people, using *The Book of Tofu.* During this retreat Demos conceived of and developed the idea of starting a tofu company, including the name and logo. Three months later he found himself, a hippie with long hair, in Boulder, Colorado. He had an idea but no capital, and was living on food stamps. By good fortune he met a man named Anton Rogers (a talented architect and builder), who loaned him $2,000 startup capital, after having known him less than a month. So in the summer of 1977 Steve

began buying equipment for making tofu. His new company was not yet officially established or registered–though he probably opened a checking account at a local bank.

Demos started making tofu at White Wave on 27 September 1977. "At 11:30 a.m. I sold my first block. I'm staring at the astrological chart which sits next to my desk. That was when I translated the effort to a dollar." The company began as a sole proprietorship, located in very small (300 square foot) rented quarters at 1738 Pearl Street in Boulder, Colorado. The front one-third of the shop was used for a retail deli and the back two-thirds for food production. From day one, the tofu was made from organically-grown soybeans. Each 14-ounce block of tofu was sold, floating in water, in Chinese food take-out cartons. For details on White Wave's early use of organically grown soybeans, see SoyaScan interview with Steve Demos (Aug. 1998). The first batch of tofu was used to feed the participants in a ten-day meditation retreat in Boulder.

One direct competitor was the Spinning Kitchen, which had started 9 months earlier, in about January 1977. They had the Boulder market locked up when White Wave started.

White Wave had three products from the opening day: Nigari Tofu, Black Walnut Mushroom tofu, and Lemon Herb tofu. The latter two innovative flavored tofus were made by mixing the natural flavorings into curds at a specific point before pressing. Shortly White Wave expanded into making sandwiches, which led to salads, drinks, pies, cakes, and muffins. One of the first stores in Boulder to sell Steve's tofu was Green Mountain Grainery, owned and run by Bruce Macdonald. Pat Calhoun (formerly Demo's wife), arrived in December from the Pacific Coast Bakery in California, bringing all their recipes. Recipes for baked goods (such as cinnamon rolls and cookies) were adapted.

By early 1978 soymilk (plain, honey-sweetened, or carob-maple) was introduced, sold out of a jet spray juice cooler or in quarts, and also used to make Coconut Cream Pie and Tofu-Agar Pies filled with various fruits (apples or whole strawberries, peaches, or blueberries). At about the same time the okara from the tofu started to be used to make one of America's earliest brands of Soysage. This spicy Vegetarian Soysage (shaped like a sausage) was distributed with the tofu. Before long White Wave was making a host of delicious and innovative tofu deli products which were sold only at the Pearl Street deli. These included Macro Pizza with Tofu, Mexican Entrees, Okara Granola, and Tofu Dogs and Sauerkraut (very firm tofu cut into long rectangles and marinated broth). Soy Sannies (Miso-tahini Sandwiches) were also sold at nearby health food stores.

To help attract customers, the deli also sold an assortment of then largely unknown food products: 10-15 varieties of Japanese and American miso, many sea vegetables, shoyu, kudzu, umeboshi plums, and the like, many of the same products Demos had sold 4 years earlier at his health food store in Pennsylvania. Most of these were of great interest to macrobiotic devotees, though Steve had little personal interest in that subject.

Tofu was quickly recognized as a tremendously versatile, all-American ingredient. Now new people started coming into the company. Some were cooks and they helped to develop new products. In 1978 White Wave began to distribute a number of its most popular deli-type products to other retailers. These were among America's earliest commercial second generation tofu products: Missing Egg Salad (America's first, named by Trudy Stuart), Tofuna Salad (Vegetarian Tuna Salad), and Tofu Turnovers (with spinach and feta cheese filling). Other innovative second generation products sold or used only at the Pearl Street deli included Tofu Treats or Creamies (in banana-coconut, peanut-carob, or carob mint flavors), Miso Salad Dressings (hearty or mellow), and Tofu Mayo (eggless mayonnaise used in the Missing Egg Salad). Address: Lafayette, California.

2144. Shurtleff, William. 1987. History of White Wave, Inc. (Continued–Document part II). Lafayette, California: Soyfoods Center. 11 p. Oct. Unpublished manuscript, based on interviews with Steve Demos from June 3 to Oct.
• ***Summary:*** Continued: At the same time White Wave started making nut and seed products in the same little shop, starting with gomashio (sesame salt), tamari-coated sunflower seeds and almonds, and nut butters.

Just a year after opening, White Wave was forced to expand out of the tiny Pearl Street shop by the demand for its deli products from outside retailers, such as Arati and other natural food stores in Boulder. Demos recalls:

"We acted with very little foresight. It was more like 'What do you want to do today? Let's make something new.' Finally we couldn't get out the front door. We had to step over the top of buckets of tofu, presses, and boxes used to deliver our little Chinese fish cartons of tofu, stacked up so high we couldn't see out the window. It was chaotic. We were making money and business was booming, but we were only paying ourselves $1.42 and hour."

On 28-30 July 1978 a meeting of tofu manufacturers from across the USA was held in Ann Arbor, Michigan. The meeting was organized by Steve Fiering, Jerry MacKinnon (plus coworkers at The Soy Plant) and Bill Shurtleff, and hosted by The Soy Plant. Steve attended this historic meeting, and ended up rooming with Tom Timmins, head of the New England Soy Dairy. "I thought I was rooming with one of the idols of the industry. Just by virtue of association, I was going to do well." At this meeting the Soycrafters Association of North America (SANA) was established, with Larry Needleman as executive director of the new trade association. Steve was elected to be one of six members of SANA's steering committee. Various photos of the meeting show Steve, with long hair and mustache, leading and participating in the discussions. A yellow lined sheet titled "Tofu Sales" was circulated to all attendees; Steve wrote that

White Wave was making medium-firm bulk and packaged tofu, which wholesaled for $0.65 and $0.74 per pound, f.o.b. plant. Several days after the Ann Arbor meeting, William Shurtleff and Wataru Takai visited Demos, and saw how he made tofu at his tiny shop on Pearl St. in Boulder. They sampled and enjoyed the various creative offerings in the deli, and Shurtleff took home a label from each product.

At Walnut Street: In September 1978, after just a year at Pearl Street, the tofu company had long since outgrown its minuscule 'back room' space. So manufacturing operations were moved to a 3,000 square feet converted warehouse at 3869 Walnut Street. It felt like they had moved into a castle, with ten times as much space. Now there was great pressure to expand the business to use up the extra space. The company began to make new products (such as tempeh, ice cream, and new deli foods) and look for new markets.

The deli remained at Pearl Street, and was given a new name, The Cow of China (a term from *The Book of Tofu*). The name "White Wave" was reserved for the tofu manufacturing company. But there was only one set of books, under White Wave. The company now changed to a partnership, with seven equal partners, all active. Demos was president and Pat Calhoun did the bookkeeping, and only these two were interested in meditation.

Right after the move, to announce The Cow of China as a retail outlet and its vegetarian deli products, Demos did his first real advertising, using three charming posters. The first read: "White Wave Through the Cow of China Offers Food from The Kingdom of Plants. We make it all here in Boulder. 100% Dairyless." It then listed 14 soyfoods plus some non-soy desserts, almond-, cashew-, and peanut butters, and tahini. A second poster showed a soybean, with head, tail, and legs like a cow and dotted lines to delineate the choice butcher cuts. But instead of rump roasts and flank steaks were Soysage, Miso Dressings and the like. A third showed Jack, standing under a giant beanstalk, about to trade in his cow for the magical beans at which he is gazing in wonder. The caption: "We've got an alternative. White Wave Soy Dairy." The latter two posters were used as catalog advertisements with a growing number of natural food distributors.

The tofu plant now consisted of an open kettle, VCM grinder, and hand press for the curds on the end of a swinging levered bar. White Wave started to deliver product to some Denver health food stores and in late 1978, not long after the move to Walnut Street, they landed their first supermarket chain, King Soopers supermarket chains, which began to order 100 cases. As business expanded, so did the need to improve packaging and marketing, and to control costs.

New packaging: White Wave couldn't get its tofu into supermarkets unless it was sold in water-packed film-sealed plastic tubs (trays); the Chinese carry-out food/fish cartons were not acceptable. So Demos bought a little hand-packing machine that allowed one person to pack one block of tofu at a time in water in a plastic tray, then seal the tray with a film lid. Steve remembers first using this machine at the Walnut St. plant. Initially, he would seal the tofu tray with clear, unprinted film, then run one of their oval labels (the one with a hint of green color in it, used previously on the Chinese cartons) through a gluing machine (which was less expensive than buying pre-glued labels), and slap the label on the clear plastic film. This was White Wave's "first true commercial mass market package." The new marketable package led to many new accounts. After King Soopers the company got into the City Markets chain, then about a year later into Safeway, followed by a host of other chains in outlying areas. As business expanded, White Wave could afford pre-printed film labels for its tofu in plastic trays. The label design, though rectangular, was basically the same as the old oval. The ingredients new read: "High protein soybean cake contains: Soybeans grown without the use of herbicides or pesticides, filtered water, and nigari (salt bitterns). No more no less!" Soon a variety of textures were available: Extra firm press, firm organic, extra firm, and sift.

New sources of soybeans: White Wave had made its tofu from organic soybeans from day one. When the company first moved into Walnut Street, they were still buying these soybeans from Green Mountain Grainery in Boulder. But in the fall of 1978 Steve drove to a meeting of the Organic Growers Association in Iowa. He spoke about the demand for organic soybeans and met Marvin Kurpkeweight, who was already growing soybeans organically in eastern Nebraska. Steve visited Marvin's farm and contracted with him to buy organic soybeans direct from the farmer. Address: Lafayette, California.

2145. Shurtleff, William. 1987. History of White Wave, Inc. (Continued–Document part III). Lafayette, California: Soyfoods Center. 11 p. Oct. Unpublished manuscript, based on interviews with Steve Demos from June 3 to Oct.
• ***Summary:*** Continued: White Wave's tofu production was growing nicely. It rose from 120,000 lb. in 1978 (2,308 lb/week), to 179,000 lb. in 1979 (3,442 lb/week, up 49%), to 279,000 lb. in 1980 (5,365 lb/week, up 56% over 1979).

In February 1979 a major new product line was started: tempeh. Chip McIntosh was the first tempeh maker, followed by Chris O'Riley. An old kitchen refrigerator, warmed by light bulbs, was used as the incubator. The first two products were Soy Tempeh and Soya Rice Tempeh, the latter being America's first multi-ingredient, soy-and-grain tempeh.

At about the same time, a third new product was launched: Polar Bean. It was a soymilk based non-dairy frozen dessert, made in a soft serve machine but sold in hard-pack pints. The first flavor was Banana-carob. Later strawberry, chocolate, carob mint, and orange flavors were added. In about 1984 a soft serve version called Polar Softie was introduced but did not prove successful.

Also in 1979 Richard Leviton visited White wave and the Cow of China, and did an in-depth study of their operations and products, published in the 1979 issue of *Soycraft* magazine. Soyfoods sold both at "The Cow" and for wholesale distribution to other retailers included: Organic Nigari Tofu, Soymilk (Honey-Vanilla or Carob-Maple), Soysage, Tempeh, Missing Egg Salad, Tofu Mayo, Baked Savory Tofu Cutlets, Sweet Bean Tofu Pie, Miso Salad Dressings (Mellow or Hearty), and Tofu Treats or Creamies (Banana-Coconut, Peanut Carob, or Carob-Mint; squares of creamy baked tofu blend on a healthful oats-coconut-flour crust).

Other ready-to-eat items sold only at "The Cow" included Soysage Pate, "Macro" Pizza (with tofu), Tofu Spinach Dill Turnovers, Tofu Cinnamon Rolls, Hot Tofu Meatballs and Meatball Sandwiches, Sloppy Joe Sandwich (made with TVP), Tofu Cream Cheese & Black Olive Sandwich, Tofuna Sandwich (like tunafish), Strawberry Tofu Pie, Soy Sesame Bars, and Tofu Butternut Squash Pie. In mid-1979 bulk recipes for about ten of these products were published, with permission, in *Tofu & Soymilk Production* by Shurtleff and Aoyagi.

Leviton noted: "The Cow of China is surely one of the nation's most ambitious and energetic soyfoods companies." It was just about breaking even with weekly gross retail sales of $1,000, three-fourths of which came from soyfoods. Concerning the growth of the still totally unmechanized little company Demos, now the self-styled "beneficent dictator," always frank and candid, added:

"It was a hell of a struggle, especially for an undercapitalized small business. But I certainly wouldn't discourage anybody because we started with nothing, and we've been going since then, and we've been able to make it all meet. We've just rigged, we've improvised, we've done everything imaginable, as I'm sure many other people in this industry have. We cut our salaries back, we did without a lot, but its own momentum kicked in. I suppose we consider ourselves alchemists in turning sweat into money. So, let me express my gratitude to everybody and everything, seen and unseen, who have helped us pull this together."

In August 1979 Gary and Chandri Barat arrived in Boulder and spent several days studying the Cow of China. They had met Demos at the Second Annual Soyfoods Conference in Amherst, Massachusetts (July 26-29, 1979). They were driving around the country, studying tofu and developing a business plan in preparation for starting a soyfoods company, which later became Nature's Inn, then Legume. As they studied The Cow of China and Demos invited them for dinner several times. He and his wife, Ginny, served a tofu spinach feta pie and mushroom caps stuffed with tofu. Later Barat told Demos more than once how much this visit has influenced him in starting a company based on tofu entrees. The lineage of Legume's early products (Tofu Cream Pies, Tofu Spinach Pies) can be traced back to The Cow of China.

Barat encouraged White Wave to do a feasibility study on converting The Cow of China into a fast food restaurant named The Family Diner and moving into a vacated A & W root beer stand three blocks from The Cow in a very attractive location. The study was done, a potential menu was developed, bu financial backing did not come through.

A White Wave catalog published in December 1979 included several new products: Doufu (extra firm Chinese style tofu), Savory Baked Tofu, and Tamaried Nuts and Seeds (Almonds, Cashews, Spanish Peanuts, Sunflower Seeds, Nut Mix).

The Cow of China deli was doing well. By February 1980 sales were $1,700 to $2,000 a week and there were often lines out the door. By the summer of 1980, according to *Soyfoods* magazine, the Cow of China had been renamed the Good Belly Deli, with the slogan "Real Food, Real Fast" and White Wave was producing 7,500 pounds of tofu and tofu products a week. The new deli, an expanded and Americanized version of "The Cow," continued to serve as an excellent showcase for the White Wave's innovative ready-to-eat soyfood products. Working with a friend who was an advertising agent, Demos had dropped the line of assorted health foods (miso, sea vegetables, etc.), expanded the deli items, and installed a stand-up counter bar to eat at and a few tables and chairs. Formerly it had been all takeout. Hot and cold fast food was served. The deli attracted lots of business (there was still usually a line out the door), the products were very innovative and they were praised by the natural foods community in Boulder. Address: Lafayette, California.

2146. Shurtleff, William. 1987. History of White Wave, Inc. (Continued–Document part IV). Lafayette, California: Soyfoods Center. 11 p. Oct. Unpublished manuscript, based on interviews with Steve Demos from June 3 to Oct.
• ***Summary:*** Continued: But White Wave was growing by leaps and bounds, as were sales of tempeh and Polar Bean soy ice cream. White Wave was doing all its own delivery in its own trucks to Boulder and Denver. And the business had not been capitalized, except for one new $3,000 loan that brought in a silent partner. A loan of $4-5,000 was outstanding from the IRS, in unpaid taxes

The Good Belly Deli lasted only 5-6 months. Though it was doing well and was probably making money (though the financial records were poor), it increasingly became a thorn in Demos' side, for it was getting out of control. It was a drain on his time and energy, more than he could handle, and it seemed to be less important than the manufacturing end of things. So one day in the spring of 1981 he walked in and announced that he was closing a business that had lines around the corner. He wanted to focus on his main goal: to become the largest tofu manufacturer in his region. In retrospect it was a good decision, but he adds, "We were

operating on a lot of idealism in those days, and not much practical business sense." In October 1980 White Wave changed from a partnership to a corporation, with 5 active and one silent stockholders.

After closing the deli, the first real money came into the company. With a bank loan, they paid off the IRS, then soon paid back that loan. Then in the fall of 1981 Demos landed a $69,900 SBA loan (SBA approved a bank loan) to buy new equipment and $100,000 worth of equipment from Mountain High, a public company which made ice cream and yogurt, and needed to get out of their Boulder ice cream plant at North 57th Court.

At North 57th Court: In September 1981 White Wave moved again, this time to Mountain High's former ice cream plant in an industrial park at 1990 North 57th Court. *Soyfoods* magazine reported that Demos threw a huge "factory-warming" party for several hundred friends and customers, serving Polar Bean and many favorite tofu and tempeh recipes. This represented a huge, key expansion. The square footage increased six to seven-fold, initially to 6,000 square feet including 22,000 cubic feet of walk-in cold storage space. Big new equipment was purchased with the SBA Loan. The number of stockholders was now reduced to three: Demos, Pat Calhoun, and Chip McIntosh. The business was able to survive because of loans. Demos cut his hair.

The percentage of sales generated by the various product lines was tofu 50% or more, ice cream 10-15%, tempeh 20-25%, and nut butters 10-15%.

For several years Demos had been urging King Soopers to move his product out of the produce section into the dairy section. In mid-1982, after studying a report on "The Tofu Market: Overview of a High-Potential Industry," published in May 1981, King Soopers made the move, in part due to customer demand. Initially sales were unchanged, since customers couldn't find the product. But there was a big advantage to King Soopers: no shrinkage from spoilage because of the lower temperature. The margin initially went down to 15%, the same as for dairy products. This brought the price down. Later they got smart and raised the margins for tofu. Not it's higher than milk but still less than produce. "I'm glad to see them making lots of money on our products," noted Demos.

In May 1983 White Wave made a major decision: to vacuum package their firm tofu. They bought a used Tiromat vacuum packager from a beef-jerky company in Los Angeles. Thereafter everything went wrong, so much that that one machine "almost broke the company's back." Demos later called it "the curse of the devil," and his production manager would often ask only half in jest, "Do you think we are sitting in vacuum packaging hell?" They found that tofu is a very difficult product to vacuum pack, though firm tofu is easier than soft. They concluded that 30% of the problems were caused by the machine, 30% by the product, and 30% by the operator, "and the rest was absolute karma." The process was very unforgiving, as was the machine's maker, which gave White Wave almost no support. They tried to disown the fact that Demos got stuck with a lemon. So White Wave had to solve all the problems by themselves.

Tempeh was now doing very well. In about 1982 White Wave began to make its own starter culture in order to get better quality control and save money: Alexander Lyon, who happened to be in town, spent a week teaching them the intricate process for $100. They also began to sell all tempeh frozen, after steaming. The product line was steadily expanded. By 1983 the company had introduced a Tempeh Burger and 5 Grain Tempeh (with soybeans, millet, wheat, oats, and barley). By 1984 the burgers were the company's best-selling tempeh product (48% of tempeh sales), followed by frozen soy tempeh (28%), soy & rice tempeh, then 5-grain tempeh. Accounting for one-fourth of White Wave's sales in 1984, tempeh was now the company's most profitable line of products. Making 5,850 pounds a week, White Wave had become America's second largest tempeh producer (after Quong Hop & Co.) and distribution had reached California. In fact, tempeh had now passed tofu as White Wave's most important product.

Polar Bean was also doing well. In 1984 it won a silver award in the annual Natural Foods Merchandiser contest, and that summer a Polar Pal ice cream sandwich was introduced.

"By 1983-84 White Wave broke the 10,000 pounds-of-tofu a week barrier and became a regional company, shipping tofu via many distributors throughout the midwest: Chicago [Illinois], Detroit [Michigan], Dallas [Texas], Salt Lake City [Utah], and Phoenix [Arizona].

Financial Crisis and Recovery: For most of its history, White Wave had been profitable, with plenty of cash and good financial records. Though the move to North 57th Court quadrupled their overhead, the company continued to make money for the first 2 years there, running a very tight ship. Then they started to encounter major equipment problems: a compressor breakdown and major non-stop vacuum packager nightmares. A maintenance team had to be hired. White Wave was growing into a company that needed management, but the sales volume could not support that. Sales were good, profits were small, and overhead was skyrocketing. This led to a slow tailspin, loosing $1,000 a month during 1983-84. These were not considered major losses but the upward trend had been reversed.

By August 1984 White Wave was $40,000 in debt and people were burned out. Decisive action was needed. In September Demos hired Lester Karplus to take charge of daily operations while he started to do a business plan to raise equity. But in the following months losses increased dramatically, to $10-$15,000 a month. White Wave lost a total of $60,000 during the next 6 months. Finally in February 1985, amidst his first real crisis, Demos fired

Karplus and McIntosh, and took over the whole company himself. His four-part strategy was cut overhead to the bone, bring in new cash quickly, hold creditors at bay as long as possible, and implement a system of data collection (which Karplus had helped develop) to generate better production and financial reports. Address: Lafayette, California.

2147. Shurtleff, William. 1987. History of White Wave, Inc. (Continued–Document part V). Lafayette, California: Soyfoods Center. 11 p. Oct. Unpublished manuscript, based on interviews with Steve Demos from June 3 to Oct.
• ***Summary:*** Continued: First, he laid off all managers (who were not producing day-to-day results). Future plans were put on hold.

In October 1984 Jason Bois, who had been around the health food business for many years, approached White Wave to discuss having White Wave make him a soft serve soy ice cream. Demos advised against soft serve, but when Bois persisted, Demos developed a new soft serve formula for him, containing tofu and spray dried soymilk. Launched in January 1985 and marketed under the name Tofruzen, they failed within four months, for lack of a market. Bois quickly returned to Demos and beseeched him to develop Tofruzen in hard pack pints so that Bois could use these products to raise equity capital in a public stock offering. Demos had all the hard-pack formulas for Tofruzen developed in 30 days, using an improved version of his Polar Bean as the base mix but with totally new flavors (chocolate, strawberry, vanilla-almond). After Tofruzen launched the new products mid-1985, they realized that they didn't really own anything. So Demos, with some unexpected luck and seeing a way to bring in new cash quickly, proposed Tofruzen buy the title to the formulas for $25,000 cash, plus $25,000 in 6 months, plus interest. And White Wave would have an extensive supply contract. Tofruzen agreed.

In December 1985 Tofruzen, Inc. raised $1.6 million net in a public stock offering, and at that time paid White Wave its first cash. Tofruzen Bars followed in May 1987 and low-calorie Tofruzen Light in August. Once Demos saw that Tofruzen would be a successful product, he downplayed marketing of his Polar Bean. Tofruzen sales rose from $91,000 in fiscal 1986 to $158,000 in 1987.

Shortly after Karplus left, White Wave started selling its tofu in a colorful box. Karplus served as an agent to negotiate with advertisers and designers. The new package helped sales.

In mid-1985, to consolidate its business focus and bring in more cash, Demos sold White Wave's nut butter business to an employee for $35,000. White Wave retained 5% interest in the company, which is now called Naturally Nuts.

To turn the tide of loosing money and get some badly needed breathing space, Pat Calhoun came up with a plan where she and Demos would call all the creditors and say, "Either we file bankruptcy or you allow us to pay off our debts to you over a one year period." All creditors agreed to this plan.

In July 1985, the moment of truth, the turning point, arrived. The company was $100,000 overextended (60 days behind in payments) and could not borrow money. Everyone was disheartened. Demos and Calhoun started regular sitting meditation again, recommitting himself to spiritual practice as central and profitability as essential. He recalls, "Once I got my priorities straight, things started to go well." Within 90 days White Wave had started to generate a positive cash flow. By mid-1986 the $100,000 debt had been paid off, and White Wave was once again accumulating cash and savings.

Heady with the feeling that he could save a struggling small company, transforming it into a winner, Demos decided to try his approach on another company, Soyfoods Unlimited, a major tempeh manufacturer, which he had been offered an opportunity to buy. Having started tempeh production in February 1981 in San Leandro, California, Soyfoods Unlimited had grown to be America's third largest tempeh manufacturer by 1984. White Wave didn't have any extra money, but the offer made sense as a way to get distribution for White Wave products in California and the West Coast, and to increase production volume. So on 1 December 1986 White Wave made its first acquisition. The buyout took place over a period of time, with some cash down. By mid-1987 Soyfoods Unlimited had been turned around and was a profitable, wholly owned subsidiary. White Wave owned all the stock and had signed a supply agreement with Soyfoods Unlimited to supply them with everything. This acquisition, with all tempeh production for both brands done at White Wave in Boulder, helped boost weekly output to 17,000 lbs. a week by the fall of 1987, making White Wave the biggest tempeh manufacturer in the USA. Growth of tempeh was strong and its future looked very promising.

White Wave has long been one of America's most innovative tempeh companies, in part because of its faith in the potential and future of tempeh. Tempeh continued to be the company's most profitable product. During 1985-88 the tempeh line was expanded with a number of original and delicious varieties: Quinoa (6/85), Lemon Broil (10/86), Amaranth and Sea Veggie (both 3/87), Peanut Sesame (3/88), and Teriyaki Burger (8/88). These also gave his product line more shelf space, a key consideration.

At King Soopers and Safeway, White Wave now had three shelves with tofu and tempeh right in the middle of the dairy section.

Tofu production was also strong, averaging 15,000 lbs. a week in mid-1987. A future high priority was the plan to pasteurize their tofu to give longer shelf life. After several years of selling tofu vacuum packed in a box, White Wave introduced a water pack without the box for the Asian-American market and some Caucasians since they are not used to the vacuum pack, and they prefer softer tofu, which

cannot be vacuum packed.

By mid-1987 White Wave was back into high gear and growing nicely. Their space grew from 6,000 to 20,000 square feet. White Wave was one of the few Caucasian-run soyfoods companies that has been able to grow without selling most of the company. Demos' family has supported him to a large degree. He had borrowed roughly $25,000 from friends and family. The company still owed one-third on its SBA and Mountain High loans, and some to family. Assets were now about $300,000 and liabilities are $200,000. Since May 1987 White Wave had money in the bank and a growth rate above 30%. The 1987 sales projection was $2 million, of which 8-14% was expected to be profit.

In December, projected revenues for 1988 were $3 million. The company was in the midst of a private placement offering for $500,000 and the banks had approved equipment loans for $600,000. They have put in a bid to purchase an old (built in 1978) meat processing house on 2.4 acres in Boulder.

The Future: New products to be launched in 1989 include several meat analogs (tofu hot dogs/franks, due in March, aimed at the mainstream market concerned with cholesterol) and a soy yogurt.

Demos has set a number of goals for White Wave. First, to become the major primary soyfoods ingredient manufacturer in the region, and to maintain a profit margin of at least 10%.

Second, to make the concept of a clearly delineated and identified "Soyfoods Section" in the dairy case, succeed at King Soopers and Safeway. Set off with plastic dividers between yogurt and milk products, the section would be filled out with second generation soy products. This new concept would allow him to compete with larger tofu manufacturers (such as Azumaya and Hinode) who are lower priced but sold in the produce section. Address: Lafayette, California.

2148. Shurtleff, William. 1987. History of White Wave, Inc. (Continued–Document part VI). Lafayette, California: Soyfoods Center. 11 p. Oct. Unpublished manuscript, based on interviews with Steve Demos from June 3 to Oct.
• ***Summary:*** Continued: Third, after (and only after) the Soyfoods Section concept does succeed, to approach other chains with the same idea and ultimately to get into the whole Kroger chain of 400 stores in the Midwest.

Fourth, to develop new tofu-dairy blends to reach the mainstream. For example, a vacuum packed tofu sold next to cheese, that tastes like cheese (it doesn't have to melt); it could be mixed with cheese or flavored like cheese. Or a tofu cheesecake made of half tofu (or tofu cream cheese) and half cream cheese, that was virtually identical in flavor and texture to all-dairy cheesecake but was lower in cholesterol, saturated fats, and calories.

Fifth, to give major attention to tempeh product development. Demos thinks that tempeh represents a vast future potential because Americans like it better than tofu (though it is largely unknown), it offers good profitability, and the competition is not as severe as with tofu. Address: Lafayette, California.

2149. *SoyaScan Notes.* 1987. New Trend: Many of the new soyfoods are being developed and marketed as all-American and fun: Tofu and tempeh burgers, tofu hot dogs, soymilk shakes, soy ice creams, tofu chocolate bars (Overview). Oct. Compiled by William Shurtleff of Soyfoods Center.
• ***Summary:*** This is part of the larger trend of the Americanization of soyfoods.

2150. Praskin, Laurie. 1987. Recent developments with soyfoods in Guatemala (Interview). *SoyaScan Notes.* Nov. 30. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** El Centro de Soya, the soy dairy at Solola, is up and running as a commercial enterprise. They are making tofu, most of which is sold to Seventh-day Adventist vegetarian restaurants that cater to tourists in Panajachel, Guatemala City and Antigua (a big tourist center and the former capital of Guatemala). In the community of Solola, they spend a lot of time teaching people how to cook with the products, which they offer at a discount to community members. This has spurred a big increase in sales of tofu and soymilk to the community. A new product in 1987 is Paletas de Soya (Soy Sticks or soymilk popsicles) made with their own popsicle machine. The only flavor is chocolate. Two employees and one independent broker with carts sell them. Agostine Xoquic is manager of the dairy. Amado Del Valle is project coordinator of the whole program, including the agricultural parts, the demos, and the dairy. They make soymilk but only for those who bring a container to the dairy.

Amado and his partner Felipe are making tempeh, which is sold to restaurants. The business is still subsidized; Plenty pays the salaries of Amado and Augustine, and also buys new equipment. But profit from the sale of soy products pays dairy employees' salaries and operating expenses. And they do make a little "profit." They are also now running a soyfoods training center/demo program. In Quiche they have a home demo program, and women grow soybeans and make soymilk and tofu at home. The main thing is adding ground soybeans to corn to make tortillas.

After Plenty had to leave Guatemala in 1980, the Soy Dairy continued making tofu and soy ice cream, without outside funding, until 1983. Larry McDermott visited in April 1985 and production started again in mid-1985. Address: 17969 Oak Dr., Los Gatos, California 95030. Phone: 408-353-2649.

2151. Barrett, Mariclare. 1987. Soyfoods almanac. *Vegetarian Times.* Nov. p. 35-38, 40. [3 ref]
• ***Summary:*** An overview and introduction to tofu,

tempeh, miso, soy sauce, etc. with summary of some new developments. Photos show Betsey Shipley & Gunter Pfaff, Jan Belleme, Henry Ford wielding axe against trunk of car made of soybeans.

2152. Eden Foods, Inc. 1987. Product description: Eden Foods quality natural foods. 701 Tecumseh Rd., Clinton, MI 49236. 21 p. Plus 6 pages of inserts. Catalog.
• ***Summary:*** The catalog lists the following soyfoods: Edensoy (Original, Vanilla, Carob; shown on page 1. "Edensoy is the best tasting, best selling, best made natural soymilk on the market"), black soybeans (they "have a hearty yet sweet taste. In Japan, black soybeans are always prepared for the New Year's celebration as they are a symbol of health."), organically grown soybeans (usually Corsoy or Amsoy), Eden tekka ("a hearty, nutritious condiment made from hacho miso, carrots, burdock, ginger root, and unrefined sesame oil; 2.8 oz), dried tofu (actually dried-frozen; 5.8 oz), barley (mugi) miso, brown rice (genmai) miso, buckwheat (soba) miso, light (shiro) miso, rice (kome) miso, hacho (100% soybean) miso, natto miso "Kinzanji," shoyu, organic shoyu, low-sodium shoyu, wheat-free tamari, tamari-roasted nuts and seeds wheat free (pumpkin seeds, sunnies [sunflower seeds], almonds, cashews, mixed nuts), and Lima Tempeh.

Some interesting non-soy foods listed in the catalog include quinoa (16.2% protein), kudzu-kiri, kudzu root starch, adzuki beans, mochi (100% brown rice, with mugwort, or with millet), sea vegetables, organic amazake, barley malt syrup, and Lima seitan.

In the spring of 1986, Eden Foods became General Agent for North America for the Lima Company of Belgium. Lima soyfood products include Lima Tempeh. Note: This catalog was still in use in Jan. 1989. Address: Clinton, Michigan. Phone: 517/456-7424 or 800/248-0301.

2153. Gleason, Jane; Weliwita, S.M.A. 1987. Home and village level soyabean utilization training in Sri Lanka: Accomplishments, constraints and potential. INTSOY/DARP/SFRC, Sri Lanka. 14 p. Unpublished manuscript.
• ***Summary:*** A detailed analysis with many summary statistics. This paper argues that because of the large amount of time and fuel required, and general difficulties of making foods at home from whole soybeans, they will not be widely made there. From 1978 to Nov. 1987 SFRC trainers have directly trained over 30,000 people in soya utilization. Of these, almost 27,000 were trained at outstation demonstrations, while over 4,000 were trained at SFRC.

However, because of processing difficulties and time requirements, it questions the premise that widespread home level utilization of whole soyabean will occur.

The instructors were asked what types of soyafoods are most likely to be integrated into Sri Lankan diets. Soya-fortified kola kenda, a traditional drink made from coconut, rice flour, and leaves of a variety of herbs was most often mentioned as 21 of 48 respondents placed kola kenda in their top three choices. After kenda, the instructors ranked soya-fortified pittu (18), roti (13), snacks (13), waddhi (12), and curry (11) as foods most apt to be part of Sri Lankan diets. Ten respondents stated that soymilk could easily become popular.

The responses of the instructors show that soya will most likely be integrated into local diets through fortification of already popular foods. Many commented that soya flour should be made available for this purpose. Traditional soyafoods from other parts of Asia, for example, tofu in East Asia and tempeh in Indonesia, were not highly ranked as foods easily accepted by Sri Lankans. Only four respondents thought that tofu and none of the respondents thought that tempeh could become important in Sri Lanka.

Table 6 indicates "What characteristic makes soya appropriate for villagers'–Nutrition, 42 respondents; Low cost, 20 respondents; Taste, 5 respondents. Table 7 indicates "Price per unit protein of common foods in Sri Lanka"–Soyabean, 0.04; Chicken, 0.21; Dried fish (fat poor), 0.11; TVP, 0.16. Table 7 also indicates "What constrains soya consumption"–Unreliable supply of soya, 23 respondents; Odd flavour, 22 respondents; Lack of preparation knowledge, 18 respondents; Difficult to prepare, 14 respondents.

Interpretation of the evidence–Three important points can be gleaned from the information provided by the extension workers and the villagers: 1. Thousands of Sri Lankans are aware of the benefits of soya. For the average consumer, the most important consideration when purchasing food is taste, not nutrition. 2. Therefore, soya will most likely be consumed in a form that is already familiar to villagers. 3. It is significant that more instructors consumed TVP than all other types of soya products. Conclusion–The best method of making soya products available to consumers is to work towards greater commercial application of soya utilization technologies.

Training should, therefore, emphasize extension to entrepreneurs. Address: Sri Lanka.

2154. Goldbeck, Nikki; Goldbeck, David. 1987. The Goldbeck's guide to good food. New York, NY: New American Library. xi + 563 p. Illust. Index. 24 cm.
• ***Summary:*** The all-new version of their *Supermarket Handbook,* which originally sold 850,000 copies. Chapter 12 (p. 143-51), titled "Soyfoods: World Class Protein," discusses tofu, frozen tofu, tempeh, soy flour and grits, high-tech soy (soy concentrates and isolates), textured soy protein products. There is also considerable information on soyfoods in other chapters throughout the book: Soy flour (p. 79). Soy nuts (p. 159, 163). Soy milk (p. 184-85). Soy yogurt (p. 190-91, 195). Soy cheese (212, 217-18). Soy protein concentrates or isolates (p. 233, 451, 483, 527). Soy oil (p. 144, 264, 288, 292-93). Meatless burgers and soy sausages (p. 394). Soy ice

cream (p. 452-53, 455). Soy sauce (510-11, 515). Miso (p. 511-12, 515). Worcestershire sauce (p. 512).

The section titled "Soy Yogurt" gives a nutritional analysis of cultured Soygurt, made by Cream of the Bean; per 8 oz. it contains 255 calories, 6.7 gm protein, 45.2 gm carbohydrates, 5.3 gm fat, no cholesterol, 20 mg sodium, and 7% of the US RDA for calcium. The text reads: "Those who must avoid milk will be interested in nondairy soy yogurt. A new arrival in natural food stores, this yogurt is made from soymilk and bacterial cultures. Gelatin is added to some brands to maintain the typical yogurt consistency. There is no need, however, for the quality to be compromised by the addition of high fructose corn syrup, isolated soy protein, salt, and several thickening agents, as has been done in at least one brand we have encountered."

The section titled "Soy Cheese" states: "Cheese based on soy milk has recently added a new category of cheese products to the market. In terms of calories, protein, and overall fat content soy cheese competes quite favorably with animal cheeses... It is both lactose- and cholesterol-free and the sodium content is about average for cheese. Note, however, that soy cheese is held together with vegetable gums and will contain either the milk derivative calcium caseinate (in which case it is not dairy free) or isolated soy protein." Page 218 gives a nutritional analysis of Soya Kaas (soy cheese). Per 1 oz. it contains 78 calories, 6.7 gm protein, 5.6 gm fat, no cholesterol, and 168 mg sodium. Address: R.D. 1, Box 495, Woodstock, New York 12498 914-679-8561.

2155. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: La Finestra sul Cielo S.r.l.
Manufacturer's Address: Via Brandizzo 416, 10088 Volpiano (Torino), Italy. Phone: 011/9951818.
Date of Introduction: 1987. November.
Wt/Vol., Packaging, Price: Plastic packets.
How Stored: Refrigerated.
New Product–Documentation: Letter from Giovanna F. Mazzieri. 1993. Oct. 6. As far as she knows, the first and only company that has ever sold tempeh commercially in Italy is La Finestra Sul Cielo S.r.l., an important macrobiotic center, located at Via Brandizzo 149, 10088 Volpiano (Torino [Turin]). Phone: 011/9951818.

Letter (fax) from Carlo Guglielmo, founder of La Finestra sul Cielo. 1993. Nov. 5. This product was introduced in the fall of 1987 and was the first tempeh made commercially in Italy. Carlo and Lucio de Berti developed the process; Lucio actually made the tempeh. For details, see the full text of this letter. Note: La Finestra sul Cielo means "A window to the sky."

2156. Moslehuddin, A.B.M.; Hang, Y.D. 1987. Effect of processing methods on the nutritional value of *Lathyrus sativus* seeds. *Nutrition Reports International* 36(5):1099-1103. Nov. [11 ref]
• ***Summary:*** The seeds of *Lathyrus sativus* (Lathyrus pea / chickling vetch) were cooked, inoculated with *Rhizopus oligosporus,* and fermented to make tempeh. During the process, the vitamin B-12 contents increased significantly. Amino acid levels were also measured. Address: Dep. of Food Science & Technology, Cornell Univ., Geneva, New York 14456.

2157. **Product Name:** Tempeh.
Manufacturer's Name: Northern Soyfoods.
Manufacturer's Address: 36 Lime St., Newcastle upon Tyne, NE5 2PN, England. Phone: 091-274-4932.
Date of Introduction: 1987. November.
New Product–Documentation: Letter from Peter R. Burn. 1987. Nov. He and T. Thompson are the proprietors. They started making tempeh in October or November 1987. Second letter. 1988. July 14. Talk with Peter Burn. His office address is 19 Lanercost Drive, Newcastle upon Tyne, ND5 2DH.

2158. *Vegetarian Times.*1987. Brother Ron's friendly foods. Nov. p. 42-44, 46, 48-50, 52. [1 ref]
• ***Summary:*** Brother Ron Pickarski, a Franciscan friar and a world class vegetarian chef, won bronze medals in both the 1980 and 1984 Culinary Olympics. Now he is testing recipes to enter in the 1988 Olympics, and writing his first cookbook titled "Brother Ron's Friendly Foods." Brother Ron is believed to be the only vegan who is also a certified executive chef, a title shared by 1,400 other American chefs. Most of his favorite recipes included in this article feature soyfoods: Alsatian onion pie (with soymilk and tofu). Primavera of vegetables (with tofu). Tofu bonne femme (with soymilk). Sweet & sour tempeh. Color photos show Brother Ron and several of his preparations.

2159. *Whole Foods.*1987. Sensational soyfoods. Nov. p. 62. [5 ref]
• ***Summary:*** This basic introduction is designed to be photocopied by natural food retailers for distribution to their customers.

2160. *Toyo Shinpo* (*Soyfoods News*).1987. Seidai ni Pari de kenkô shokuhin ten. Oshu de nobiru tônyû [Successful health food exposition in Paris helps to introduce Europe to soymilk]. Dec. 1. p. 1. [Jap; eng+]
• ***Summary:*** Soymilk, tempeh, and tofu are becoming more popular in Europe thanks to a recent soyfoods exposition in Paris. There were soymilk desserts, vanilla and chocolate, and Cacoja's soymilk, Soja, received a lot of attention at the event.

2161. Narten, Jeff. 1987. History of North Coast Tempeh and

its products. 1088 Ivanhoe, Cleveland, OH 44110. 4 p. Dec. 7. Unpublished manuscript.
• ***Summary:*** North Coast Tempeh started in house in August 1979, started using the facilities of Cleveland Tofu to make tempeh in 1980, incorporated in Sept. 1981, moved to 18320 Euclid in 1982, and opened the Noble Bean Deli on 12 Nov. 1982. Learned a lot from Lotus Cafe. Moved in 1987 to 1088 Ivanhoe in Cleveland for production of tempeh and products. The deli moved to 2246 Lee Rd., Cleveland Heights. "We now distribute to western Pennsylvania, Detroit, and most of Ohio. Our aim is to be a strong Midwest regional tempeh maker with a diverse in-house production. Our deli has become able to support itself and continues to offer great feedback for product development." They now produce about 650 lb/week of tempeh, and production is growing. Address: Cleveland, Ohio.

2162. Santa Cruz, Diego. 1987. Soyfoods in Chile (Interview). *SoyaScan Notes*. Dec. 16. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Diego just returned from 1 month in Chile. The only activity he saw related to soyfoods was by Dr. Eduardo Barriga at Chanalfonso outside Santiago. He is making tofu and donating some of it to the "Ollas Communes," or common pots for the poor. He is also trying to introduce tempeh. Diego is considering starting production of soyfoods in Chile. Address: San Rafael, California. Phone: 415-465-1045.

2163. *Toyo Shinpo* (*Soyfoods News*).1987. Kenko shokuhin toshite dô kôken suruka. Murata Kiku kyôju o kakonde [How does tempeh contribute as a health food?]. Dec. 21. p. 3. [Jap; eng+]
• ***Summary:*** This article discusses the 5th Japan tempeh conference that was held in Hyogo-ken on December 19, 1987. The following topics were discussed: 1. Tempeh's anti-mutagenic properties (*kohenigen-sei*). Kyoko Ebata gave a lecture on current experiments which focused on tempeh's resistance to the salmonella bacterium; 2. How the Japanese people are accepting tempeh and foods made from it. Lecture given by Goro Kanasugi and Makio Takato; 3. Hyojo High School's experiments on cooking with tempeh, tempeh recipes, and tempeh's acceptance. Lecture by Kojima.

2164. *Toyo Shinpo* (*Soyfoods News*).1987. Tenpe de "Mura Okoshi" jigyô [Development of a village–using tempeh]. Dec. 21. p. 1. [Jap; eng+]
• ***Summary:*** The 5th tempeh meeting and study group, held in Kasuga-cho, Hyogo-ken on December 19, 1987, drew 40 people, including Dr. Tadao Watanabe and Mr. Goro Kanasugi. The inhabitants of one village are trying to revitalize their village using tempeh. In Kenritsu Hyojo High School (Food Processing Dept.) experiments are being done with various foods made from/with tempeh, including breads, cookies, rice crackers, and jams. This high school was formerly an agricultural high school and they are very interested in making a product that might make their village famous.

2165. Robertson, Gary. 1987. Soyfoods Unlimited's most important tempeh innovations (Interview). *SoyaScan Notes*. Dec. 26. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** First, applying Hananya Kronenberg's ideas for an in-house laboratory making tempeh starter culture so that they work in a commercial tempeh company. His consulting cost a little less than $2,000 plus about $5,000 in lab equipment, including a $25,000 autoclave. The method for making silica gel crystals (the heart of Kronenberg's PhD thesis, he adapted from Columbia Univ. project) was very important. The mother culture tempeh spores were stored on these crystals to keep them dry and viable until they were later grown out on petri dishes. Kronenberg's starter produced better tempeh than did the NRRL culture.

Second, the design of the incubation room. It went up to an inverted V at the top so the hot air would collect there and be blown out into a plenum on top by fans. The room was also surrounded by a plenum. Cool air came in from below and entered the room through cracks in the walls when the fan blew hot air out.

Third, the dry dehulling was that developed by the University of Illinois. It was all gravity feed and very clean and efficient. Fourth, the method of making burgers using plastic rounds. Fifth, a moveable, portable pump that pumped the beans out of the kettle after cooking. Concerning White Wave, Gary feels that their tempeh is no longer as good as SUL's was. Steve Demos did not take the time to learn the starter or tempeh process properly and he will be in a real bind when he runs out of crystals and Kronenberg's culture. Address: Soyfoods Unlimited, San Leandro, California.

2166. Brown, Judy. 1987. Tempeh sales plateau in natural foods market. Marketers looking at new varieties and product areas for growth. *Soya Newsletter* (*Bar Harbor, Maine*). Nov/Dec. p. 1, 8-9. [2 ref]
• ***Summary:*** White Wave (Boulder, Colorado), which projects sales of $2 million for all products in 1987, produces 15-20,000 lb/week of tempeh, making the company America's largest tempeh producer. Tempeh products under the White Wave label include Soy, Soy-Rice, 5 Grain, Quinoa, Amaranth, Lemon Broil, Tempeh Burgers (two styles) and Sea Vegetable Tempeh. The Soyfoods Unlimited line includes Soy, 3 Grain, 5 Grain, Burgers, and Cutlets. Lightlife Foods (Greenfield, Massachusetts) is the second largest, producing 7,690 lb/week [up 40% over Jan. 1984]. The company's line has diversified from standard Soy Tempeh and 3-Grain Tempeh to Soy with Caraway, Quinoa, Sesame, Garden Vegetable, Macro Power, Fakin' Bacon,

and Tempeh Burgers. Lightlife's sales of all products was $800,000 for 1987, projected to rise to $1.2 million for 1988. The decision to diversify from tempeh only products was made after the company's tempeh sales plateaued in 1983. Competition became severe and supply outgrew demand.

Appropriate Foods (Brooklyn, New York) notes that "sales surged between 1980 and 1984, but have since flattened out." Brown estimates that "approximately 2 million lb of tempeh will be produced in the U.S. in 1987, with manufacturers' sales pegged at $2.7 million and retail sales at around $5 million." These sales and production figures show no growth in the industry since Soyfoods Center did its survey of manufacturers in early 1984. Average retail prices for an 8-oz package of plain soy tempeh ranged from $1.00 to $1.30; for multi-grain varieties from $1.10 to $1.40; and for burgers and newer exotic products from $1.30 to $1.70... The top two tempeh producers are confident of the marketplace and believe strongly in the potential of tempeh.

2167. Golbitz, Peter. 1987. 1987 new product count: At least 217 new soyfood products for retail sale. *Soya Newsletter* (*Bar Harbor, Maine*). Nov/Dec. p. 3.
• ***Summary:*** Of the 217 new products, the leaders in the 8 product categories were Nondairy Frozen Desserts (50), Entrees (44), Beverages (35), Snacks/Desserts (35), Cheese Alternatives (19), Frozen Entrees (17), and Condiments (16). The leaders among the 8 primary soy ingredients were tofu (133), soymilk (32), textured soy protein (19), isolated soy protein (12), soynuts (10), tempeh (6) and miso (1). Tofu was the only primary soy ingredient used to make at least one product in all categories. A complete listing of these products broken down by primary soy ingredient and by category, and which also lists flavors, company name, city, and state, is available from Soya Newsletter for $25 (or $35 in Canada). Address: Soyatech, Bar Harbor, Maine.

2168. Golbitz, Peter. 1987. Soya interview: Bill Shurtleff, noted soyfoods author, speaks on the trends and future of soyfoods. *Soya Newsletter* (*Bar Harbor, Maine*). Nov/Dec. p. 4-5.
• ***Summary:*** Shurtleff sees seven positive trends showing that the soyfoods industry is in a healthy growth pattern: 1. The remarkable growth in the number of new soyfoods products, 273 to date in 1987. 2. The increasing quality of these products and the sophistication with which they are marketed. 3. The growing consumer interest in soyfoods as reflected in the steady increase in media coverage. The SAA clipping service has received 1,145 clips on soyfoods so far this year. 4. The increasingly positive image of soyfoods in the Western world (though a Roper poll in mid-1986 found tofu to be America's "most hated" food). 5. The growing scientific and consumer awareness of the health dangers of the standard American meat-centered diet. 6. The increasing interest in natural foods, in vegetarianism, and in reducing consumption of red meat. 7. The historically unprecedented extensive and positive coverage given to dairylike soyfoods by dairy magazines. He also discusses the probable effects of a large food company, such as Kraft, starting to make and market tofu aggressively. Address: Soyatech, Bar Harbor, Maine.

2169. **Product Name:** Organic Tofu [Plain, or Smoked], Tofuburger, and Organic Tempeh.
Manufacturer's Name: Oasis Wholefoods.
Manufacturer's Address: Unit 3C, Dart Units, Steamer Quay Rd., Totnes, South Devon TQ9 5AL, England. Phone: 0803 863167.
Date of Introduction: 1987. December.
New Product–Documentation: Note from Simon Bailey. 1988. Oct. 10. Formerly Lifestream Wholefoods, owned by Francis Checkley, this business was sold in Dec. 1987 to Mr. I.J. Mohammed.

Letter from I.J. Mohammed. 1991. Sept. 9. He makes tofu, tofu burgers, tempeh, miso, breads and cakes on a community scale. He has been making these foods for the last 5 years, all by hand.

2170. **Product Name:** Chinese Tempeh Rolls.
Manufacturer's Name: Plenty Canada Soya Utilization Project.
Manufacturer's Address: 88A Kotugodella Vidiya (Postal Box 95), Kandy, Sri Lanka.
Date of Introduction: 1987. December.
Ingredients: Fresh or dried tempeh, chilies, onions, spices, salt, white wheat flour, soya flour, biscuit powder, pepper.
Wt/Vol., Packaging, Price: Each roll, 3.5 inches long and 1 inch diameter, retails for Rs. 3/-.
New Product–Documentation: Form filled out by Jane Gleason. On 23 March 1988 she visited the Plenty Canada Soya Food Centre. For details see Chocolate Milk (Aug. 1987). The product is adapted from a local recipe for a deep-fried food.

2171. **Product Name:** Tempeh.
Manufacturer's Name: Southern Soy.
Manufacturer's Address: P.O. Box 22.471, Christchurch, New Zealand. Phone: 810-736.
Date of Introduction: 1987. December.
Ingredients: Soybeans, water, rhizopus.
New Product–Documentation: Talk with Seth Tibbott. 1990. Aug. 15. Seth visited Nigel Harris, the owner, in New Zealand in Dec. 1987. He made tempeh at that time, and perhaps tofu. Seth has a label for his tempeh. Note: A letter written to this company at the above address in Feb. 1992 was returned. Nor did Christchurch telephone directory assistance have any listing for the company. Seth Tibbott does not have a more current address.

2172. *Soyanews* (*Sri Lanka*).1987. Plenty Soya centre opens in Kandy. 9(2):1-2. Dec.
• ***Summary:*** "One of the main objectives of the project is to have the Soya Centre act as a central point from which all of the soya products available in Sri Lanka can be obtained at a reasonable cost and in consistent supply. Another major objective is to assist community groups and small businessmen to set up their own small scale soya processing operations." The opening took place on 28 September 1987. Mr. Ian Taylor of Plenty Canada is the director.

"This is the first stage of a five year soya promotion project funded by the Canadian International Development Agency (CIDA) and implemented by Plenty Canada in collaboration with the Soybean Food Research Centre (SFRC) at Gannoruwa and various local non-governmental agencies." The Soya Food Centre is equipped to manufacture a wide range of soya based products including ice cream, stuffed rotis, soya watalappam, fresh as well as dried tempeh and cutlets. One of the main objectives of the project is to have the Soya Centre act as a central point from which all of the soya products available in Sri Lanka can be obtained at a reasonable cost and consistent supply.

The Plenty Soya Food Centre is open from Monday to Saturday and is located on the main floor of the Y.M.C.A. at No. 88A, Kotagodella Vidiya, Kandy. The project is a result of a collaboration with Plenty's Field Director, Mr. Ian Taylor in November, 1986.

2173. Suparmo, -; Markakis, P. 1987. Tempeh prepared from germinated soybeans. *J. of Food Science* 52(6):1736-37. Nov/Dec. [11 ref]
• ***Summary:*** The contents of oligosaccharides (sucrose, raffinose, and stachyose) and of phytate in soybeans were reduced by 12-24 hours of germination. Fermentation of these soy sprouts to make tempeh caused a further decrease in oligosaccharide, phytate, and fat content, and an increase of the proportion of protein in tempeh solids. Soybean lectins were not affected by germination but were inactivated during preparation of tempeh. The adjusted PER for regular tempeh was 2.19 vs. 2.26 for tempeh made from soy sprouts.

Table 2 shows the oligosaccharide and phytic acid contents of dormant [whole dry] and germinated soybeans, and tempeh made from them. The raffinose content of dormant/dry soybeans (percentage of dry weight) was 0.2; it decreased to 0.1 in soybeans germinated for 24 hours, and in tempeh made from regular or germinated soybeans. The stachyose content of dormant/dry soybeans was 3.8; it decreased to 3.3 in soybeans germinated for 24 hours, to 1.8 in soy tempeh, and to 0.5 in tempeh made from soybeans germinated for 24 hours. The phytic acid content of dormant/dry soybeans was 1.3; it decreased to 1.2 in soybeans germinated for 24 hours, to 0.8 in soy tempeh, and to 0.6 in tempeh made from soybeans germinated for 24 hours. Address: Dep. of Food Science & Human Nutrition, Michigan State Univ., E. Lansing, MI 48824-1224.

2174. **Product Name:** No Chicken Salad (With Tempeh in a Pita Pocket), Tofu Salad (in a Pita Pocket), and Nori Rolls (With Tofu Filling).
Manufacturer's Name: Terra's Specialty Foods.
Manufacturer's Address: R.D. 1, Box 317, Vernon, VT 05354. Phone: 802-254-5242.
Date of Introduction: 1987. December.
New Product–Documentation: Talk with Bari Madwin. June 29 and Aug. 28. Susan Quinn sells tofu and tempeh sandwiches in Brattleboro. She bought an existing company in 1988. She uses about 12 lb/week of tofu.

Talk with Susan Quinn. 1988. Aug. 30. She bought this company from Martha Brown in Aug. 1987. It was named Martha's Sandwiches, but she renamed it Terra's Specialty Foods in Feb. 1988. At the time, Martha had a line of sandwiches, including Eggless Tofu Salad (in a sandwich, 8 oz) and BLT with Fakin' Bacon (made from tempeh). Susan introduced her three products in December 1987. The tofu salad in a pita pocket weighs 4 oz. The tofu in the nori rolls is marinated, broiled, then put in with the veggies. She buys her tofu from the food co-op. It is a part-time business.

2175. **Product Name:** Tempeh Tabooli.
Manufacturer's Name: 21st Century Foods Inc.
Manufacturer's Address: 30A Germania St., Jamaica Plain, MA 02130.
Date of Introduction: 1987.
Ingredients: Organic sesame wheat tempeh, cracked wheat, carrots, cabbage, parsley, onions, olive oil, wood aged apple cider vinegar, 100% pure natural lemon juice, garlic, sea salt.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated.
New Product–Documentation: Label. 1987. 3.5 inch diameter. Green and black on yellow. "New! 100% natural. No preservatives." Posner. 1987. 21st Century Whole Foods Cook Book. Inside rear cover.

2176. **Product Name:** Sesame Wheat Tempeh Burgers.
Manufacturer's Name: 21st Century Foods Inc.
Manufacturer's Address: 30A Germania St., Jamaica Plain, MA 02130.
Date of Introduction: 1987.
Ingredients: Organic soy tempeh, bulghur wheat, roasted sesame seeds, tamari, natural hickory smoke, lemon juice, herbs, spices.
Wt/Vol., Packaging, Price: 5.5 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1987. 3 inch diameter. Black and red on yellow. "New! All natural. Gourmet."

2177. Berghofer, Emmerich. 1987. Nutzung

aussereuropaeisches fermentierter Lebensmittel fuer heimische Zwecke [Application of non-European fermented foods for domestic uses]. *Ernaehrung* (*Die*) 11(1):14-22. [Ger]*
• ***Summary:*** The author has made tempeh from fava beans (*Vicia faba,* Ackerbohnen) on a laboratory scale. Address: Inst. fuer Lebensmitteltechnologie der Universitaet fuer Bodenkunde.

2178. **Product Name:** [Tempeh Salads].
Manufacturer's Name: De Hobbit.
Manufacturer's Address: Waterstraat 4, B-9980 St. Laureins, Belgium.
Date of Introduction: 1987.
New Product–Documentation: Soya Bluebook. 1987. p. 95.

2179. **Product Name:** [Tempeh].
Manufacturer's Name: Granja Tierra Nueva.
Manufacturer's Address: Aldea San Luis, La Azulita, C.P. 5102, Estado Merida, Venezuela.
Date of Introduction: 1987.
New Product–Documentation: Letter from Ing. Oswaldo Perez. 1987. July.

2180. Mahmud, Mien K. ed. 1987. Applied research and training on tempe. *U.N.U.* [*United Nations University*] *Tempe Newsletter* 1:2-6. *
• ***Summary:*** Note: The following was retrieved from http:// archive.unu.edu/ unupress/food/ 8F101e/ 8F101E0d. htm: "Tempe newsletter: In 1986 a first course of applied research and training on tempe was held at the Nutrition Research and Development Centre, Bogor, Indonesia. The training participants were ten scientists from Asia and Africa. Funding was provided by the United Nations University.

"Participants pointed out the following benefits from the training: Tempe technology is an appropriate technology for processing legumes (not only soybeans) into palatable, safe, and nutritious food. The significant health effects of soybean tempe, especially the complementary value of tempe protein for cereals and other carbohydrate sources and the high content of dietary fibre and its effect on diarrhoea [diarrhea], are very important for developing countries. Tempe can be used in nutrition improvement programmes.

"The transfer of tempe technology to developing countries will! help promote the nutritional status of their populations. This can be achieved only if the trainees disseminate the knowledge and skill gained from the training in their own countries.

"To keep the participants aware of developments in tempe technology, a Tempe Newsletter, funded by the United Nations University, is being published four times a year by the Nutrition Research and Development Centre. Those interested in further information should write to the Nutrition Research and Development Centre, Komplek Gizi Jl. Dr. Semeru, Bogor 16112, Indonesia." Address: Indonesia.

2181. **Product Name:** Quinoa Tempeh.
Manufacturer's Name: Noble Bean.
Manufacturer's Address: R.R. 1, McDonalds Corners (near Elphin), Ontario K0G 1M0, Canada. Phone: 613-278-2305.
Date of Introduction: 1987.
How Stored: Frozen.
New Product–Documentation: Letter (fax) from Allan Brown. 1998. Jan. 21. This tempeh was first sold in 1987.

2182. **Product Name:** Noble Bean Eggless Tempeh Salad.
Manufacturer's Name: North Coast Tempeh Co.
Manufacturer's Address: 1088 Ivanhoe Rd., Cleveland, OH 44110.
Date of Introduction: 1987.
Ingredients: Tempeh (Organic soybeans, water, Rhizopus culture), imitation mayonnaise (soy oil, water, honey, cider vinegar, lemon juice, natural spices, kelp, onion powder), celery, pickles, onion, parsley, shoyu, mustard, garlic powder.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated.
New Product–Documentation: Label. 1987. Oval 4 by 2.75 inches. Blue, red, green, and yellow on white. Jeff Narten. 1987. "History of North Coast Tempeh and its Products." 4 p. Dec. 7.

2183. **Product Name:** The Soy Deli Gourmet Fresh Almond Veggie-Nut Butter (Tempeh-Based).
Manufacturer's Name: Quong Hop & Co.
Manufacturer's Address: 161 Beacon St., South San Francisco, CA 94080. Phone: 415-873-4444.
Date of Introduction: 1987.
Ingredients: Organic tempeh (water, organic* soybeans, Rhizopus oligosporus), apple cider, carrots, pinto beans, water, raw almonds, corn oil. * Grown in accordance with Calif. Health & Safety Code 26569.11.
How Stored: Refrigerated.
New Product–Documentation: Labels. 1987. 3.5 inch diameter. Salmon tan and black on white. "Master Tofu-Makers Since 1906."

2184. Ratnamani, A. 1987. Acceptability, nutritive value and shelflife study of tempe prepared with sunflower seed and soybean dhal. MSc thesis, University of Agricultural Sciences, Bangalore. *

2185. Samish, Shlomith. 1987. Tempeh-like fermented food product from soybean. Research Development Company of The Hebrew University of Jerusalem, P.O. Box 4279, Jerusalem 91042, Israel. 1 p. F-0097.

• ***Summary:*** "The innovative process and resulting products developed are economically and nutritionally superior, require less time, energy, and labor, and pose no pollution problems. The process requires a short cooking time, or the product can even be prepared without cooking. It obviates the need for soaking and dehulling. The yield is 2.37." Address: Dep. of Biochemistry and Human Nutrition, Faculty of Agriculture, The Hebrew Univ. of Jerusalem. Phone: 02-699033.

2186. Samish, S. 1987. An improved method for producing tempeh from soybeans. In: Book of Abstracts, 7th World Congress of Food Science and Technology. Raffles City, Singapore: Institute of Food Science and Technology. See p. 145. Held Sept. 1987 in Singapore. *

2187. **Product Name:** [Tempeh, and Tofu].
Foreign Name: Tempeh, Tofu.
Manufacturer's Name: Soleil de Lalise.
Manufacturer's Address: Domaine de Galise, 32260 Tachares, France. Phone: 62.65.35.63.
Date of Introduction: 1987.
New Product–Documentation: Letter from Jean-Luc Alonso of Gaia in Graulhet, France. 1994. May 16. In 1987, a company named Soleil de Lalise (meaning "the sun of Lalise"), located near Agen, also began to make tempeh and tofu. These products are still sold by this firm. Their address is: Domaine de Galise, 32260 Tachares, France. Phone: 62.65.35.63.

2188. Wang, Hwa L. 1987. Technical aspects of whole soybean use. In: Jacqueline Dupont and Elizabeth M. Mosman, eds. 1987. Cereals and Legumes in the Food Supply. Ames, Iowa: Iowa State Univ. Press. See p. 97-118. Proceedings of the Iowa State Univ. Nutritional Science Council Symposium, "Roles of Cereals and Legumes in the Food Supply." 1983. [33 ref]
• ***Summary:*** Contents: Introduction. Traditional uses of whole soybeans as food. Hydration of whole soybeans. Tofu. Tempeh. This article focus mostly on to tofu and tempeh, which are made by two simple processes for converting soybeans into interesting and attractive foods.

Table 8.1 lists 6 Oriental nonfermented soybean foods, and Table 8.2 lists 6 Oriental fermented soybean foods. Address: NRRC, Peoria, Illinois.

2189. Albert, Rachel. 1987. Gourmet wholefoods: Vegetarian and macrobiotic cuisine. Grain of Salt Publishing, 2211 N.E. 50th, Suite #12, Seattle, WA 98105. xi + 176 p. Illust. by Rebecca Rickabaugh. Index. Introduction by Karl Mincin. 21cm.
• ***Summary:*** This vegan cookbook contains no recipes calling for eggs or dairy products. At last, a macrobiotic cookbook without fish. This book has a brief, unstuffy introduction to macrobiotics and tasty, creative recipes. Includes 11 recipes featuring tofu, 4 with tempeh, 1 using black soybeans, and many using miso and shoyu. Note the correct use of the term "shoyu" throughout. Also has recipes for "amasake" and "amasake frosting." Address: Washington.

2190. Arraj, Tyra; Arraj, James. 1987. The treasures of simple living: A family's search for a simpler and more meaningful life in the middle of a forest. Chiloquin, Oregon: Tools for Inner Growth. 212 p. See p. 65-68, 72-73, 144-48, 199-200. Illust. Index. 22 cm. [6 ref]
• ***Summary:*** Chapter 14, titled "Tofu and Tempeh," begins: "I make tofu once a week and the result of half an hour of work is four tofu meals and at least as many tempeh made from soy pulp." A description of the process using a blender is given. Tofu recipes include Celestial Chicken (meatless), Tofu Fish (meatless), Sweet & Sour tofu. Okara tempeh recipes are for Spaghetti Tempeh (the favorite), and Tempeh Tacos. Address: Tools for Inner Growth, Box 520, Chiloquin, Oregon 97624.

2191. Bartholomai, Alfred. ed. 1987. Food factories: Processes, equipment, costs. Weinheim, West Germany: VCH Verlagsgesellschaft mbH. xv + 289 p. 24 cm. [Eng]
• ***Summary:*** Includes chapters on tofu plant by Takai Tofu & Soymilk Equipment Co. (Japan) (p. 157-59, Chap 22), surimi plant by K.L. Holmes and C. Riley (p. 207-14), protein recovery plant by J. Lyle (p. 223-27), soybean oil extraction plant by K. Weber (p. 231-35), and soymilk plant by Takai Tofu & Soymilk Equipment Co. (Japan) (p. 279-81, Chap. 41).

Within each chapter are the following sections: Introduction, economic considerations, social impact, plant design basis (capacity), plant layout and floor plan, process description. Takai has recently supplied/sold the following plants: (1) Tofu plants to Natural Inc. (Maryland, USA 30 kg/hour), Tempe Production BV (Netherlands, 30 kg/hour), and Castle Trading (Australia, 60 kg/hour). (2) Soymilk plants to Namyang Company (Korea, 2,000 liters/hour), Seoju Industrial Company (Korea, 1,000 liters/hour), Guilin Sweets and Food Factory (China, 1,000 liters/hour), Jinan Soymilk Factory (China, 1,000 liters/hour). Address: 570 Stanhope Rd., Sparta, New Jersey, 07871.

2192. Bates, Dorothy R. 1987. Kids can cook: Vegetarian recipes kitchen-tested by kids for kids. Summertown, Tennessee: The Book Publishing Co. 120 p. Illust. Index. 23 cm. Spiral bound.
• ***Summary:*** The index of this vegetarian cookbook contains listings for 4 tofu recipes and 1 miso recipe, plus definitions at the Ingredients sections of tofu, TVP (Texturized Vegetable Protein), tempeh, and miso. Dorothy Bates is the mother of Albert Bates, a lawyer at The Farm, and a patron of The Book Publishing Co. Address: Tennessee.

2193. Beuchat, Larry R. 1987. Food and beverage mycology. 2nd ed. New York, NY: Van Nostrand Reinhold. xiii + 661 p. Illust. Index. 23 cm. [20+ soy ref]
• ***Summary:*** Contents: Contributors. Foreword. Preface. Classification of food and beverage fungi, by E.S. Beneke and K.E. Stevenson. Relationships of water activity to fungal growth, by Janet E.L. Corry. Fruits and fruit products, by D.F. Splittstoesser. Vegetables and related products, by R.E. Brackett. Meats, poultry, and seafoods, by James M. Jay. Dairy products, by Elmer H. Marth. Field and storage fungi, by C. M. Christensen. Bakery products, by J.G. Ponte, Jr. and C. C. Tsen. Traditional fermented food products, by L.R. Beuchat. Alcoholic beverages, by G. G Stewart. Edible mushrooms, by W.A. Hayes. Poisonous mushrooms, by Donald M. Simons. Fungi as a source of protein, by A. J. Sinskey and C.A. Batt. Fungal enzymes and primary metabolites used in food processing, by R. Bigelis and L.L. Lasure. Mycotoxins, by N.D. Davis and U.L. Diener. Methods for detecting mycotoxins in food and beverages, by L.B. Bullerman. Methods for detecting fungi in foods and beverages, by B. Jarvis and A.P. Williams. Appendix. Regulatory action levels for mold defects in foods.

Chapter 9, "Traditional fermented food products, has a section on koji and a long section on fermented soybean foods that discusses: Shoyu, miso, natto (incl. itohiki-natto, yukiwari-natto, and hama-natto / hamanatto; called tu su by the Chinese and tao-si by the Filipinos), sufu, meitauza, and témpé [tempeh]

Tables show: (9.1) Some fermented foods of fungal origin. For each food is given: Product name, geography, substrate, microorganisms, nature of product, and product use. Soy-related products include: Chee fan, Chinese yeast, Hamanatto, kecap, kinema, ketjap, meitauza, meju, miso (incl. chiang, jang, doenjang, tauco, tao chieo), natto, soybean milk, soy sauce (incl. chiang-yu, shoyu, toyo, kanjang, kecap, see-ieu), sufu (tahuri, tao-kaoan, tao-ju-yi), tao-si, taotjo, tauco and témpéh. Address: Dep. of Food Science, Agric. Exp. Station, Univ. of Georgia, Experiment, GA 30212.

2194. Campbell-Platt, Geoffrey. 1987. Fermented foods of the world: A dictionary and guide. London and Boston: Butterworths. xxiii + 291 p. 26 cm. [25 soy ref]
• ***Summary:*** The author classifies fermented foods into 9 groups: Beverages, Cereal products, dairy products, fish products, fruit and vegetable products, legumes, meat products, starch crop products, and miscellaneous products. Fermented legume products are particularly important in the diets of East Asia, Southeast Asia, and the Indian subcontinent. He has sections on many fermented soyfoods: Dawadawa, hama-natto, kenima [sic, kinema], miso, natto, tempe (incl. tempeh, tempe bengook, tempe bongkrek, tempe gembus [okara tempeh], tempe lamtoro, tempe mata kedele), and sufu (incl. teou-fu-ru). He lists major areas consumed, related terms, how consumed, types, how produced, microbiology and biochemistry, and a few key references. His research began in Ghana with dawadawa made from the African locust bean. Address: National College Prof. of Food Technology, Dep. of Food Science & Technology, Univ. of Reading, Reading, Berkshire, UK.

2195. Downes, John. 1987. Soy source: A practical guide to cooking with soy foods. Chatswood, NSW, Australia: Nature and Health Books. Co-published in 1987 by Prism Press, 2 South Street, Bridport, Dorset DT6 3NQ, England. Distributed in the USA by Avery Publishing Group. 127 p. No index. 22 cm. [21 ref]
• ***Summary:*** Contents: Introduction, Nutrition & Soyfoods, Ingredients & Techniques, Glossary, Appetizers & Dips, Marinades & Accompaniments, Soups, Soup Noodles, Main Courses, Salads & Dressings, Desserts, Bibliography. A cookbook containing very little information about soyfoods in Australia. The author was born in 1949. Address: Australia.

2196. Fardiaz, Dedi. 1987. Oncom: Fermented peanut pressed cake, a unique Indonesian traditional fermented food. In: Fujiharu Yanagida, ed. 1987. Traditional Foods and Their Processing in Asia. Tokyo: NODAI Research Institute, Tokyo Univ. of Agriculture. vii + 235 p. See p. 25-31. [10 ref]
• ***Summary:*** Contents: Introduction. Processing of oncom. Fermentative changes: Liberation of fatty acids, solubilization process, degradation of phytic acid, reduction of oligosaccharides. Nutritive values and wholesomeness of oncom. Address: Faculty of Agricultural Engineering and Technology, Bogor Agricultural Univ., Bogor, Indonesia.

2197. INTSOY. 1987. Home and village soyfood preparation (Leaflet). Champaign, Illinois. 6 panels.
• ***Summary:*** Contents: Overcoming protein deficiencies. INTSOY basic processing concepts. A practical approach. Products and processes: Soy flour, tofu, tempeh, soy milk, roasted and fried soybeans [soynuts], curries, sweets. Record of achievement (in Sri Lanka, incl. training more than 20,000 people). Address: International Soybean Program, Univ. of Illinois at Urbana, 113 Mumford Hall, 1301 W. Gregory Dr., Urbana, Illinois 61801. Phone: 217-333-6422.

2198. Karim, Mohamed Ismail Abdul; Hassan, Zaiton. 1987. Traditional fermented foods of Malaysia. In: Fujiharu Yanagida, ed. 1987. Traditional Foods and Their Processing in Asia. Tokyo: NODAI Research Institute, Tokyo Univ. of Agriculture. vii + 235 p. See p. 210-18. [12 ref]
• ***Summary:*** The authors discuss the preparation of a number of Malaysian fermented soyfoods, including tempeh, kicap kacang soya (soy sauce), and tauco (soybean paste). They

also discuss other Malaysian fermented foods: budu or kicap ikan (fish sauce), cincaluk (fermented shrimp), belacan (fish/shrimp paste), pekasam (fermented freshwater fish), tapai (fermented rice or cassava), tempoyak (fermented durian), tairu/taire/taina (fresh cow's milk fermented by bacteria equivalent to sour milk or yogurt), dadeh (made from fermented buffalo milk), arak beras (rice wine), toddy (palm wine), idli (steamed pudding), dosai (pancake), dadeh (fermented sweetened milk), and jeruk buahbuahan & sayur sayuran (pickled fruits and vegetables). Address: Faculty of Food Science and Biotechnology, Universiti Pertanian Malaysia, Malaysia.

2199. Mahmud, Mien K. 1987. Penggunaan makanan bayi formula tempe dalam diit bayi dan anak balita sebagai suatu upaya penanggulangan masalah diare [Using tempeh based infant formula in the diet of babies and infants under 5 years old as a means of treating diarrhea]. PhD thesis, Bogor Agricultural University. [Ind]*
Address: Indonesia.

2200. Nichterlein, Karin. 1987. Huelsenfruechte [Legumes]. Bonn, Germany: AID (Auswertungs- und Informationsdienst fuer Ernaehrung, Landwirtschaft und Forsten). 20 p. Illust. 21 cm. [10 ref. Ger]
• ***Summary:*** The section on soybeans (p. 14-16) discusses soya oil, lecithin, soybean meal, soy protein concentrates, soya bread, low-fat soy flour, Sojamark (Soya meat), TVP, soya milk, tofu, soy sauce (shoyu, tamari), miso, tempeh, sufu (fermented tofu), natto, and soy sprouts. Address: Institut fuer Pflanzenbau und Pflanzenzuechtung I, Giessen, Germany.

2201. NODAI Research Institute. 1987. Traditional foods and their processing in Asia. Tokyo: NODAI Research Inst. vii + 235 p. Seminar held Nov. 13-15, 1986 at the Tokyo Univ. of Agriculture, Tokyo, Japan.
• ***Summary:*** Contents include: Oncom: Fermented peanut pressed cake, by Dedi Fardiaz. Mochi: Rice Cake, by Akiko Kawabata. Miso: Bean paste, by Hisao Yoshii. Chemistry and technology of tofu and its derived products, by Tokuji Watanabe. Indigenous fermented foods in Nepal, by Tika Karki. Improvement of traditional soy sauce fermentation mold, by Sri Hartadi and Siti Kabirun. Address: Tokyo Univ. of Agriculture, 1-1-1 Sakuragaoka, Setagaya-ku, Tokyo 156, Japan.

2202. Passmore, Jacki. 1987. Asia: The beautiful cookbook. Los Angeles, California: Knapp Press. 256 p. Illust. (color). Index. 37 cm.
• ***Summary:*** This is a stunningly beautiful, oversized book–a feast for the eyes, filled with elegant color photos (many full page), authentic recipes and many insights about Asian cookery. Each recipe is accompanied by one or more photos, Contents: Japan: Simplicity and elegance. Korea: Warm and sustaining. China: From the beginning of time. Philippines: East meets West. Thailand: Titillating, tantalizing. Laos and Kampuchea: Unforgettable foods. Vietnam: Herbaceous overtones. Singapore and Malaysia: A blending of cultures. India: Southern fire, northern serenity. Burma: Exotic offerings. Indonesia: Symphony of flavors. Sri Lanka: Gems from an enchanted isle. Glossary. Acknowledgments.

Japan: Yudofu (Simmered bean curd, with 3 cakes tofu {bean curd}, p. 31). Tofu dengaku (Grilled bean curd on skewers, with 2 lb {1 kg} momen tofu and white miso, p. 31). Ton-negu no teriyaki (Teriyaki pork rolls, p. 38). Miso-shiru (Miso-flavored soup with bean curd).

Singapore and Malaysia: Popiah (with ¼ cup (about 2 oz / 60 gm) compressed bean curd cake, shredded, p. 155, 148-49). Tempe lemak (Tempe in coconut milk, p. 166). Hokkien mie (Hokkien style noodles, with 2 cakes compressed bean curd, p. 168). Laksa ayam (Chicken with laksa noodles in coconut sauce, with 2 squares / cakes compressed bean curd, p. 169).

Indonesia: Kecap manis is a sweetish soy and chili sauce (p. 218). Babi kecap (Pork in sweet soy sauce, p. 227).

Glossary (p. 252-54) includes short definitions of: Azuki beans. Bean curd. Bean pastes and sauces. Kecap manis ("based on dark soy sauce, sugar and spices"). Kombu. Nori. Paneer (India). Sesam. Wakame.

2203. Riet, W.B. van der; Wight, A.W.; Cilliers, J.J.L.; Datel, J.M. 1987. Food chemical analysis of tempeh prepared from South African-grown soybeans. *Food Chemistry* 25(3):197-206. [33 ref]
• ***Summary:*** Processing of soybeans into tempeh improved nutritional value including a reduction in phytic acid concentration, starch and the flatulence-causing oligosaccharides stachyose and raffinose. Thiamin concentration was reduced, and riboflavin and nicotinic acid contents increased during fermentation. Tempeh was found to be an acceptable product for South Africa which would increase soybean consumption. Address: National Food Research Inst., CSIR, P.O. Box 395, Pretoria 0001, South Africa.

2204. Roozen, Jac. P.; Groot, Jolan de. 1987. Analysis of low levels of trypsin inhibitor activity in food. *Lebensmittel-Wissenschaft + Technologie* (*Zurich*) 20(6):305-08. [14 ref. Eng]
• ***Summary:*** A method which utilizes affinity chromatography was developed and applied to the following soy products: Soybeans (dry, soaked or steamed), tempeh (fermented for 24 or 48 hours), soy flakes (defatted or heated), dry soy meat (textured vegetable protein), dry isolated soy protein, and tofu. Results are detailed. The specific trypsin inhibitor activity varied widely in the soy products but was always less than 1900 trypsin

inhibitor units/mg protein. Address: Dep. of Food Science, Agricultural Univ., De Dreijen 12, 6703 BC Wageningen, Netherlands.

2205. Shannon, Sara. 1987. Diet for the atomic age. Wayne, New Jersey: Avery Publishing Group Inc. xviii + 316 p. Introduction by Ernest J. Sternglass, PhD. Index. 23 cm. [400+* ref]
• ***Summary:*** The subtitle on the cover reads: "How to protect yourself from low-level radiation." This book, written from a macrobiotic viewpoint, contends that various foods, including miso and sea vegetables, can protect people from radioactivity. Chapter 6, "Diet for the Atomic Age," discusses miso, tofu, tempeh, and sea vegetables at length as foods that can protect us from radiation (p. 130, 145-55). The story of how miso protected Dr. Akizuki and his staff from the radiation of the atomic bomb dropped on Hiroshima is told on pages 77, 116, 148-49.

Chapter 8, "Recipes" (p. 193-234) includes many macrobiotic-style soy-related recipes and a special section titled "Tofu and Tempeh." The chapter contains 13 tofu recipes, 7 miso recipes, and 4 tempeh recipes. The author received her degree in nutrition from the State University of New York. Address: Practicing nutritionist and health counselor, New York City.

2206. Singleton, Paul; Sainsbury, Diana. 1987. Dictionary of microbiology and molecular biology. 2nd ed. Chichester, New York, Brisbane, Toronto & Singapore: John Wiley & Sons, Ltd. xii + 1019 p. Illust. 25 cm. A Wiley-Interscience Publication.
• ***Summary:*** Contains entries for: fermentation, fermented foods, fermenter (fermentor), miso, natto, nitrogen fixation (dinitrogen fixation), ogi, oncom, shoyu (see Soy sauce), soy paste (see Miso), soy sauce (shoyu), sufu, tempeh, tofu (an intermediate in Sufu production).

2207. Yntema, Sharon K. 1987. Vegetarian children: A supportive guide for parents. Ithaca, New York: McBooks Press. 169 p. Index. 22 cm. [188 ref]
• ***Summary:*** Though not a cookbook, this book work is especially useful for parents who need help in making a vegetarian transition for their children. Contains health and nutrition answers for vegetarian children of all ages–from feeding your baby to school lunches. Discusses tofu (p. 62-63, 98, 147-48) and tempeh (93, 148). Excellent bibliography.

"The author received an M.A. in Early Childhood Special Education from George Washington University. Before her son was born in 1978, Ms. Yntema worked as a child development specialist at the Day Care and Child Development Council of Tompkins County in Ithaca, New York." Address: Ithaca, New York.

2208. Brunthaler, Norbert. 1988. Re: Soyfoods made and sold by Sojvita. Letter to William Shurtleff at Soyfoods Center, Jan. 4. 1 p. Typed, with signature on letterhead. [Eng]
• ***Summary:*** "Thank you for your letter of Dec. 10." He gives the year and month that his company started to make and sell the following products: Tofu, Tofu marinated and baked, Tempeh, Sojanaise, Tofuburger, Tempeh vacuum packed and stable, Tofu spread (4 kinds), Sojella (enriched soymilk), Soyoghurt with fruits, Natto.

"These are only our soy-products which we sell by ourselves or through distributors in Austria. (Furthermore we produce rice-wafers, seitan, gomasio {sic, gomashio, sesame salt}, mochi.) We cannot say, which company is the largest in Austria, but we have the most different kinds of soyproducts. Our next competitor is: Sojarei in Baden and a smaller one is Tofurei in Wels. Furthermore there is only one Tempeh-producer in Vienna who sells tempeh and different cookies. These are all soy-producers in Austria. We hope we could help you with this information. With best regards. N.S.: Red miso and barley miso is in development since 1984." Address: Sojvita Produktions GmbH, Hauptplatz 1, Lichtenwoerth, Austria. Phone: 02622 / 75494.

2209. Margulis, Marlyn L. 1988. Specialty of the house: Tempting palates with tempeh and tofu. *Courier-Post* (*Camden, New Jersey*). Jan. 10.
• ***Summary:*** Richard's Natural Foods Restaurant in Voorhees (NJ) caters to the tastes of vegetarians and people on macrobiotic diets in South Jersey, says owner Richard Wessel. Tempeh burgers and stir-fried tofu are two of the nutritious items he sells.

2210. Shurtleff, William. 1988. New soyfood product introductions skyrocket during 1980s. Tofu, tempeh, soymilk, soy ice creams are most popular (News release). Soyfoods Center, P.O. Box 234. Lafayette, CA 94549. 4 p. Jan. 11.
• ***Summary:*** "The 'lighter eating' revolution has catapulted soyfoods into one of America's fastest growing food categories. A record number 330 new soyfood products were introduced in the United States during 1987, an increase of over 635% since 1977... These latest figures, part of a 30-year-long food industry trend, are tracked by SoyaScan, the Center's computerized database. It lists more than 4,630 soyfood products from 1546 A.D. to the present.

"During the 1950s, an average of 11 new soyfood products were launched each year in the U.S. This number increased to 16 during the 1960s, and 26 during the period 1970-75. Most of these new introductions were based on modern, high-tech soy protein products, such as soy protein isolates and concentrates, or textured soy flour.

"Then in the late 1970s the number of new products began to rise rapidly with the advent of the soyfoods movement. It reached 78 in 1976, 162 in 1979, 224 in 1982,

296 in 1985, and an all-time high of 330 in 1987." A graph shows "Number of New Soyfood Products Introduced, 1950-1987."

This release was carried by the Associated Press Financial Wire (Jan. 12 as "Soy-Based Foods Gain from Lighter Eating" and widely syndicated*), World Food & Drink Report (Jan. 21), Investor's Daily (Los Angeles, Jan. 12), San Francisco Examiner (Jan. 12), Oakland Tribune (Feb. 1), Natural Foods Merchandiser (Feb.). Food & Drink, Oil Mill Gazetteer (Feb.), *Journal of the American Oil Chemists' Society* (JAOCS, March, p. 319), Vegetarian Times (April, p. 9), Food Distributors Magazine (April), Dairy and Food Sanitation (April, p. 204), Whole Foods (April, p. 9), Health Foods Business (April), Adweek's Marketing Week (April. p. 6, 49), Restaurants & Institutions (April 29), East West (May, p. 10), Food Merchants Advocate (May with graph), Soyanews (Sri Lanka, July-Sept. p. 5). Address: Lafayette, California.

2211. Ebata, Junko. 1988. Tenpe wa hatsugan busshitsu ni kiku. Osaka-shi Dai Ebata Jokyôju ga jikken. Tenpe no henigensei to kôhenigensei [Tempeh contains antimutagenic substances that can help prevent cancer. Experiments conducted by Asst. Prof. Ebata of Osaka City University]. *Toyo Shinpo* (*Soyfoods News*). Jan. 21. p. 3. [Jap]
• ***Summary:*** Experiments showed that tempeh controlled the mutagenic activities of AF2, a powerful carcinogen, used during the 1970s in Japan as a tofu preservative. Address: Prof., Faculty of Science of Living, Osaka City Univ. Sugimoto 3-3-138, Sumiyoshi-ku, Osaka 558, Japan. Phone: 06-605-2811.

2212. Van den Berg, H.; Dagnelie, P.C.; Staveren, W.A. van. 1988. Vitamin B-12 and seaweed. *Lancet* i(8579):242-43. Jan. 30. [6 ref]
• ***Summary:*** "Neither in fermented soya products (tempeh, shoyu, tamari, rice miso, barley miso, tofu), nor in other fermented products (amasake rice, umeboshi prunes) did we find measurable B-12 (all below 0.02 micrograms per 100 g)." Tests done using both radioassay and *Lactobacillus leichmanii* showed that Spirulina and Nori (*Porphyra tenera*) were the two best vegetarian sources tested. But the B-12 in the nori does not appear to be available to the body. Its presence may be due to corrinoid-like B-12 analogues.

This study showed a tendency toward vitamin B-12 related anemia (not iron-related) in macrobiotic children who are generally vegan. A deficiency of vitamin B-12 in children can result in serious neurological damage. Address: 1. TNO-CIVO Toxicology and Nutrition Inst., 3700AJ Zeist, Netherlands; 2-3. Dep. of Human Nutrition, Agricultural Univ., Wageningen, Netherlands.

2213. Okada, Noriyuki. 1988. Tenpe–Indonesia no daizu hakkô shokuhin [Tempeh–An Indonesian fermented soyfood]. *Shokuryo: Sono Kagaku to Gijutsu* (*Food: Its Science and Technology*) No. 27. p. 65-93. Jan. [1 ref. Jap]
• ***Summary:*** Contents: Origin of tempeh. Chronology of tempeh (Both taken largely from *History of Tempeh* by Shurtleff and Aoyagi). Methods of making tempeh (with a chronology of their development). Microorganisms that have been isolated from tempeh and its starter. Changes taking place during tempeh fermentation. Protein efficiency. Antioxidants in tempeh. Ways of eating tempeh. Conclusion. Address: Oyo Biseibutsu-bu, Biseibutsu Riyo Dai-ichi Kenkyu-shitsu (Norinsho, Tsukuba, Japan).

2214. Perez, Oswaldo. 1988. El tempey: La soya en la alimentación human [Tempeh: Soya in human nutrition]. *La Era Agricola* (*Merida, Venezuela*) No. 4. Jan. p. 11. [Spa]
• ***Summary:*** A brief overview describing tempeh, its nutritional value, and ways of cooking. Address: Granja Tierra Nueva, Aldea San Luis, La Azulita, C.P. 5102, Estado Merida, Venezuela.

2215. Shurtleff, William; Aoyagi, Akiko. comps. 1988. Marketing soyfoods–Labels, ads, posters, and other graphics: Tempeh and tempeh products. Lafayette, California: Soyfoods Center. 175 leaves. Illust. No index. 28 cm. Series: Marketing soyfoods.
• ***Summary:*** This book is a collection of black-and-white photocopies of materials ranging in date from 1976 to 1987. The books in this series, each a unique collection of graphic materials, are designed for a number of purposes: (1) To serve as a source of ideas, ingredients, inspiration, legal specifications, and basic guidelines for companies in the process of developing their own products, designing their own graphic materials, and conceiving their own marketing strategies. (2) To document the tremendous diversity of soyfoods products and the way that each is presented and marketed. (3) By arranging the materials in chronological sequence, to help document the development and history of new product categories and soyfood types, and with them the rise of the soyfoods industry and market in the Western World. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

2216. Specker, Bonny L.; Miller, D.; Norman, E.J.; Greene, H.; Hayes, K.C. 1988. Increased urinary methylmalonic acid excretion in breast-fed infants of vegetarian mothers and identification of an acceptable dietary source of vitamin B-12. *American J. of Clinical Nutrition* 47(1):89-92. Jan. [16 ref]
• ***Summary:*** Urinary secretion of methylmalonic acid in elevated amounts is one indicator of vitamin B-12 deficiency. The authors analyzed blood serum and urine samples of 169 macrobiotic adults and children from the Boston area. Of 110 adults, 51% had B-12 levels below the so-called threshold level of 200 picograms of B-12 per milliliter of blood serum,

[1 picogram = 1 trillionth of a gram]. And there was a rise in a metabolic breakdown product (urinary methylmalonic acid [UMMA], which increases as B-12 levels decrease) in the urine of children breast-fed by vegan mothers. Two infants showed signs of possible neurological damage, which was quickly corrected by B-12 supplementation.

Certain seaweeds were found to have levels of vitamin B-12 comparable to beef liver (35-41 micrograms/100 gm wet sample; wakame had 23-61 and kombu had 17-49 mcg/100 gm wet sample). But tempeh, which was thought to have high levels contained only 0.4-0.7 micrograms/100 gm wet sample.

The authors found surprisingly low levels of vitamin B-12 in 4 samples beef liver, which is supposed to be one of the most concentrated sources of this vitamin–only 3.9 mcg/100 gm. Note: The test used, a radioassay with pure intrinsic factor as binder, has been challenged by some researchers who claim that it degrades as much as 60% of the real vitamin present in the samples. Yet the addition of 60% to the 3.9 mcg figure would only bring it to 6.24 mcg/100 gm. Are the tests faulty or is the level of vitamin B-12 in our food supply dropping? And, if so, why? Address: Asst. Prof. of Pediatrics, Univ. of Cincinnati Medical Center, Cincinnati, Ohio 45267-0541.

2217. Demos, Steve. 1988. New developments at White Wave (Interview). *SoyaScan Notes.* Feb. 4. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** "We are in the process of doubling the capacity of our tempeh operation on a single shift. We are rebuilding the entire plant: tempeh, tofu, ice cream. We plan to stay in this plant and are shooting for a building of our own by the mid-1990s. We gave up on acquiring the dairy and a meat company nearby. We're growing so fast, I can't tell you how big we're going to be. Right now we have 20,000 square feet; by the end of this year it will not be enough.

"We will soon have a semi-automatic tempeh process. We have effectively automated the filling of the containers and made the rest of the process much easier. We took the grunt out of it. But we still use rolling racks in an incubation room. A conveyorized incubation system is still a ways off. Recently Peter Golbitz asked me how much tempeh we were making. I told him I did not want to say any more than that it was in the tens of thousands of pounds per week. He told me he wanted to say "15-20,000 lb/week" and I said that he had no basis for those figures." Address: Boulder, Colorado.

2218. Bernardini, Lorenzo (Bern). 1988. Tasty treats at Wildwood Natural Foods Deli. *News* (*San Rafael, California*). Feb. 17-23.
• ***Summary:*** This article is in the section titled "Dining Out in Marin." A dietary genius named Bill Bramblett along with partners Paul Orbuch and Frank Rosenmayr have created a huge success story at Wildwood (A fourth partner, Jeremiah Ridenour, operates a tofu factory in Santa Cruz). Wildwood makes or distributes 90 different products. In addition to Wildwood Natural Foods Deli in Fairfax, the company conducts a thriving wholesale business in nine Bay Area counties, with additional outlets from Eureka to Los Angeles. For the past eight years Wildwood has experienced a 30 to 50% annual growth. The company distributes fifty thousand products weekly. Wildwood has nine delivery vehicles on the road.

A photo shows Chef Narayana, owner Bill Bramblett and maitre d' Daniel Spear; they not only serve vegetarian fare on the premises but also operate a brisk take-out business. The following products are mentioned: Tempeh Fiesta, Tabouli, Japanese Noodles, Tofu Dill Salad, Spinach Seitan Salad (Wildwood makes the seitan), Cream of Potato-Dill Soup (dairyless), Enchilada con Salsa. Address: Restaurant features.

2219. *Recorder* (*Greenfield, Massachusetts*).1988. ABC films Greenfield firm [Lightlife Foods]. Feb. 18.
• ***Summary:*** Lightlife makes tempeh and tofu hot dogs, using tofu bought from nearby Tomsun Foods. The company will appear on ABC's "World News Tonight" with Peter Jennings, featured in a series "Health Food of the Future." Michael Cohen will be shown making tempeh dishes.

2220. *Recorder* (*Greenfield, Massachusetts*).1988. Lightlife Foods Inc. applying for ZBA expansion permit. Feb. 20. p. 3.
• ***Summary:*** The company is applying to the Zoning Board of Appeals for a permit to expand its 74 Fairview Avenue location. The ZBA hearing is scheduled for March 3. Lightlife does a little more than $1 million worth of business a year.

2221. Muendel, H.-H. 1988. Soybeans: Current status and potential. *Agriculture Canada Research Station, Lethbridge, Weekly Letter* No. 2819. Feb. 24. 1 p.
• ***Summary:*** "Over the past decade a number of southern Alberta growers have tried growing small areas of soybean. Yields have been variable, depending on variety, time and depth of seeding, weed control, and harvesting equipment. In excess of 2 tonnes per hectare (30 bushels per acre) were achieved commercially. The major problem encountered was the lack of ready markets at sustained attractive prices.

"Several early maturing varieties suitable for production under irrigation in southern Alberta have been released in recent years: Maple Ridge and Maple Amber from the Agriculture Canada Research Station at Ottawa and KG20 by King Grain Limited.

"Research by Agriculture Canada at the Lethbridge Research Station and Vauxhall Substation and by Alberta Agriculture at Brooks and Bow Island has determined some of the agronomic requirements and characteristics of soybean.

"A number of commercial enterprises are now showing interest in Alberta-grown soybean. Recent developments of test processing and whole bean extrusion for animal feed are encouraging and other commercial processing interests as well as marketing into the tofu-tempeh human food markets are being explored. Whereas farmers in southern Alberta had no ready market for their soybeans in the past, this major obstacle to local production may soon cease to exist."

Note: As of April 1991, Dr. Hans-Henning Muendel was on official leave with an assignment to the organization of BARD project (Barani [Rainfed] Agricultural R&D) in Pakistan, administered by Agriculture Canada. He is at G.P.O. Box 1785, Islamabad, Pakistan. Address: Plant Breeder, Lethbridge, ALB, Canada. Phone: 403-327-4561.

2222. *E. Bridgewater Star* (*Bridgewater, Massachusetts*).1988. Be creative: Make it a tofu day! Feb. 25.
• ***Summary:*** Robert Bergwall, vice president of Nasoya Foods said, "Today, in the United States, tofu is recognized as a nutritional and tasty alternative to protein foods, but contains absolutely no cholesterol and is low in saturated fat, sodium, and calories, and is high in calcium. At Nasoya, we produce between 90,000 and 100,000 pounds of tofu a week." For tofu and tempeh recipes, contact the Dept. of Food and Agriculture, 100 Cambridge St., Boston, Massachusetts 02202.

2223. Golbitz, Peter. 1988. Whole bean soy products. In: L. McCann, ed. 1988. Soybean Utilization Alternatives. St. Paul, MN: Univ. of Minnesota Center for Alternative Crops and Products. vi + 429 p. See p. 325-31.
• ***Summary:*** Discusses: Tofu. Soymilk. Yuba or soymilk film. Fresh green soybeans. Whole dry soybeans. Soynuts. Soy sprouts. Tempeh. Soy sauce. Miso. Address: Soyatech, Bar Harbor, Maine.

2224. **Product Name:** Impulse Soyfoods Tempeh.
Manufacturer's Name: Impulse Foods.
Manufacturer's Address: Radnor Business Centre, Radnor Rd., Horfield, Bristol BS7 8QS, England. Phone: 0272 41690.
Date of Introduction: 1988. February.
Ingredients: Soya beans, rice flour, Rhizopus oligosporus culture, cider vinegar.
Wt/Vol., Packaging, Price: 8 oz in poly bag.
How Stored: Frozen.
Nutrition: 157 calories per 100 gm.
New Product–Documentation: Note from Simon Bailey. 1988. Sept. 29. "Producers of tempeh." Letters from Cathy Higginson. 1988. Oct. 5 and Oct. 21. "I started producing tempeh as Impulse Foods in Feb. 1988. I presently produce about 250 lb/week of tempeh, which sells throughout England." Label. 1988. 3.5 inches square. Black on orange. "100% organic. Keep frozen. Serving suggestions: Slices or cubes of tempeh can be deep or shallow fried, steamed or baked, and used in casseroles, stir fries, etc. See recipe leaflet for more information." Leaflet. 1988. "Impulse Foods Tempeh. A traditional Indonesian food made by culturing cooked soya beans into a delicious, savoury soya bean cake." With color photo.

Recipe leaflet. 1989. 2.75 by 4 inches, 6 panels. Black on orange. "Cooking with tempeh. Five [actually seven] quick and easy recipes for this exciting new soya bean product: Crispy fried tempeh. Tempeh burger. Tempeh & vegetable stew. Tempeh tempura. Tempeh, egg & onion saute. Tempeh kebabs with peanut sauce. Spaghetti sauce with tempeh."

Talk with Philip Marshall of Cauldron Foods. 1990. July 9. This company, run by a lady in Bristol, seems to be doing all right. The company has changed hands about 3 times.

Letter from Linda Perfect of Impulse Foods (Typed with signature on letterhead). 1990. "I am producing Tempeh here in the UK, and you will be pleased to know that sales are increasing slowly but surely." Requests information about the vitamin B-12 content of tempeh.

Letter from Alison J. Clark of Culture Foods Ltd., a cooperative in Nottingham, England. 1991. June 17. "The only tempeh distributed in this area is made by Impulse Foods of Bristol."

Spot in Health Food Business (England). 1992. July. p. 17. The company is now named Impulse Foods.

2225. **Product Name:** Joan's Tempeh [Oat & Soy].
Manufacturer's Name: Joan Anderson & Co.
Manufacturer's Address: 414 Seaside St., Santa Cruz, CA 95060. Phone: 408-425-4666.
Date of Introduction: 1988. February.
New Product–Documentation: Talk with Joan Anderson. 1988. Aug. 27. This product was launched in Feb. 1988.

2226. Matthiesen, Livia C. 1988. Soja? So ja! Das grosse Soja-Kochbuch fuer Feinschmecker [Soya? Well yes! The big soy cookbook for epicures]. Bern, Switzerland: Humata Verlag Harold S. Blume. 128 p. Illust. Recipe index. 24 cm. [Ger]
• ***Summary:*** At the top of the cover: "Wholefoods recipes with soya, the giver of super protein. 132 recipes with tofu, okara, tempeh, soybeans, and soybean grits." Plus 16 color photos of prepared dishes. Tofu is used in many of these German-style recipes. Contains instructions for making tofu, okara, and tempeh at home.

2227. McGowan, Christina. 1988. An analysis of the market for soya-based products. Dublin, Ireland: Centre for Marketing Studies, University College Dublin. 37 p. Feb. 28. Unpublished typescript. 30 cm.
• ***Summary:*** This is the earliest survey seen of the soyfoods

market in Ireland. It is full of interesting statistics. The summary states that the market for soya-based products in the Dublin area is miniscule [minuscule]. These products account for only 1-5% of total health food sales. Annual sales of such products are roughly £200,000–£240,000 according to Kelkin, Ireland's leading wholesaler. However if general trends in the health food industry can be relied on, there will be a steady increase in demand for soya products. The two main types of consumers are those suffering from lactose intolerance, and vegetarians. The most popular product is soya milk due to increased publicity and frequent references by doctors. Possible new products would be soy cheese, ice cream, or yogurt. A total of 23 retailers were interviewed and only 23 stock soya products.

A survey was conducted on 103 respondents outside health food stores. Of those who had tasted soya-based products (only 15% of the total): 71% buy for health reasons. 81% buy in health stores. 94% buy for themselves.

51% of the respondents became aware of soya products through word of mouth, 23% through in-store displays, and 23% through magazines/print. The most popular product quoted by respondents was soya milk (62.5% indicated they purchased it). Approximately 50% said they bought soy-based desserts, 20.2% bought tofu, 11.5% purchased soy cheese, 5.4% purchased tempeh, and 2.7% bought soy yogurts.

Companies involved with soya are Sunrise (under license here), Spiral Foods of Cork (Tempeh), and Irish Sea Greens (Tempeh). Some people are making tofu in the Swords area and an Asian man was making tofu locally. Wholesalers that handle soya foods are Wholefood Wholesale (import 20 tonnes a year of soya milk worth £15,000 [Irish pounds] wholesale value), LifeForce (import £30,000 to £40,000 of soya milk), Paragon Distributors (imports 3-4 tons of soya foods worth £10,000), Perrans (sells £12,000 worth of soya milk per year), and Kelkin Naturproducts (sells £150,000/year of soya milk and £50,000 desserts/year). Address: Dublin, Ireland.

2228. Sutardi, -; Buckle, K.A. 1988. Characterization of extra- and intracellular phytases from *Rhizopus oligosporus* used in tempeh production. *International J. of Food Microbiology* 6(1):67-79. Feb. [18 ref]
• ***Summary:*** This Rhizopus mold produced both extra- and intracellular phytases. The enzymes were isolated, partially purified, then characterized. Address: Dep. of Food Science & Technology, Univ. of New South Wales, P.O. Box 1, Kensignton, NSW 2033, Australia.

2229. **Product Name:** Sloppy Joe Tempeh, and Meatless Country Stew.
Manufacturer's Name: Turtle Island Soy Dairy.
Manufacturer's Address: P.O. Box 218, Main St., Husum Falls, WA 98623. Phone: 509-493-2004.
Date of Introduction: 1988. February.
Wt/Vol., Packaging, Price: 15 oz recyclable plastic tubs.
How Stored: Refrigerated, 60 day shelf life.
New Product–Documentation: Spot in Natural Foods Merchandiser. 1989. Feb. p. 14. And April. p. 48. Fully microwavable. Voice of the Turtle 1989. Feb. p. 3. These products were introduced on 25 Feb. 1988. Products listed in Fowler Brothers catalog. 1991. Jan. Each in 9 oz and 15 oz.

2230. **Product Name:** [Tofu, Tempeh, Natto, Okara Croquettes].
Foreign Name: Tofu, Tempeh, Natto, Croquettes d'Okara.
Manufacturer's Name: Gaïa Enterprise. Officially registered in Jan. 1992.
Manufacturer's Address: Rue Principale, 66130 Corbere, France. Phone: 68.84.86.28.
Date of Introduction: 1988. March.
New Product–Documentation: Form filled out for Anthony Marrese. 1989. Nov. These three products were introduced in March 1988 by Odile Corbel & Dan Ludington. The following amounts are presently produced: Tofu 3 kg/week (sold fresh), tempeh 3 kg/week (non-pasteurized), natto 2 kg/month, and okara croquettes 2 kg/month. Odile started making her own tofu for 2 people each week, then for friends. A friend (Pauline Schaft) supplied her with tempeh, natto, and koji for amazake. In 1986 she went to the Kushi Institute in the USA. She returned to France at the end of 1987 with Dan and began her own small production daily.

Letter from Daniel S. Ludington. 1992. Feb. 7. He has been making tofu, tempeh, and miso for sale for 3½ years. He learned to make them using books by Shurtleff and Aoyagi. Now he would like to order their books *Miso Production,* and *Tofu & Soymilk Production.*

Letter from Dan. Ludington. 1992. March 3. "Gaïa Enterprise was officially registered with the Chambre de Metiers of the Pyrenees Orientales in Jan. 1992. (She had been unofficially in existence using the same name for nearly four years)." Dan's father was a 20-year career cook in the U.S. submarine service. He died instantly of a heart attack at age 54. Dan is the oldest of 4 boys. He received a degree in chemical engineering from MIT in 1977, then worked for Intel Corp. in their factory making silicon chips for 5 years, then for Toshiba USA for another year. When his father died, he kept a 10-year promise to himself to hitch-hike around America. In about Loveland, Iowa, his chemical engineer's eyes saw how chlorinated hydrocarbons enter the food chain, and decided to stop eating meat. About 6 months later he was introduced to macrobiotics. 2½ years later he went to the Kushi Institute in Boston, Massachusetts, to see if he could find a better balance in his diet. There he met Odile Corbel, a French woman with a 12 year-old son named Xavier and 10 years of macrobiotic experience. They were married, and returned to France. 18 months later Dan got a Green Card. While Odile was in the USA, Pauline Schaft had stopped

making tempeh, and a weekly, organically grown products market had started in Perpignan. So he and Odile started making tofu, tempeh, and macrobiotic pasties and selling them at this market. The business has grown until today sales are $400/week. He and Odile are still married with 2 children of their own. Pauline Schaft now goes by her maiden name of Van Marle; she is now more involved with her yoga practice than with making food. The company now sells 12-15 kg/week of tofu, 3-5 kg/week of tempeh, and 4 kg/week of miso, all direct and without the use of labels, marketing, or distribution.

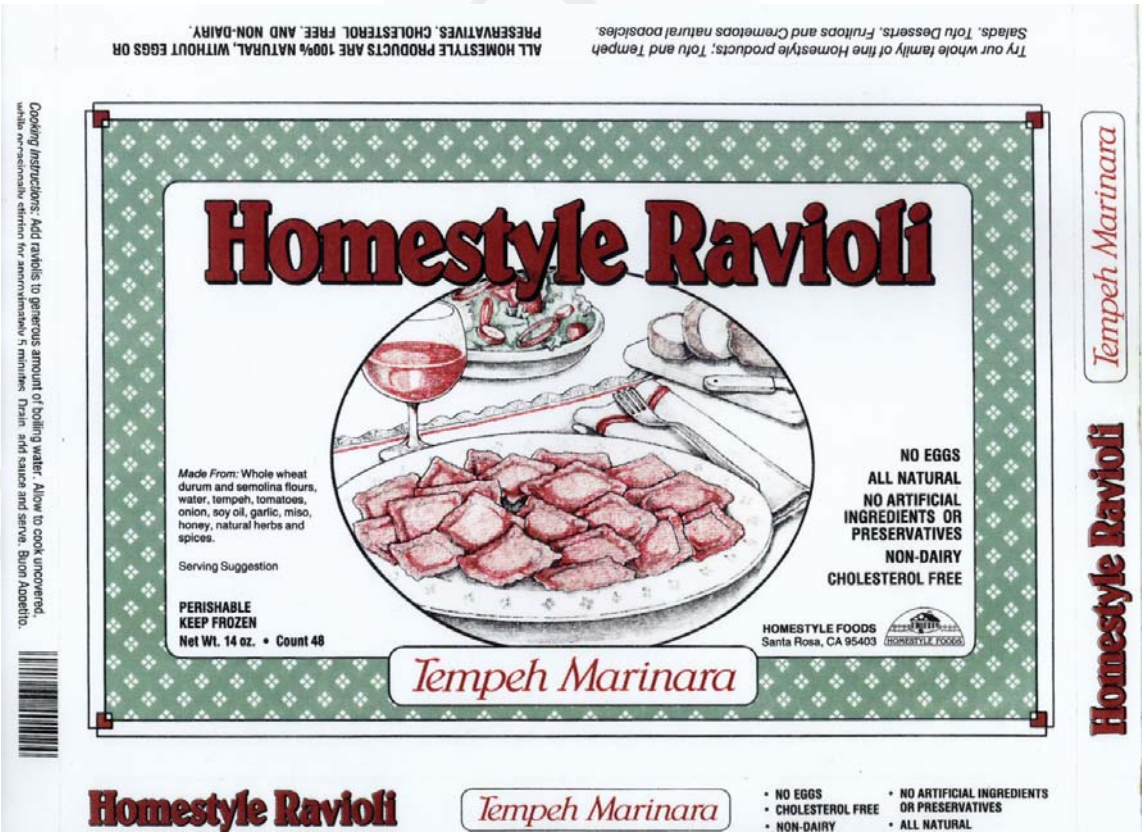
2231. **Product Name:** Homestyle Ravioli [Tempeh Marinara, Tofu with Spinach, or Cheese Italiano].
Manufacturer's Name: Homestyle Foods (Formerly Sonoma Specialty Foods).
Manufacturer's Address: 2317 Bluebell Dr., Santa Rosa, CA 95401. Phone: 707-525-8822.
Date of Introduction: 1988. March.
Ingredients: Tempeh: Whole wheat durum and semolina flours, water, tempeh, tomatoes, onion, soy oil, garlic, miso, honey, natural herbs and spices. Tofu: Whole wheat durum and semolina flours, water, Homestyle Tofu Cottage Salad, Spinach, whole wheat bread crumbs, herbs, garlic and spices.
Wt/Vol., Packaging, Price: 14 oz 48 ravioli.
How Stored: Frozen.
New Product–Documentation: Interview with Dennis Hughes. 1988. Feb. 15. This product will be out shortly. Sales to local stores of all products are about $165,000, which is about half of the company's total sales. Of the $165,000 roughly 1/3 is products made by Homestyle; 2/3 is complementary products (mostly soyfoods) made by other companies. Roughly 3/4 of their total products are soyfoods. The company started distributing other manufacturer's soyfoods in about August 1985. Before that (7 years ago) they started to distribute a local pasta and gourmet sauce.

Label. 1988. March. Paperboard box. 10.5 by 7.5 by 3/4 inches. Red, green, and black on white. Front panel has a red, black, and green drawing of a plate of ravioli with a wine glass and salad. "No eggs. All natural. No artificial ingredients or preservatives. Non-dairy. Cholesterol free."

Leaflet from World Vegetarian Day in San Francisco. 1990. Oct. 6. Cheese Italiano is a new flavor in the ravioli line. It contains cheese but no eggs.

Talk with David Burns of Homestyle. 1990. Oct. 9. This product was introduced in about May or June of 1988. The name of the manufacturing side of the company changed from Sonoma Specialty Foods to Homestyle Foods in Oct. 1987.

2232. Homestyle Foods. 1988. 1988 Catalog. 2317 Bluebell Dr., Santa Rosa, CA 95403. 20 p.
• ***Summary:*** This company also distributes soyfoods made by several other companies, including Quong Hop and White Wave tempeh products. Address: Santa Rosa, California.



2233. Leneman, Leah. 1988. Leaders of the soya revolution. *Vegan* (*The*) (*England*). Spring. p. 20-21. [7 ref]
• ***Summary:*** The author, "herself an established authority on culinary applications of the soya bean, looks at the work of William Shurtleff and Akiko Aoyagi, the unsung heroes of the soya revolution." "It is possible that the books they have written which are not known to the general public may have had an ever greater influence than those which are–books like Tofu & Soymilk Production... Their books have provided the wherewithal for eager young entrepreneurs to move confidently into soya foods production, and the growth rate in this industry has been quite phenomenal, not only in the USA but on the continent and in Great Britain as well." Address: 19 Leamington Terrace, Edinburgh EH10 4JP, Scotland.

2234. Lubbe, James. comp. 1988. Abbreviated history of the Bountiful Bean Plant, Madison, Wisconsin. Bountiful Bean, 2049½ Atwood Ave., Madison, WI 53704. 23 p. Unpublished manuscript. [4 ref]
• ***Summary:*** The company was founded in 1978. 1. History table by year showing accounts, products, equipment, number of people, wages, other. 2. Newsletter and newspaper ads and articles. 3. Brochures, product announcements & job application descriptions. 4. Product labels.

Ad. circa 1983-84. Bountiful Bean Soyfood Deli. Macrobiotic dietary principles. Offers: fresh tofu, tofu pies, tabooli, toasted tofu, nori rolls, 4 soymilk flavors, 4 varieties of bulk miso, millet / tofu pudding, nutburger sandwiches, tempeh books, mini-tours of plant, spicy tofu, more! And: lowest soyfood prices in town, free samples and recipe sheets, managed by the workers. low-cost carry-out foods. 903 Williamson St. 251-0595. from: 7-6 Sun-Fri.; 7-4 Mon.; 10-4 Sat.

Update talk with Deborah Bachmann and Elizabeth Hanson. 1991. Nov. 1 and 11. In March 1990 Bountiful Bean Soyfoods moved from Madison, Wisconsin, to 620 Main St., Ridgeway, Wisconsin. Richard Kraemer and Elizabeth Hanson began to produce soyfoods during the last week in June, renting from the cooperative, then they purchased the business on 21 Aug. 1991. Richard and Elizabeth are married with a son, are in their late 40s, and come from Oseola, Wisconsin; he is a carpenter (and was a pastor) and she a nutritionist. They are both very enthusiastic about tofu and the business. The co-op has now been changed to a private business. They work full time and they have three employees–1 full time and 2 part time. They are thinking of re-launching tempeh and soy yogurt. The cooperative got what they felt was a good price for the business. People who worked more than 6,000 hours (Chris Burant [8 years], Deborah [almost 10 years], and a woman named Solie) each got a large chunk. Another 11 people who had worked in the past were also given part of the money. The smallest amount of money distributed was $250.00. Deborah and James Lubbe are no longer with the company. Bountiful Bean Soyfoods now makes tofu, Herb Tofu, plain or vanilla soy milk, Tasty Tofu, Hummus with Tofu (and garbanzo beans), and Taboolie with Tofu (salad, which also contains bulgar). They have discontinued tempeh and soy yogurt.

Update: Talk with Roger Bindl. 1993. April 15. Richard Kraemer would like to sell Bountiful Bean in Ridgeway and Roger is considering buying it. 85% of the company's sales are in Madison, Wisconsin. Address: Madison, Wisconsin.

2235. *Soyanews* (*Sri Lanka*).1988. Consumers prefer processed soya foods. 10(1):1-2. Jan/March.
• ***Summary:*** Jane E. Gleason and S.M.A. Weliwita of International Soybean Program, University of Illinois (USA) and the Soybean Food Research Centre, Peradeniya (Sri Lanka) are convinced that the promotion of pre-processed soyafoods should replace the home utilization of whole soyabeans if the soyafoods industry is to make progress in Sri Lanka. They came to this conclusion after a survey of the home and village level Soyabean Utilization Training Program, which has been in operation since 1978. Even though the program had conducted 3668 training sessions attended by 76,363 trainees, mostly housewives, it was found that the utilization of soyabeans in local cuisine was negligible. Several reasons have been adduced for this, but it would appear that the main barrier to greater soya consumption is that it is not available in processed forms acceptable to consumers.

To assess the market potential for pre-processed soya foods, a soya foods marketing experiment has been initiated in a village near Peradeniya. A single family in this village has been marketing a variety of soya-foods. The six best selling products were coffee, Kola Kenda, chilli snacks, sweet snacks, fried nuts, and dried tempeh, in that order. The price per unit of common foods in Sri Lanka is as follows (in rupiahs): Soyabean, 0.04; ground nut, 0.05; cowpea, 0.07; green gram, 0.07; dried fish (fat poor), 0.11; TVP, 0.16; lean beef, 0.16; chicken, 0.21. In a survey on what constrains soya consumption the top 5 answers were, in order: Unreliable supply of soya, 23 respondents; odd flavor, 22; lack of preparation knowledge, 18; difficult to prepare, 14; unaware of benefits, 10.

2236. *Daily Camera* (*Boulder, Colorado*).1988. Soy sensation: White Wave introduces new products for 1988. April 5.
• ***Summary:*** Coming this year from White Wave are sesame-peanut tempeh, teriyaki tempeh burger, sloppy joe tempeh, and a soy-based hot dog. Last year, White Wave reached $2 million in revenue.

2237. Vansickle, Janice. 1988. Soys take root in organic market. *Windsor Star* (*Essex County, Ontario, Canada*). April 9.

• ***Summary:*** Jon Cloud is a transplanted "dirt farmer" from mountainous Vermont and now the production manager for Soy City Foods. Their products include soymilk, tofu, tempeh, falafels, burgers, and granola. Cloud became a [Vietnam] war protestor while in college, and opted into being a 60's back-to-the-land disciple after burning out in the urban jungle. The Organic Crop Improvement Association in Ontario has attracted 300 members during its five years of existence and 50 now have their farms certified as organic. A photo shows Jon Cloud with company products such as Soyettes, Grain Tempeh, and Falafels. Address: Star Agricultural Reporter, Ontario, Canada.

2238. Layton, Lyndsey. 1988. County's health food industry is still strong... despite some producer setbacks. *Recorder* (*Greenfield, Massachusetts*). April 29.
• ***Summary:*** Tempeh Works attempts to borrow $500,000 for future expansion of the company's plant. The tempeh company is just pulling out of a three-year slump period of heavy losses to enjoy a 40% annual growth rate. It would like to double the size of its Fairview Street plant from 6,000 square feet to 12,000 square feet. But the company's recent shaky past, combined with the Tomsun/Country Dairy experiences, have made it tough to win confidence from lenders. Tomsun will stay in operation despite the fact the 11-year-old company filed for protection earlier this month under Chapter 11 of the U.S. bankruptcy code. Last week, Tomsun secured a $150,000 loan from the Springfield based Bank of Western Massachusetts to pay some of its debts and keep the operation going. Tomsun executives blame the company's troubles on recent challenges in its northeast tofu market by two tofu makers from outside the region. Currently, Tomsun has 50% of that market.

Tofu has become a commodity where the person who can turn out large amounts can sell it the cheapest. In 1982, Tomsun was the 3rd largest tofu maker in the nation; it has now dropped to 4th place. South River Miso Co. produces about 300,000 lb of miso each year in 5 to 8 different varieties. Annual sales hover around $40,000. Tempeh Works has only one serious national competitor that is based in Boulder, Colorado.

2239. **Product Name:** Pacific Gardens Original Tempeh Pasta Sauce with Chunky Vegetables, and Garlic & Mushroom Pasta Sauce with Marinated Tempeh.
Manufacturer's Name: Associated Cooperatives, dba Twin Pines Distributing (Marketer-Distributor).
Manufacturer's Address: 322 Harbour Way, Suite 25, Richmond, CA 94801. Phone: 415-232-1111.
Date of Introduction: 1988. April.
Ingredients: Original Tempeh: Italian plum tomatoes, tomato paste, water, tempeh, fresh onions, fresh celery, fresh bell peppers, fresh carrots, fresh zucchini, apple cider vinegar, natural herbs and spices.
Wt/Vol., Packaging, Price: 32 oz jar. 12 per case.
How Stored: Shelf stable; refrigerate after opening.
New Product–Documentation: Soya Newsletter. 1988. March/April. p. 8. Garlic & Mushroom contains the above ingredients plus marinated tempeh, soy sauce, garlic, and mushrooms. Talk with Terry Baird of Assoc. Co-ops. 1988. July 15. The products will be introduced July 1. Pacific Gardens is the brand and Twin Pines is the distributor. Tempeh is made by White Wave. It emphasizes organic. The products are made by a co-packer. Labels. 1988. Sept. Sent by Lonnie Stromnes. 13 by 3 inches. Red, yellow, green, tan, black, and white. "100% Natural. Better for you. Garden Style Recipe. No added salt, No oil, No sugar, No animal products. Nutritious tempeh in every bite!"

Talk with Knute Loken of Surata. 1990. March 6. Surata makes the tempeh for this product. Associated Co-ops has moved to Las Vegas.

2240. Lang, Kerri-Sue. 1988. A growth market for organic foods. *Country Guide* (*Winnipeg*). April. p. 20-22.
• ***Summary:*** In 1980, the USDA defined organic farming as "a production system that avoids, or largely excludes, the use of synthetically compounded fertilizers, pesticides, growth regulators and livestock feed additives to the maximum extent feasible. Organic farming systems rely upon crop rotations, animal manures, legumes, green manures, off-farm organic wastes, mechanical cultivation, mineral bearing rocks, and aspects of biological pest control to maintain soil productivity and tilth, to supply plant nutrients, and to control insects, weeds and other pests. The Organic Foods Production Association of North America (OFPANA) was founded in 1985. About 25 farmers contract organically-grown soybeans with Toronto-based Soy City Foods.

Organic food producers feel strongly that organic foods are healthier and more nutritious than conventionally grown foods, but scientific data does not yet support this claim. Ontario farmers requesting organic certification must have abstained from using prohibited fertilizers for at least one year and pesticides for 3 years. Prohibited fertilizers include anhydrous ammonia, ammonium nitrate, diammonium phosphate, most sewage sludge, triple superphosphate, muriate of potash, and potassium chloride. Prohibited soil additives include quick lime and slaked or hydrated lime.

Certified organic growers are inspected annually at their own expense ($150). They also sign a licensing agreement and pay a fee to use the Ontario association's logo. The logo fee is based on gross sales. Organic soybean yields last year were about 20% below the normal provincial average. Jon Cloud, part-owner of Soy City Foods in Toronto, says most of his contract growers experience a 25% yield reduction in their first 3 years of organic production. But a premium for the beans, along with reduced input costs, brings net returns to at least the level that could be expected under conventional crop management.

Last year, about 25 farmers grew organic soybeans on about 320 acres under contract with Soy City Foods. Highest yield was 45 bushels per acre; average was 32 bushels. Right now, says Cloud, the company could use 2,000 acres of organically-grown soybeans. Premium prices for organic beans are $8.50 a bushel. The firm produces several soy-based foods for human consumption. These include soy burgers, falafel (spicy patties traditional in some parts of the Middle East), a base for soy pate, tempeh, tofu, and soy milk. Contract growers are supplied with seed because Soy City wants beans with high protein and low oil content. Organic farmers don't spend $40 an acre on herbicides. Nor do they put tonnes of commercial fertilizer on their fields. And they sell their crops at a 15% to 20% premium. Weeds, he adds, are controlled by non-chemical procedures such as crop rotation and cultivation, which cost little.

Hugh Martin, a soils and crops specialist with the Ontario Ministry of Agriculture and Food says organic farming will be a significant part of agriculture in the future. Most organic growers he works with have an ingrained stewardship ethic and are concerned about soil conservation. He says, "After about 5 years of organic farming, the organic matter content of soil increases. Improved porosity allows water to penetrate quickly. There's less runoff."

Color photos show the storefront of Soy City Foods "Soy Food Information Centre" and 3 of the company's products: Soyettes, Tempeh, and Falafels. Address: Winnipeg, Manitoba, Canada.

2241. Pecjak, Marinka. 1988. Soja v kulinariki [Soybeans in the kitchen]. Ljubljana, Yugoslavia: Feniks. 138 p. Illust. Plus 16 pages of color plates showing recipes. 21 x 30 cm. [Slv]
• ***Summary:*** Features 300 recipes that use soybeans and soyfoods. Contents: Introduction: In the beginning there was the soybean, almost anything can be made from soya (a diagram shows many food and non-food products), soya is concentrated, soybeans in cuisine, how to use these recipes. Whole soybeans (p. 17): Recipes for coffee, different kinds of spreads, salads, soups, green soybeans with rice, dips with whole soybeans, soybeans with mushrooms, patties, soybean roast, sausages made of whole soybeans, stuffed duck, stuffed trout.

Soybean flakes and textured proteins (p. 40): Spread, party balls, filled bread, soups, pancakes, Australian pie, Buckwheat with flakes, flakes in mushroomy sauce, baked potatoes, stuffed cabbage leaves, chilled stuffed tomatoes, stuffed roasted peppers, stuffed eggplant.

Soymilk and dairylike products (p. 74): Various spreads, soups and salads with herbs, pancakes, baked potatoes, baked noodles, soy pudding, soymilk ice cream, avocado milk. Soy flour and semolina (p. 111): Soy noodles, pasta, pancakes, fish balls, soy bread.

Soy sprouts (p. 122): Soups, salads, sprouts with potatoes, chicken with sprouts and wine, pork with sprouts. Soy sauce and other forms of fermented soybeans (p. 128): Chart showing fermented soy products (incl. miso, tempeh, sufu, natto), salads, soups, chicken with sprouts and soy sauce, meat with fermented black soybeans, roast cutlets, Hoisin dip.

2242. Quong Hop & Co. 1988. The Soy Deli. Quality & support (Ad). *Whole Foods.* April. p. 86.
• ***Summary:*** "We educate your customers about tofu! Soy Deli has the largest variety, and best dealer support of any tofu company in America." Also in Whole Foods. 1989. Feb. p. 62. Address: South San Francisco, California. Phone: 415-761-2022.

2243. Shurtleff, William; Aoyagi, Akiko. comps. 1988. Bibliography of tempeh, from 1815 to 1988: With 1050+ references. Lafayette, California: Soyfoods Center. 103 p. Subject and country index. Partially annotated. Printed April. 28 cm. [1078 ref]
• ***Summary:*** The most comprehensive bibliography on the subject published up to this time. Contains all known commercial products. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549. Phone: 415-283-2991.

2244. Witzel, Ruby. 1988. Tempeh in your future. *Bestways.* April. p. 18.
• ***Summary:*** Describes how to make tempeh at home, and gives recipes for Broiled Tempeh Cutlets, Barbecued Tempeh, and Breaded Tempeh Cutlets.

2245. Cusick, Heidi Haughy. 1988. The Cinderella of soy. *San Francisco Chronicle.* May 11.
• ***Summary:*** Tempeh is a staple at Milly's, a San Rafael, California, restaurant that specializes in making vegetarian cuisine appealing to non-vegetarians. The chef is Dennis Malone. He describes tempeh as having a light, cheesy flavor, because it is made similarly to cheese, but it can also taste chickeny or veal-like, depending upon how it is cooked. Tempeh cakes are firm and 'meaty'. Tempeh is one of the foods credited with actually reducing cholesterol in the body. Contains a Tempeh Goreng recipe from *The Book of Tempeh.*

2246. Layton, Lyndsey. 1988. Pass the mustard: Meatless franks spice of life for Greenfield firm. *Recorder* (*Greenfield, Massachusetts*). May 20. p. 21, 25.
• ***Summary:*** Introduced in 1985, Tofu Pups are meatless frankfurters made from tofu without nitrates, preservatives or cholesterol. Owners of Lightlife Foods Inc., formerly known as Tempeh Works, believe the soybean creation is on the verge of becoming a national hit. "It's an alternative to red meat that is low-calorie, low-sodium, has no cholesterol or preservatives, which is what more and more people in this country are looking for," says Michael Cohen, founder

of Tempeh Works. Lightlife's sales figures confirm Cohen's optimism. The first year on the market, sales of Tofu Pups were $230,000. The next year, sales jumped to $405,000–a 76% increase. Executives expect 1988 to be the first year combined tofu and tempeh sales top $1 million, at an annual growth rate of about 40%. To keep pace with an expanding market, Lightlife wants to double the size of its 6000-square-foot Fairview Street factory in an ambitious $730,000 expansion plan.

In 1983, the operation moved from an old gas station on French King Highway to its current Fairview Street plant. To finance this transition and buy some new machinery, the company borrowed heavily from Shawmut Bank and fell into the red for the next three years. "We went from having $3000 in interest payments to $35,000," says Cohen. In the Northeast the tofu franks are also sold in supermarket chains such as Stop & Shop, Purity Supreme, Finast and Big Y. The firm now has 15 full-time employees.

At present Lightlife produces the flavoring, which Cohen calls the Tofu Pups "soul". The other food processor blends the flavoring with tofu and stuffs it into casings. If things go as planned, Lightlife will make its own Tofu Pups from scratch once the company expands its plant. But the Tofu Pups cost more than their traditional counterparts–$2.49 to $2.99 for a 16-ounce package of 10 tofu franks. Meat wieners typically cost $1.49 to $2.39. A photo shows Chia Collins and Michael Cohen of Lightlife.

Tomsun International recently declared bankruptcy. They tried to grow too quickly and couldn't keep up with demand for Jofu [a yogurt alternative made from tofu]. Address: Recorder staff.

2247. Arocena, Javier. 1988. [Re: Brief history of soyfoods manufacturing company Zuaitzo]. Letter to William Shurtleff at Soyfoods Center, May 27. 2 p. Typed, with signature on letterhead. [Spa; eng+]

• ***Summary:*** "In 1982, we started working on a family production level and in 1984 on an industrial one. We started selling tofu and seitan in March of 1984 and tempeh in Nov. of 1987. We also produced tofu and Seitan Burgers and tempeh pâté, both in Nov. of 1987, though not as much was sold. A brief history: We opened a store in Vitoria-Gasteiz and manufactured a great variety of products, including tofu and seitan. I learned how to make tofu in France with Dominique Lagadec and how to make seitan in Barcelona. A key moment in my story was in beginning to use vacuum packaging, as before products were sealed in sanitary, plastic water containers, 15 cm wide, 30 cm long, and 20 cm tall. With the vacuum packaging and further pasteurization, I was able to respond to the challenge of increasing the life of the product and expand the radius of my commercial activities.

"It is important to point out, looking ahead, that manufacturers with an investment of 250,000 pesetas can compete in the market with the advantage that you work unhampered by bank charges. You make a pan of 180 liters with a 2 meter by 1 meter stainless steel plate, fired with domestic butane gas and heat diffusers, a second hand deep sink, and as a mill, one used for cereal groats to which you adapt a motor using a washing machine pulley. Last and most expensive, a second hand vacuum machine from the many companies who reject them in exchange for newer technologies.

"Since I have always worked alone with my wife and daughter, I set the price of tofu and seitan at 860 pesetas per kilogram in the beginning. Later on, with more sales and no competition in all of Spain, I lowered the price to 700 pesetas per kilogram–its current price–offering paid freight in next day deliveries, gathering and crediting any old material (month and a half old or spoiled by any other cause). The successful introduction of the products was due to the fact that the work was done in the same location from which it was sold. But above all, it has been a success with those who are ill; one local doctor here in Vitoria is prescribing it! I have also given cooking classes over the past several years. At the same time, I personally do all the deliveries in the city and its surroundings. In other big cities, I have distributors who carry other products besides mine. In the long run I have been successful and today I ask myself if I should lower the prices, especially with the tofu. Tempeh had a better price from the beginning; everything going very smoothly. I set the price at 220 pesetas for a 275 gm jar of tempeh.

"Nonetheless, the social commitment is large and with the profits I have purchased a shop that carries chemical-free products. My cooking classes are free and I am encouraging soy agriculture in the region."

Note: The original of this letter is typewritten in Spanish with Javier's signature. Someone has done a three page handwritten translation, which is included. Address: Zuaitzo, Correria, 39–01001 Vitoria-Gasteiz, Spain. Phone: 945/28 86 30.

2248. Bruce, Gene. 1988. The myth of vegetarian vitamin B-12. *East West.* May. p. 44-55. Summarized by Judy Brown in Soya Newsletter. 1988. May/June. p. 7. [4 ref]

• ***Summary:*** Although the requirement for B-12 is the lowest of all vitamins and the body can store a supply to last many years, alarming deficiencies of vitamin B-12 have been found in vegetarian children leading to serious physical and mental retardation, and neurological damage. The effects begin with numbness and tingling of the hands and feet. Although numerous studies have shown fermented foods made in traditional societies to have significant B-12, when these foods are made under sanitary conditions in industrialized countries, the B-12 is generally lost. Recent studies suggest the presence of a false B-12 or B-12 analogue that some laboratory tests (such as the microbiological assay using *Lactobacillus leichmanii*) have mistaken for the real thing. Bonny Specker, PhD at the Univ. of Cincinnati, Ohio,

and J. Gorstin at Vanderbilt Univ. in Nashville, Tennessee have studied B-12 levels in tempeh, miso, and tamari. Only negligible to trace amounts were found. Significant amounts were found in sea vegetables and spirulina. Specker analyzed blood serum and urine samples of 169 macrobiotic adults and children. Very low levels of B-12 were found. At the Agricultural Univ. of Wageningen in the Netherlands, Peter Dagnelie was undertaking a similar project, checking the blood of 50 macrobiotic children. He found deficiencies of vitamins B-12, D, and B-2, plus protein, calcium, iron and calories.

U.S. tempeh makers, when asked to recheck their tempeh, found that it presently contained no B-12. Most are taking claims about vitamin B-12 off their labels after conducting their own tests and obtaining similar results. According to Dr. Keith Steinkraus, the most probable explanation for the loss of B-12 in U.S. tempeh is improved sanitation and the fact that the B-12 producing bacterium cannot compete with the abundant mold in properly inoculated tempeh.

Good non-flesh sources of B-12 are milk (whole or nonfat, 0.9 micrograms/8 oz), cheese (0.9 micrograms/3 oz), and egg (0.6 micrograms/large egg). In conclusion, lacto-ovo vegetarians are probably getting enough B-12. Strict vegetarians (vegans) are advised to take a B-12 supplement. Without further research concerning B-12-analogues in sea vegetables and microalgae, there are no reliable vegetable sources of B-12. Address: Boston, Massachusetts.

2249. Murata, K. 1988. Antioxidative stability of tempeh. *J. of the American Oil Chemists' Society* 65(5):799-800. May. [7 ref]
• ***Summary:*** Discusses the antioxidant activities of 6,7,4-trihydroxyisoflavone, an isoflavone isolated from tempeh. Fatty acids liberated from soybeans during the fermentation of tempeh promote rapid decomposition of peroxide. Address: Research Inst. for Education, Teikoku Gakuen, Moriguchi City, Osaka 570, Japan.

2250. *Plenty Canada News* (*Lanark, Ontario, Canada*).1988. Soy promotion project in Sri Lanka. Spring. p. 3.
• ***Summary:*** Soy promotion project in Sri Lanka. Plenty Canada's soy utilization project in Sri Lanka is designed to assist Sri Lankans to use soy products for human consumption. This is achieved by using an integrated approach learned through Plenty Canada's experience in Central America, the Caribbean and Africa. The first stage of this five-year project was to set up a Soy Centre in Kandy to retail, and thereby popularize soy-based products. Soy Centre in Kandy was officially opened on Nov. 13, 1987. Plenty Canada's two volunteers and eight Sri Lankan counterparts have been busy producing a wide range of soyfoods for retail and wholesale consumption (flour, dhal, flakes, splits, dried tempeh and cocktail snacks).

At the Centre people can also learn methods of processing, retailing, and ways to set up their own income-generating activities. Demonstrations are given in near village communities. Address: R.R. 3, Lanark, ONT, Canada KOG 1KO.

2251. Quong Hop & Co. 1988. The Soy Deli. Nutrition, value, and variety make soy deli a great buy (Ad). *Vegetarian Times.* May. p. 73. Oct. p. 36.
• ***Summary:*** Includes a photo of products. Address: 161 Beacon St., South San Francisco, California 94080. Phone: 415-761-2022.

2252. Shimoda, Keiki. 1988. Naijeria de no nattô shishoku-kai–Osegere-mura, Zonkuwa-mura no rei [Natto tasting meeting in Nigeria. Examples of Osegere village and Zonkuwa village]. *Daizu Geppo* (*Soybean Monthly News*). April/May. p. 32-35. [Jap]
• ***Summary:*** The first natto taste test in Nigeria was in Lagos. 7 women, ages 30-40, at the Department of Agriculture tried plain, unheated natto. They disliked the sticky/slimy texture, saying that it reminded them of rotten food. But the strong smell of natto was not foreign to them, since they knew dawa-dawa.

The next taste test was in the village of Zonkwa, located 50 km southeast of Kaduna. It had 200 inhabitants of which 10 tasted natto, but the village head tasted first and his response may have influenced that of the other villagers. These people know and consume dawa dawa soup, so the natto was used in a similar soup in place of dawa dawa. The result looked like a thick porridge. In this form, the natto was liked very much. A table compares natto and dawa dawa for appearance, smell, texture, and taste–on 5 levels of like and dislike. In each characteristic dawa dawa scored only slightly higher than natto. Natto received the highest score for its taste (very tasty: 8 vs. 9 for dawa dawa) and the lowest for its mouthfeel (4 vs. 9). All tasters said that natto soup more "sticky" or mucilaginous (*nebatte-iru*) than dawa dawa soup, and that it reminds them of okra soup with corn.

Then at Zonkwa natto was served Japanese-style on white rice (probably seasoned with shoyu and thinly sliced leeks (*negi*)). The "brave young people who ate it said it as very tasty."

The last taste test was in the village of Osegere, located about 20 km east of Ibadan. A tempeh experiment had been conducted there by the Denmark Ministry of Development starting in 1981. This time the local people (who did not speak much English) were asked to make natto soup using freeze-dried natto, plus the usual palm oil, pepe, etc. About 10-12 people tasted it and 90% said they liked it very much; 40% said they found it "sticky." Address: Tsukuba Univ., Shushi Katei Kankyo Kagaku Kenkyu-ka.

2253. *White Wave News.*1988--. Serial/periodical. Boulder,

Colorado: White Wave, Inc. Vol. 1, No. 1. April/May 1988. Bimonthly.
• ***Summary:*** Issue No. 1. shows the new White Wave Soyfoods logo. It describes the change in packaging and brands in phasing out the Soyfoods Unlimited brand and replacing it by the White Wave brand. There is an in-store deli recipe for Tempeh Mock Chicken Salad and a consumer recipe for Tofu Sandwich Steaks. There is a brief discussion of tempeh, which is called "The Cultured Vegetarian." Address: 1990 N. 57th Ct., Boulder, Colorado 80301. Phone: 303-443-3470.

2254. **Product Name:** Tempeh Cutlet.
Manufacturer's Name: White Wave.
Manufacturer's Address: 1990 North 57th Court., Boulder, CO 80301. Phone: 303-443-3470.
Date of Introduction: 1988. May.
Ingredients: Tempeh (made with soybeans organically grown in accordance with section 26569.11 of the California Health and Safety Code and brown rice), natural soy sauce, garlic, onion, spices.
Wt/Vol., Packaging, Price: 6 oz (170 gm). Vacuum packed in poly pouch.
How Stored: Frozen or refrigerated.
Nutrition: Per 3 oz.: Calories 190, protein 9 gm, carbohydrates 6 gm, fat 3 gm, sodium 466 mg.
New Product–Documentation: Label. 1988, May. 2.75 by 3.75 inches. Blue on beige with rainbow border. "Perishable. Keep frozen or refrigerated." Formerly under the Soyfoods Unlimited brand and weighing 7 oz. All White Wave products are certified Kosher-Pareve by Rabbi Mordecai Twerski of the Talmudic Research Institute in Denver. The symbol looks like an M with the central leg bent to the left.

2255. Maeda, Toshiie. 1988. Mura okoshi–Tenpe sonjuku [Revitalizing a village–the tempeh village school. I.]. *Toyo Shinpo* (*Soyfoods News*). June 1. [Jap; eng+]
• ***Summary:*** The author, a representative of the school, wrote a book titled Homeland of Miso (*Miso no Furusato*). He discussed the fact that the use of miso mainly in miso soup presents a big problem. The first solution to the problem is to use miso in thick ketchup-like sauces. The second is to return to the non-salted fermented foods such as Japanese natto, Nepalese kinema, Indonesian tempeh, and Chinese soy nuggets (shi), which are the ancestors of miso. He emphasized tempeh, which he feels is a wonderful food that can be used in various ways, and is nutritious and healthy. He explained that tempeh is becoming popular in the USA and Europe, and concluded that tempeh alone can be used to start a food industry.

"Because of this book, I received a visit from 2 people from the "Vitalizing Village Committee" of Kasuga-cho, Hyojo-gun, Hyogo-ken. They asked me to give a lecture on tempeh, for they wanted to consider whether tempeh could be used to help vitalize the village. I accepted the offer, but realized I needed more information on the subject. So I contacted Murata sensei, professor emeritus at Osaka Shiritsu Daigaku, who played a key role in organizing the first international Asian Symposium on Non-Salted Soybean Fermentation in Japan. She and others at the university sent me an encouraging letter, four articles on tempeh, and information on tempeh cookery from the university.

"In late August 1987 I used these material to give a 40 minute lecture on tempeh followed by 20 minutes of questions. It was decided to have a follow-up meeting for tempeh tasting. Through Dr. Murata's introduction I received 2 kg of free tempeh from a maker in Aichi-ken. The sampling was a big success and was written up in the newspaper in a big way. The local Hyojo prefecture high school food processing department started to experiment with tempeh, and a women's group, the Kasuga-cho Commerce and Industry Group, began to experiment with tempeh cookery. At the end of Sept. 1987 one of the teachers at the high school succeeded in making tempeh, which made the news. Then they started to make second generation tempeh products, such as confections and breads. At their local school festival in October 1987 he presented the products and gained a good reputation."

2256. *Soybean Update.*1988. Indonesian poultry industry is expanding at a rate of 10% a year. June 6.
• ***Summary:*** ... with about 90% of the total commercial feeds and concentrates manufactured in the country being used for poultry. Aquaculture is also on the rise. Carp feeding with floating feed has been very successful. Soymeal is the key for continued expansion in the aquaculture industry. Thomason says soybeans are popular for human foods in Indonesia, with tempeh, a fermented soyfood, consumed by both humans and livestock for its anti-bacterial properties.

2257. Maeda, Toshiie. 1988. Mura okoshi–Tenpe sonjuku: Tenpe zukuri ga hajimaru [Revitalizing a village–the tempeh village school: Tempeh production gets started. II.]. *Toyo Shinpo* (*Soyfoods News*). June 11. [Jap; eng+]
• ***Summary:*** In Nov. 1987 there was serious discussion of having an international tempeh symposium in the town of Kasuga-cho. This was the idea of Prof. Dr. Tadao Watanabe of Kyushu Univ. Though the idea eventually had to be dropped for lack of funding, the Fifth Tempeh Meeting was held in the village of Kasuga-cho on 19 Dec. 1987. Many prominent tempeh experts attended: Dr. T. Watanabe, Dr. Murata, Mr. Kanasugi, and Mr. Takato. The latter two are also involved with natto. After this meeting, some people wanted to start making tempeh in the village. Taking the initiative were Mr. Kenji Takami (a potter), Mr. Kazumasa Takami (a wood sculptor), and later another Mr. Takami (a horticulturist). They wanted to include tempeh in their lunch program. They started to build a tempeh factory on part of T.

Takami's pre-school, Meitoku Hoiku-en. Dr. Nishira Hiroshi of Kobe University, Dept. of Agric. Chemistry, advised on how to make tempeh starter. Experiments were conducted at Kyoto Tanki Daigaku (Junior College).

In mid-January 1988 the group started to call itself Tenpe Sonjuku: Kenko Shokuhin Tenpe Kenkyu Sakuru (Tempeh Village School: Health Food Tempeh Study Circle). They bought the best equipment for making tempeh starter. Because of limited capital, they built the plant simply and improvised. For dehulling, they used a tofu shop mill. For separating the hulls by aspiration, a *tomi* developed during the Edo period. For the incubation room, an inexpensive rice sprouting room. For dewatering the beans, a used washing machine centrifuge. For mixing in the tempeh starter, a tofu burger (ganmo) mixer. For incubation trays, used rice sprouting boxes. Address: Kobe Women's Junior College, food processing.

2258. Noble Bean. 1988. Noble Bean Tempeh Products (Ad). *Vegetarian Times.* June. p. 70.
• ***Summary:*** "Coast to coast. Cultured, organic soybeans and grains. An excellent source of protein. Made with TLC [tender loving care] & country fresh spring water. Culturing fine tempeh since 1979."

Note: This is the earliest document seen (Sept. 2011) concerning Noble Bean (the company) or its tempeh. Address: R.R. 1, McDonalds Corners, ONT, K0G 1M0, Canada. Phone: 613-278-2305.

2259. Peluso, Michael R. 1988. The nutritional value of soy. *Health World* (*Burlingame, California*) 2(4):26-28. May/June.
• ***Summary:*** This introductory article discusses whole soybeans, soy flour, soy protein products (isolates, spun fibers, TVP), soy milk, soy cheese (tofu), tempeh, miso, and soy sauce. Table I shows the composition of most of these is given. The author is especially interested in soy oil as a good source of vitamin E and of the essential fatty acids, linoleic and alpha linolenic acids. He is critical of the hydrogenation process. Table II gives a nutritive comparison of soy oil and selected food fats. Table III gives a nutritive comparison of soy foods and selected animal foods. Address: P.O. Box 606, Occidental, California 95465.

2260. Shurtleff, William; Aoyagi, Akiko. 1988. Das Tofu-Buch: Herstellung, Verwendung, Ernaehrungswert, Rezepte [The book of tofu: Preparation, uses, nutritional value, recipes]. Munich, West Germany: Goldmann Verlag. 384 p. Illust. by Akiko Aoyagi Shurtleff. Index. 18 cm. [Ger]
• ***Summary:*** A pocket book edition of the original 1980 German edition of *The Book of Tofu.* Contains 300 recipes. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

2261. *Soya Newsletter* (*Bar Harbor, Maine*).1988. New trypsin inhibitor found/Work on high B-12 tempeh. May/June. p. 10.
• ***Summary:*** A new trypsin inhibitor in soybeans has been found and work is being done to characterize it. Also, research is being conducted to help produce a high-vitamin B-12 tempeh, a fermented soybean product. Address: P.C. Markakis, Food Science Dep., Michigan State Univ., East Lansing, MI.

2262. Maeda, Toshiie. 1988. Mura okoshi–Tenpe sonjuku: Mura okoshi was kore kara da [Revitalizing a village–the tempeh village school: Now begins the village development. III.]. *Toyo Shinpo* (*Soyfoods News*). July 1. p. 4. [Jap; eng+]
• ***Summary:*** On 31 Jan. 1988 the group held the first formal meeting of its members. In February work on the equipment began, and by Feb. 20 the tempeh starter room were finished. In March, after many failures and trials, good tempeh starter was produced, and from it the first good tempeh. Big success! By mid-April the tempeh plant, with a production capacity of 2 tonnes a month, was completed.

The purposes of the group: 1. To provide real good foods to the household table. 2. Especially to provide nutritious tempeh for the table to change people's food life. And to popularize tempeh as a food to maintain a healthy food life. Therefore they are collecting information on nutrition and trying to develop second generation tempeh products. Mr. Maeda works as a food technology technician. Cooking experiments are done by the wives of the members. They use organically grown soybeans from Mr. Otsuki, a tofu shop owner. Address: Kobe Women's Junior College, food processing.

2263. Bubny, Paul. 1988. Venerable soybean sprouts new uses. *Health Foods Business* 34(7):72, 74, 76, 108. July.
• ***Summary:*** Lonnie Stromnes, national sales manager of White Wave Soyfoods in Boulder, Colorado, reports that White Wave recently "upscaled" the packaging on its tempeh products; the new graphics depict tempeh in use, so that customers do not have to bring a thorough knowledge of the food into the store with them. Mitoku-USA, based in Albany, New York, imports some 20 varieties of miso. At least one manufacturer, the Asheville, North Carolina-based Great Eastern Sun, saw its miso sales increase by 20% last year. Bruce Sturgeon, the company's vice president, said Great Eastern Sun's volume on miso alone was $400,000 in 1987. Shoyu and tamari are frequently aimed at the gourmet market as well as the natural foods / specialty foods market. Owner Dale Kamibayshi of Alfalfa's Market in Boulder, Colorado said, "I think many people are still intimidated by (soyfood's) preparation." To help overcome the intimidation factor, Alfalfa's has scheduled a soyfood tasting fair for July 16; the first such fair which the store has devoted to soy.

Gary Barat, chairman of Legume, Inc. said, "I see the

natural foods and gourmet markets coming together," said Barat. "And the smart marketers are realizing that." People who shop specialty stores have both eyes turned toward quality. Soy companies are increasingly making use of organically grown soybeans. There is also a trend toward using specific soybeans for specific products, a sign of a maturing industry. The trend is more prevalent in the U.S. than in Far East Asia. Westbrae, for example, uses Vinton beans for its Westsoy soy beverage. As the currency in Japan remains strong against the dollar, you're going to see more and more (soy) products produced in America. Also there will be greater growth in so-called "second-generation" soy products–dairy analogs with soymilk, soy cheese, soy ice cream and soy yogurt. Address: Associate Editor.

2264. Fertilia. 1988. Prijlist. 1 Juli 1988. Milieu vriendelijke levensmiddelen [Price list. 1 July 1988. Environmentally friendly foods]. Koolhaaspark, 3864 PW Nijkerkerveen, Netherlands. 49 p. 30 cm. [Dut]
• ***Summary:*** Contains products from: Dr. Vogel (p. 20). Huegli (mostly bouillon, p. 20). Japanese soy products (shoyu, tamari, may types of miso, nigari, kuzu, wheat gluten, mochi, p. 30-33). Fertilia soy products (p. 34). Yakso (tofu, tempeh, soy sauce, p. 34). Witte Wonder (tofu, seitan, p. 35). Orido (amesake, p. 35). Liza (rice drink, p. 36). Living Foods (soya drink, p. 36). Provamel (9 soy drinks and 6 soy desserts [puddings], p. 36). Jonathan (1 bottled soy drink, p. 36), Lima (shoyu, tamari, soymilk), Eden (no soy, p. 37). Address: Nijkerkerveen, Netherlands. Phone: 03495-72844.

2265. Mitchell, David A.; Doelle, H.W.; Greenfield, P.F. 1988. Agar plate growth studies of *Rhizopus oligosporus* and *Aspergillus oryzae* to determine their suitability for solid-state fermentation. *Applied Microbiology and Biotechnology* 28(6):598-602. July. [14 ref]
• ***Summary:*** Both organisms grew well on cassava starch as their sole source of carbon and energy, although growth was stimulated by addition of yeast extract and peptone. Neither organism utilized ungelatinized starch effectively. Growth of *R. oligosporus* was inhibited by NaCl (table salt) at greater than 0.5% (w/v), while A. oryzae was unaffected by up to 4% NaCl. Colony radial growth rate for R. oligosporus was far superior to that obtained for A. oryzae. R. oligosporus was chosen as the more suitable organism for future studies of protein enrichment of cassava by solid-state fermentation. (A further advantage of R. oligosporus is that it has been consumed as a food, in the form of tempeh for centuries, showing its acceptability and safety.). Address: Biotechnology Unit, Univ. of Queensland, St. Lucia, QLD 4067, Australia.

2266. Spence, Cathie Slater. 1988. Tennessee's ghost farm: A personal odyssey back to a pioneering alternative community. *East West.* July. p. 46-53.
• ***Summary:*** The best report seen to date of changes at The Farm following "the changeover" in the Farm's economy in 1983 away from a communal form. The change required that everyone pay their way. A $200,000 debt was paid off and the land was owned free and clear but less than a third of the population stayed thru the changeover. Many who had invested a decade of their lives left with nothing–but bitterness, feeling betrayed. Stephen Gaskin feels betrayed and angry. Roberta Kachinsky is preparing to market her tofu cheesecake nationally. Address: Cambridge, Massachusetts.

2267. *Watashi no Kenko* (*My Health*).1988. Atarashii nattô tenpe wa kôshite taberu. Indonesia no kusakunai nattô [Here's how you eat the new natto, tempeh. Indonesia's natto that doesn't smell]. July. p. 147-62. [Jap]
• ***Summary:*** A popular introduction to tempeh containing nutritional information and recipes.

2268. **Product Name:** [Tempeh Doeloe, and Tempeh Poesta].
Foreign Name: Tempeh Doeloe, and Tempeh Poesta.
Manufacturer's Name: Yakso.
Manufacturer's Address: Zoutstraat 17, Groningen, Netherlands.
Date of Introduction: 1988. July.
Wt/Vol., Packaging, Price: 170 gm.
New Product–Documentation: Fertilia price list. 1988. July. p. 34. Doeloe and Poesta are apparently Indonesian food terms that are not translatable into English. Doeloe means "past" or "old."

2269. Bailey, Simon. 1988. Soya-based products. *Natural Choice.* Aug. 15.
• ***Summary:*** "The food of the future. The soya bean is a protein-packed food which is increasingly used as a dairy or food substitute in today's search for a healthier diet." Discusses soya milk, dairy free desserts, tofu, tofu-based foods, soya flour, soya sprouts, tempeh, soya sauce, miso, and high-tech soya foods including TVP and soya protein isolates. Address: 138 Randolph Ave., London W9 1PG, England. Phone: 01-289-7364.

2270. Keith, Hogetsu. 1988. Re: Making soymilk and tempeh at Shasta Abbey. Letter to William Shurtleff at Soyfoods Center, Aug. 16. 2 p.
• ***Summary:*** In this Soto Zen Buddhist monastery (Rev. Roshi Jiyu-Kennett, abbess), having about 50 year-round residents, they make 9-14 gallons/week of soymilk and 20-24 lb/week of tempeh. They would like to make tofu but don't have the time or labor, so they buy it from Ashland Soy Works in Oregon. They have been making soymilk for nearly 2 years. Address: Shasta Abbey, P.O. Box 199, 3612 Summit Dr., Mt. Shasta, California 96067. Phone: 916-926-4208.

2271. Ridenour, Jeremiah. 1988. Monterey Bay Soyfoods, Western Soy Complements, and Wildwood Natural Foods (Interview). *SoyaScan Notes*. Aug. 31. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Jeremiah got interested in soyfoods in June 1977 because of his interest in vegetarianism and because his parents grew soybeans on their farm. In July 1979 he established Monterey Bay Soyfoods, a sole proprietorship, in Santa Cruz, California. Initially it was a company that allowed him to do research. Then he began to making tempeh, which was first sold commercially in February 1980. But for about 9 months he produced tempeh out of his garage and sold it out of the house in ½ and 1 pound quantities without a label or a brand name. This was the first commercial tempeh made in Santa Cruz.

At about this time (late 1979 or early 1980) Buddy Hamel started a company named Clearway Soyfoods on 17th Ave. in Santa Cruz, making tofu. In Feb. 1981, Jeremiah wrote an article on transforming a dead refrigerator into a tempeh incubator, and in July 1981 another article about using a honey extractor for dewatering soybeans for tempeh; both were published in Soyfoods magazine.

In April 1981 a new company was formed named Western Soy Complements (WSC). A corporation with four stockholders, including Jeremiah, it was located in Jeremiah's garage at 335 Pennsylvania Ave. and made tempeh brand-named Santa Cruz Tempeh. "We grew the best tempeh ever in my garage. It has never been quite as good." Then in Nov. 1981 WSC moved into the back of the Well Bean Deli, where they cooked and incubated the tempeh. Tempeh of the Sea (with nori) was launched in about 1982. After about 18 months, in June 1984, WSC was moved to 1560 Mansfield Dr., Suite D in Santa Cruz. Then marinated tempeh burgers came in about 1985. In March 1987 they brought out the Tempeh Temptations (fried and marinated) and Three Seed Tempeh, and in June Curried Rice Salad with Tempeh (and carrots), which in September started to be private labeled for Wildwood. WSC has always made only tempeh.

In Sept. 1985 Jeremiah began a joint venture in Santa Cruz with Wildwood Natural Foods. Monterey Bay Soyfoods sort of became part of Wildwood. Wildwood had distributed WSC's tempeh in northern California. Buddy Hamel and Clearway, a tofu manufacturer, had just gone out of business. Wildwood wanted to make tofu in Santa Cruz. The first product (tofu) was sold in June 1986. Jeremiah now owns some of the stock in Wildwood Natural Foods of Santa Cruz. Wildwood has outgrown its space, so they are planning to find a new location for WSC (maybe one building away) and let Wildwood fill its space. Jeremiah is working on adding vitamin B-12 to his tempeh. Address: Santa Cruz, California. Phone: 408-476-4448.

2272. **Product Name:** Organic Tempeh.
Manufacturer's Name: Kaiora Natural Ltd.
Manufacturer's Address: CPO Box 3007 (180 Victoria St. West), Auckland 1, New Zealand. Phone: (09) 370 454.
Date of Introduction: 1988. August.
New Product–Documentation: Letter from Austin Holden. 1988. Dec. This August they began to produce a wider range of soy products, including tempeh. They use locally grown organically certified soybeans ("Biogro" certified by IFOAM).

2273. Klaper, Michael. 1988. Vegan nutrition: Pure and simple. 2nd ed. P.O. Box 959, Felton, CA 95018-0959. Or 8563 Empire Grade, Santa Cruz, CA 95060. iii + 72 p. Illust. 27 cm. [137* ref]
• ***Summary:*** An excellent, highly readable introduction to the subject by a physician. The Acknowledgments page (p. 69) reads like a "Who's Who" of vegetarianism in the USA in 1988. Dr. Klaper gives special thanks to "Cynthia Pararo Klaper, for her indispensable editing suggestions, tireless efforts, and loving support." Soyfoods (especially tofu, soymilk, and tempeh) are mentioned and discussed throughout this book. Soy-related recipes include: Tofu yogurt. Bran muffins (with soymilk). Tofu omelette. Tofu tahini dressing. Blond miso dressing. Tofu eggless salad. Miso soup. Hot miso dressing. Tofu cutlets. Tofu loaf.

Note: Dr. Klaper is a graduate of the Univ. of Illinois College of Medicine, with post-graduate training and experience in surgery, anesthesia, obstetrics, and general practice. Since 1972 his emphasis has been on applied nutrition. Until recently his practice was in central Florida. Address: Felton, California. Phone: 408-423-6643.

2274. McSweeney, Daniel. 1988. Consumer survey 1988. *Whole Foods*. Aug. p. 27-28, 30, 32, 34.
• ***Summary:*** Natural/organic food purchases. Percentage of respondents who purchased a type of product during the past year: 1988 all/1987 all (1988 women / 1988 men). NA means "Not Available." The following are ranked in descending order of the percentage of consumers buying the product in 1988: Tofu: 63.5/83.4% (55.6/63.5%); Tamari 55.6% / NA (57.8/50.0%); Soy sauce 47.6%/NA (46.7%/50%); Miso 41.8/69.7% (42.2/38.9%); Tempeh 30.2/NA (35.6/16.7%); Soymilk 28.6%/54.5% (31.1/22.2%). Note the sharp declines between 1987 and 1988 for soymilk -47.6%, miso -40%, tofu -24%. All soyfood products for which there are statistics for both years declined, a serious trend.

Note: The "1986 and 1987 surveys statistics were generated through a reader questionnaire in East West magazine. The 1988 Consumer Survey was handed out to shoppers at 13 different retail stores throughout the country. Due to this variance in the survey base, some statistical discrepancies may have resulted."

2275. *Nutrition News* (*Riverside, California*).1988. Soy: King of the mountain. 11(8):1-4. Aug. [1 ref]
• ***Summary:*** An overview and introduction to soyfoods nutrition, tofu, tempeh, miso, shoyu and tamari, and soymilk. Note: This magazine was formerly located in Pomona, California.

2276. **Product Name:** Fakin' Bacon, Lettuce & Tomato Sandwich (With Tempeh).
Manufacturer's Name: Rademacher–Worley Farms of Sonoma County.
Manufacturer's Address: Box 5184, Santa Rosa, CA 95402. Phone: 707-792-2208.
Date of Introduction: 1988. August.
New Product–Documentation: On sale in Berkeley. 1988. Aug. 30. Talk with Peter Worley of RW Farms. 1988. Aug. 30. The product was introduced 3 weeks ago, in early August, and was an instant hit. He is already selling 700 sandwiches/week.

2277. Schnell, Hannelore. 1988. Kleine Bohne, ganz gross [Small bean, very big]. *Natur* (*Munich, West Germany*). Aug. p. 75-83. [3 ref. Ger]
• ***Summary:*** Discusses soymilk, tofu, soy sauce, miso, tempeh, Soyastern, Svadesha Tofurei, Alpro, and DE-VAU-GE. Concludes with a detailed discussion of newly recognized potential dangers with HVP products. Vegetable seasonings made by companies such as Maggi may contain carcinogenic chloropropanols, such as dichloro propanol. Maximum limits on these are now being established.

2278. *Soya Newsletter* (*Bar Harbor, Maine*).1988. U.S. soyfoods production to use 62 million pounds of soybeans in 1988. July/Aug. p. 10.
• ***Summary:*** This figure was the result of a recently soyfoods industry survey conducted by Soyatech, Inc. The soyfoods included in this projection are tofu, soymilk, tempeh, soy sauce, miso, and soynuts. When asked how they expected their demand for soybeans to grow over the next 5 years, 4.8% of soyfoods manufacturers surveyed expected it to remain the same, 52.4% expected it to grow slowly, 42.9% expected it to grow considerably, and none expected it to decrease.

2279. **Product Name:** Teriyaki Burger (Made with Tempeh).
Manufacturer's Name: White Wave.
Manufacturer's Address: 1990 North 57th Court., Boulder, CO 80301. Phone: 303-443-3470.
Date of Introduction: 1988. August.
Ingredients: Tempeh (made with soybeans organically grown in accordance with section 26569.11 of the California Health and Safety Code and brown rice), natural soy sauce, garlic, onion, spices.
Wt/Vol., Packaging, Price: 6 oz (170 gm). Vacuum packed in poly pouch.
How Stored: Frozen or refrigerated.
Nutrition: Per 3 oz.: Calories 190, protein 9 gm, carbohydrates 6 gm, fat 3 gm, sodium 466 mg.
New Product–Documentation: Talk with Steve Demos. 1988. Dec. 20. The product was introduced in Aug. 1988. Label. 1989. April. 4 by 4.5 inches. Yellow, white, and black on red. Large photo of a tempeh, lettuce & tomato sandwich, with a slice of tomato and 2 slices of dill pickles on top, cheese slices and lettuce below. "All the sizzle... none of the steak. Ready to eat in 1 minute. Makes a delicious sandwich or entree–just brown in a lightly oiled pan or microwave 1 minute high power." Leaflet. 1989. April. "Make your sales sizzle with White Wave."

2280. Stromnes, Lonnie. 1988. New developments with tempeh and tofu at White Wave (Interview). *SoyaScan Notes.* Sept. 20. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Tempeh sales are up 30-35% over last year because of new products and expanded distribution into new markets. White Wave tofu will be coming into California starting in October. Lucky supermarkets will have a 12-foot organic produce section starting this month or next. Address: White Wave, Inc., 14670 Doolittle Dr., San Leandro, California 94577. Phone: 415-352-1320.

2281. Stromnes, Lonnie. 1988. New developments with tempeh and tofu at White Wave (Interview). *SoyaScan Notes.* Sept. 20. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** White Wave hopes to start fortifying their tempeh with vitamin B-12 producing cultures. They have gotten patented formulas from ATTC: Arthrobacter species #31263; Propionic bacteria #13673; and Streptomyces bacteria #11009.

White Wave is now actively trying to sell their tempeh and tofu to companies that produce other foods: Their tofu is used in Amy's Pot Pie and their tempeh in the Co-op line of Spaghetti sauces. Address: White Wave, Inc., 14670 Doolittle Dr., San Leandro, California 94577. Phone: 415-352-1320.

2282. Cross, Kevin. 1988. Brief history of Soy Power Company, Inc. of Santa Monica (Interview). *SoyaScan Notes.* Sept. 22. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** The company started business in Santa Monica, California, in April 1981, with Tom Binder and Kevin Cross as partners. They distributed tofu and soymilk made by Wy Ky in Los Angeles. They first started distributing other people's products in about July 1982, starting with Vegetable Jerky from Maple Meadows. When Edensoy was launched in 1983, it started to hurt their sales so they decided to get in

on the action. They soon became America's leading seller of Edensoy. In April 1986 they moved the company to Marina del Rey, then in September 1988 back to Santa Monica. Today they market and distribute about 11 soyfoods products under their own brand (all made by other companies), and they distribute another 350 products from other companies. Address: 1602 Stanford St., Santa Monica, California 90404. Phone: 213-829-2331.

2283. Murata, Kiku. 1988. Re: New Tempeh Study Group planned in Japan. Letter to William Shurtleff at Soyfoods Center, Sept. 24. 1 p. Typed, with signature. [Eng]
• ***Summary:*** "After the Asian Symposium on Non-Salted Soybean in 1985, we had the 4th and 5th Tempeh Conferences (*Danwakai*). We are going to start a Tempeh Study Group (*Kenkyukai*) soon in Japan. At some meetings reports will be presented. Membership is ¥2,000/year. The first meeting of the Study Group will correspond to the 6th Danwakai. We will be sending announcements to about 200 people, and hope that 25-50% will join." Address: 608 Honyakushi, Nara City 630, Japan.

2284. Elliot, Rose. 1988. The complete vegetarian cuisine. New York, NY: Pantheon Books. 352 p. First American edition. With many lovely full-page color photos. Index. 28 cm.
• ***Summary:*** Visually, this is a beautiful book. The author makes minimal use of soybeans or soyfoods in her vegetarian cookbooks. She has apparently not learned that very few cultures that use soya as a traditional part of their diet use either soybeans as such or soy flour. In "Learning to love the soybean" (p. 16) she notes: "Soybeans and soy flour are rich sources of nutrients, but, in my opinion, so difficult to make palatable! However sprouted soybeans are delicious and make an excellent crunchy addition to salads, stir-fries, and sandwiches... Creamy soy milk (p. 106) and tofu (p. 108), which can both be made at home, are other palatable ways to eat soy."

Pages 38-39 contain a marvelous 2-page spread color photo of 30 different leguminous seeds (including soybean and soy flour), each with a brief description, followed by a longer description on pages 40-41. The section titled "Soybean *Glycine max"* states: "Soybeans have a strong flavor and need powerful condiments, such as curry, tomato and garlic, to make them taste good. I think they're nicest when sprouted (p. 207) and added to salads and stir-fries.

"Many products, such as miso, soy sauce, tempeh, soy milk and tofu, are made from soybeans and are described in other sections of this book.

"Soy flour is high in protein and low in starch, so it cannot be used to make a normal white sauce, although it can be stirred into savory sauces and gravies to add bulk and nutrients and is sometimes added to flour as a dough improver, in the proportion 8 parts flour to 1 part soy flour."

Pages 104-05 contain another 2-page spread color photo of dairy and nondairy ingredients, with a brief description of each, including tempeh, seitan, dried deep-fried tofu, aromatic dried tofu [probably five-spice pressed tofu = *wu-hsiang toufukan*], smoked tofu, firm tofu, soft tofu, textured vegetable protein (chunks or chopped), soy milk, and soy cream. A longer explanation is given on pages 106-06. The author does not like the strong soybean flavor or stodgy texture of tempeh. Page 108 gives a brief description of how to make tofu, and has a sidebar titled "Ideas for using tofu and vegetarian protein foods." A good but brief description of soy sauce is given on p. 184, and a poor description of "How to make soy milk" (with added vanilla, honey, and oil) is given on page 280.

Soy-related recipes include: Miso soup with bean curd (p. 133; a variation includes wakame). Vegan ice cream (uses soy milk instead of dairy milk, p. 280). Thus, only 1 recipe in the 352-page book uses tofu and none use tempeh.

Originally published in Great Britain as *Rose Elliot's Vegetarian Cookery* by William Collins Sons & Co. Ltd., London and Glasgow. "Rose Elliot, a vegetarian since the age of three, is one of England's most popular cookbook authors. Her many best-selling books include *Vegetarian Cooking from Around the World, The Festive Vegetarian,* and *The Vegetarian Mother and Baby.* An active food consultant, she has appeared often on television and radio in Britain. She lives in Hampshire, England." She was born and educated in England. Address: Hampshire, England.

2285. Herbert, Victor. 1988. Vitamin B-12: Plant sources, requirements, and assay. *American J. of Clinical Nutrition* 48(3S):852-58. Supplement. Sept. Proceedings of the First International Congress on Vegetarian Nutrition. Held 16-18 March 1987 at Washington, DC. [22 ref]
• ***Summary:*** This very interesting and important paper states: "Many of the papers in the literature give values of vitamin B-12 in food that are false because as much as 80% of the activity by this method is due to inactive analogues of vitamin B-12."

This vitamin is not found in plant sources. "There is no active vitamin B-12 in anything that grows out of the ground; storage is found only in animal products, where it is ubiquitous and where it is ultimately derived from bacteria."

Confusion has arisen because the standard US Pharmacopeia (USP) assay for vitamin B-12, measures on the growth of a bacterium (*Lactobacillus leichmannii*). Unfortunately substances that are active vitamin B-12 for bacteria are not necessarily active B-12 for humans. As much as 80% of the activity by this method is due to inactive analogues of vitamin B-12. Note also that vitamin B-12 is one of the few nutrients absorbed primarily from the lower half of the small bowel.

Nobody needs more than 1 microgram per day of real B-12 (cobalamin). "Fermented products, such as soy

products like tempeh, do not contain substantial amounts of B-12... We studied several types of tempeh, including Original Soy Tempeh, a *Rhizopus oligosporus* culture with a label claim of 160% of the US RDA for vitamin B-12 per 4 oz. Using the differential radioassay we found there was practically no vitamin B-12 in it (Herbert et al. 1984). Vegans must get a source of vitamin B-12.

What is the RDA for vitamin B-12. Definitely less than 2 micrograms/day, and probably more like 1 microgram. Address: Mt. Sinai School of Medicine, New York, New York.

2286. **Product Name:** [Tempeh Burgers].
Manufacturer's Name: La Sojeria, S.C.
Manufacturer's Address: Carretera de Vic Km. 30, 08180 Moia (near Barcelona), Spain. Phone: (93) 830 1123.
Date of Introduction: 1988. September.
Wt/Vol., Packaging, Price: Vacuum packed in plastic bags.
New Product–Documentation: Letter from Javier Arocena of Zuaitzo, Spain. 1992. Dec. 14. He knows of three other soyfoods manufacturers in Spain: Natur-Soy, Vegetalia, and La Sojeria, all near Barcelona.

Form filled out by Laura Cami and Mario Rimoldi of La Sojeria. 1993. Feb. 13. Their company introduced these products in Sept. 1988. They now make about 150 lb/month. The burgers are sold in vacuum-packed plastic bags.

2287. **Product Name:** [Tempeh].
Manufacturer's Name: Le Bol en Bois.
Manufacturer's Address: 35, rue Pascal, 75013 Paris, France. Phone: 707-272-4.
Date of Introduction: 1988. September.
How Stored: Refrigerated.
New Product–Documentation: Talk with Alain Bitton, who calls from France. 1993. Sept. 28. He is the tempeh maker at Le Bol en Bois. He has been making and selling tempeh there since about Sept. 1988, when Le Bol en Bois started to make tempeh. He is looking for a dehuller (dry or wet) to dehull the soybeans to make tempeh.

2288. **Product Name:** Organic Tempeh [Mildly Spiced, or Tasty].
Manufacturer's Name: Nutrisoy Pty. Ltd.
Manufacturer's Address: 255 Forest Road, Arncliffe 2205, NSW, Australia.
Date of Introduction: 1988. September.
Ingredients: Mildly Spiced: Organic soybean, water, cider vinegar, sea salt, spices, herbs, and culture (*Rhizopus oligosporus*).
Wt/Vol., Packaging, Price: 300 gm in plastic bag.
How Stored: Refrigerated.
New Product–Documentation: Labels with dates sent by Tony Wondal of Nutrisoy. 2005. April 26. He started making and selling these products in March 1987. Seasoned: Blue, yellow and red on white. On the front panel: "Nutritious. Cholesterol free... For a high energy breakfast, quick lunch, or hearty main meal. No artificial flavouring, colouring, or preservatives. Improved quality. Fitness food."

2289. Shurtleff, William; Aoyagi, Akiko. 1988. Das Tempeh-Buch: Nahrung fuer alle Band 3 [The book of tempeh: Food for mankind. Vol. 3]. Ahorn Verlag, Irmingardweg 10, D-8210 Prien, West Germany. 256 p. Illust. by Akiko Aoyagi Shurtleff. Index. Sept. 23 cm. Translated by Christiane and Dr. Peter Heningsen, and by Flora Yap. [292 ref. Ger]
• ***Summary:*** Contents: What is tempeh? Preface. Acknowledgments. How to use this book. Part I. Tempeh: Food for all. 1. Soybeans: Protein source of the future. 2. The nutritional value of tempeh.

Part II. Cooking with Tempeh (162 recipes). 3. Getting started–Preparation, principles, and basic recipes. Favorite tempeh recipes. 4. Western-style tempeh recipes. 5. Indonesian tempeh recipes.

Part III. Making tempeh. Making tempeh at home, in a community, or on a commercial scale. 7. Other types of tempeh and onchom. 8. Making tempeh starter. 9. The Indonesian tempeh shop.

Part IV. Tempeh history and research. 10. The history of tempeh East and West. 11. The microbiology and chemistry of tempeh fermentation. Part V. Appendixes: Tempeh contacts throughout the world. Bibliography. Glossary. List of illustrations. About the authors and their work (autobiographical).

Published in a hardcover edition only–6 years after the project started. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

2290. *Soyanews* (*Sri Lanka*).1988. Soya foods at Katugastota Mahapola. 10(3):5. July/Sept.
• ***Summary:*** "In the second week of August, 1988, the Plenty Canada Soya Food Centre extended its popularising activities to the Mahapola held at St. Anthonys' College, Katugastota with great success. Those who visited the Plenty Canada Soya Stall had the choice of a wide array of snacks to choose from, including cutlets, rolls, dhall, tempeh sticks, soya toffee, aluwa and coffee.

"Freshly prepared soya coffee proved to be one of the most popular drinks... Because of its good taste and affordable price, almost everyone who visited the stall had a cup of coffee and took a packet home."

2291. *Soyanews* (*Sri Lanka*).1988. Harnessing the sun for better nutrition. 10(3):1. July/Sept.
• ***Summary:*** "Tempeh, produced in Indonesia for hundreds of years, has recently found favour in Sri Lanka as a high quality substitute for dried fish. It has also proven popular in dishes calling for eggplant, baby jack and chicken." When dried to a moisture content of 12%, it has a long shelf

life without refrigeration. Now Plenty Canada, working in cooperation with the Intermediate Technology Development Group (I.T.D.G.) and Sarvodaya, have developed a low cost solar powered cabinet dryer, which dries tempeh in less than half the time of traditional techniques with no losses to birds or insects. Plenty Canada hopes to introduce their new solar powered dryers to village and farm groups interested in the production of commercial quantities of dried tempeh.

2292. Tenpe Kenkyushu-kai. 1988. Tenpe Kenkyû-kai kiyaku [Rules of the Tempeh Research Society (Brochure)]. Kobe Park City 2-1110, 6-2-1 Minatojima, Chuo-ku, Kobe 650, Japan. 3 p. [Jap]
• ***Summary:*** The basic membership dues are ¥2,000 per year (April to March). A supporting membership costs ¥10,000 per year. Address: Kobe, Japan. Phone: 078-302-7065.

2293. Schecter, Andy. 1988. History of Northern Soy (Interview). *SoyaScan Notes.* Oct. 10. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** In August 1975 Jay Thompson, who was on the kitchen staff at the Rochester Zen Center, read a notice on tofu that William Shurtleff had written to *East West Journal.* He wrote Shurtleff in Japan requesting instructions for making tofu. Shurtleff sent him a basic recipe. In September, having had good results, he wrote back asking for a larger scale recipe. Shurtleff sent him a chapter of a book he was writing on *Tofu & Soymilk Production.* Soon members of the kitchen staff (Thompson, Martha Gifford, Debbie Lebeaux, and Andy Schecter) were making tofu on the large kitchen stove (using a Corona Mill) for members of the community.

Several months later, when they had showed that the process was practical and wanted to expand, they set up a small tofu shop in the basement of Zen Center, cooking over a candy stove. At that time several volunteers, Greg Weaver and Greg Mello, who were members of the Center but not of the kitchen staff, also began making tofu in the new basement shop. This tofu was used only by members of the Center, and was not sold commercially.

Then Weaver and Mello decided to start a commercial tofu shop, so they formed a partnership and rented space at 277 N. Goodman St. in Rochester. Greg Weaver got some checks printed on which the business name was given as Flying Cloud Tofu. When Greg Mello saw that name he was so upset that they had a big fight and decided they didn't want to work together. Greg Weaver went off to work in landscaping, and Greg Mello asked Andy Schecter to come in as a partner. After several months (when the checks were used up), the business name was changed to The Tofu Shop.

In about October 1977 Greg Mello decided to leave. Greg Weaver took his place as Andy's partner. Norman Holland came in the following year, in 1978.

In Nov. 1977 Earl Lepper started making tempeh in his home in Rochester and having a rough time. He would take it out of the incubator and walk it over to the Genesee Co-op, where it was sold. He decided to drop the business and leave town, so Northern Soy decided to make him a generous offer for basically his technique and equipment–he didn't have much of a business. Shortly he returned to Rochester and went to work for Northern Soy making their tempeh.

In 1978 The Tofu Shop decided to open a soy deli in Rochester. They transferred to it the name The Tofu Shop and changed the name of the manufacturing company to Northern Soy. Greg Weaver ran the deli operation, which opened in Nov. 1978.

In the summer of 1979 the company moved to 30 Somerton St. which had 3,000 square feet (plant plus office space). On 1 Sept. 1985 the company changed from a 50:50 partnership between Schecter and Holland to a corporation in which the two each owned 50% of the stock. In July 1988 the company moved to its present address, 545 West Ave., where they have 16,000 square feet total (plant plus office plus storage). This now seems like too much space, so they plan to expand their soyfood product line. Tofu prices are now lower than anyone would like, and the company is having a hard time paying the interest on their loans. Address: 545 West Ave., Rochester, New York 14611. Phone: 716-235-8970.

2294. Holzapfel, Robert. 1988. The Farm in Tennessee and The Book Publishing Company (Interview). *SoyaScan Notes.* Oct. 22. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** The Yellow Sun Co-op in Amherst, Massachusetts, opened in about 1970. Tom Timmins, who was not one of the founders, applied to be the manager and was hired in about 1971. Robert worked with him.

There are now about 250 people living on The Farm, including 100-125 adults. Only about one-fifth of the men have long hair. All Farm members own the 1,700 acres of land together, and none pay rents on houses they live in. All houses are now single family dwellings. The Farm was about $600,000 in debt in October 1983, the time of the reorganization, when they changed from a collective to a cooperative. This was greater than the assets. Most Farm members are still vegetarians. Stephen no longer gives any Sunday morning raps/sermons. Granted that some Farm members had worked for years to build The Farm and left empty handed, but they also left behind this $600,000 debt.

Books that have sold well for The Book Publishing Company: *Big Dummy's Guide to CB Radio* (1.5 million copies sold to date), *Tofu Cookery* (150,000 to 200,000; 25,000 a year now), *Tempeh Cookery* (25,000 total), *Tofu Quick & Easy* (13,000 a year now). There are no records on sales of *The Farm Vegetarian Cookbook,* but it has sold very well since 1975, when it was published (maybe 170,000 copies). Annual sales in 1988 are expected to be 10,000 to 15,000 copies worth $300,000. The company almost went under in 1984. Dorothy R. Bates (the mother of Farm

Lawyer Albert Bates) has been instrumental in the company's comeback. Address: President, The Book Publishing Co., P.O. Box 99, 156 Drakes Lane, Summertown, Tennessee 38483. Phone: 615-964-3571.

2295. Barat, Chandri. 1988. Recent developments at Legume, Inc. (Interview). *SoyaScan Notes.* Oct. 28. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Chandri has just returned from SIAL (the international food exposition held on alternate years with ANUGA) in France, where they showed their Barat tofu chocolate line in the American Pavilion. The response was tremendous. They set up distribution all over the world. There were a lot of soyfoods companies at the expo, including Cacoja and a French tempeh producer. They spoke to thousands of people at the expo and were surprised to find that a good 50% knew what tofu was, and their attitude toward tofu was generally very positive. There were few with negative attitudes.

Products they now sell in addition to the chocolate line include the Tofu Lasagna, Manicotti (they changed the name of Cannelloni Florentine to Manicotti Florentine since many people thought Manicotti meant meat), Stuffed Shells Provençale. These are sold mostly to the natural food trade with some crossover into the kosher market. Now in California they have a kosher distributor who gets them into major supermarket chains; he puts the product on the shelves himself; there is no slotting allowance and the product is not in the store's computer. Kosher has proved to be a key attribute of the products.

During the last year which ended in June 1988, sales rose 20% and the loss went down from $1.3 million to $500,000. They withdrew from most frozen supermarket distribution (it never became profitable due to constant large costs to stay in). They stayed only with profitable frozen distribution, mostly health food or kosher chains, with sales presently about $1.1 million/year. They also dramatically cut overhead. They have a shot at making a profit this quarter and will definitely do so the January quarter. The future looks good.

Several years ago, in about Oct. 1986 at the ashram in South Fallsburg, New York, Gurumayi Chidvilasananda, Muktananda's successor, told them several times jokingly (she calls them the "tofu people") to make tofu candy. That idea led to the launch of the Barat Bar, a non-dairy chocolate bar, about 10 months later. Though the salad dressing didn't make it, the tofu chocolate was designed as a product that could be distributed through much broader channels... drug stores, etc. Concerning other products copying the Barat Bar, they have a lead on the market and they have a license with Sucanat; Sucanat will not sell their sweetener to a similar product. Also, The Barat Bar was the first product containing Sucanat to be launched, and Legume has done a lot of publicity for Sucanat. So a loyalty and friendship has developed. Address: 170 Change Bridge Rd., 2nd Floor, Montville, New Jersey 07045. Phone: 201-882-9190.

2296. Karta, Susani K. 1988. Market trends in the development of traditional soyfood. Paper presented at the ASEAN Food Conference '88: Food Science and Technology in Industrial Development. 18 p. Held 24-26 Oct. 1988 at Bangkok, Thailand.
• ***Summary:*** Contents: Introduction. Traditional soyfood. Market situation and trends. Indonesia. Singapore. Malaysia. Thailand. Constraints in the market development of soyfood (in each of the above 4 nations). Major trends in the development of traditional soyfoods. Marketing strategy of soyfood. Tables: 1. Traditional non-fermented soyfood products. 2. Nutritional composition of traditional non-fermented soyfoods. 3. Description and uses of traditional fermented soyfood products. 4. Nutritional composition of traditional fermented soyfoods.

5. 1987 estimated consumption of soybeans as foods in the Far East [total and per capita in East Asia]. China, 1,062 million population, 7,325,000 tonnes, 6.9 kg/capita. Japan, 122 million population, 1,141,000 tonnes, 9.3 kg/capita. South Korea, 42.1 million population, 330,000 tonnes, 7.8 kg/capita. Taiwan, 19.6 million population, 260,000 tonnes, 13.3 kg/capita.

6. Southeast Asia soybean consumption for food. From 1983 to 1989 the increase in 1,000 metric tons was: Indonesia 927 to 1,600. Singapore 14 to 26. Malaysia 32 to 70. Thailand 40 to 150. Philippines 9 to 24. Total 1,022 to 1,870 (increase of 82.9% in 7 years).

7. Per capita soybean consumption for food in Southeast Asia. From 1983 to 1989 the increase in kg/person was: Indonesia 6.0 to 8.8. Singapore 5.6 to 10.5. Malaysia 2.1 to 3.7. Thailand 0.8 to 2.6. Philippines 0.2 to 0.5. Average total: 3.8 to 5.9 (increase of 55.3% in 7 years).

8. 1987 estimated consumption of soybeans as foods in Southeast Asia [total and per capita]. Indonesia, 175 million population, 1,575,000 tonnes, 9.0 kg/capita. Thailand, 53.6 million population, 118,000 tonnes, 2.2 kg/capita. Malaysia, 16.1 million population, 55,000 tonnes, 3.4 kg/capita. Singapore, 2.6 million population, 20,000 tonnes, 7.7 kg/capita. Philippines, 61.5 million population, 18,000 tonnes, 0.3 kg/capita.

9. Indonesian soybean production, imports, and consumption as food (in tonnes). From 1983 to 1989, production rose from 536,000 to 1,250,000, imports decreased from 391,000 to 350,000, and the amount consumed as food increased from 927,000 to 1,600,000. About 50% of the soybeans used for foods in Indonesia go to make tempeh, and 40% are used to make tofu.

10. Singapore soybean consumption as food. From 1983 to 1989 the amount increased from 14,000 tonnes to 26,000 tonnes. Most of these soybeans are used to make tofu and soymilk. 11. Malaysia soybean imports and consumption

as food (in tonnes). From 1983 to 1989, production rose from 182,000 to 440,000, and the amount consumed as food increased from 32,000 to 70,000. 12. Thailand soybean production, and consumption as food (in tonnes). From 1983 to 1989, production rose from 113,000 to 490,000, and the amount consumed as food increased from 40,000 to 150,000. Only in 1988 were soybeans imported–40,000 tonnes. This growth of soyfood consumption is due partially to the Government of Thailand's interest in promoting the awareness and utilization of soyfood products. The Thailand Agricultural Extension Service program and other institutions have been actively advocating of soyfoods into the food industry and the human diet, especially in rural areas. The government controls soybean imports by issuing licenses.

In summary: The soybeans with the highest per capita soybean consumption for soyfoods are: Taiwan 13.3 kg, Japan 9.3 kg, Indonesia 9.0 kg, Singapore 7.7 kg, South Korea 7.3 kg, and China 6.9 kg. The greatest potential for growth lies in China, where it is very common to find markets running out of soyfoods early in the morning. There is also great potential for growth in Malaysia, Thailand, and the Philippines. Address: American Soybean Assoc., 541 Orchard Rd., #11-03 Liat Towers, Singapore 0923, Republic of Singapore.

2297. Liebman, Bonnie. 1988. Vegieburgers: Stalking the perfect VLT. *Nutrition Action Healthletter.* Oct. p. 10-11.
• ***Summary:*** A rating of meatless burgers based on taste and fat content. A table shows product, maker, serving size, calories, fat (% calories, uncooked), sodium, and taste. "If the first ingredient is tofu, the fat content is high–probably around 55% of calories (compared with 58-66% for beef)... None of the burgers made with tempeh as a major ingredient supplied nutrition information. But tempeh gets only 35% of its calories from fat–an advantage, at least nutritionally. But palate pleasers they're not. Our testers quickly learned to identify the tempeh burgers by their 'sour' or 'glutenous' taste, and invariably tossed them into the 'bad' category. They come across as poor imitations of the imitation meat-burgers.

The five best rated products were: 1. Gardenburger (Wholesome & Hearty Foods, Portland, Oregon). 2. Nature's Burger, Original (Fantastic Foods, Novato, California). 3. Nature's Burger, Pizza (Fantastic Foods). 4. Nature's Burger, Barbecue (FF). 5. Tofu Burger (FF; the cook supplies the tofu). Soy products by White Wave, Quong Hop, Natural, Inc. and Bud, Inc. are listed in the table.

2298. Yu, R. 1988. Incorporation of lupin into human foods. In: Saipin Maneepun, Pivan Varangoon, and Bulan Phithakpol, eds. 1988. Food Science and Technology in Industrial Development: Proceedings of the Food Conference '88. 2 vols. Bangkok, Thailand: Institute for Food Research and Product Development, Kasetsart University, Thailand. See p. 24-26. Held 24-26 Oct. 1988 in Bangkok, Thailand. *
• ***Summary:*** Research in Australia has shown that lupin seed (*Lupin angustifolius*) can be used to make acceptable tempe. The writer stated that lupin was a better substrate for fermentation than soybean, and that taste panelists preferred the nutty flavor and golden color of lupin tempe.

Literature reports indicate a faster growth of lupin sprouts (36% greater yield) than for soy and mung bean, and that the crispier lupin sprouts have a high acceptability rating compared to soy sprouts.

Note: Lupin grain was sold into Indonesia for tempe manufacture from about 1985 to 1995, however trade was abandoned during the tumultuous years of political change and the Indonesia monetary crisis. There has been renewed interest in the use of lupin for tempe (Jayasena and Quail, 2004).

2299. Harris, Ron. 1988. A history of Grain Dance, one of America's earliest seitan manufacturers (Interview). *SoyaScan Notes.* Nov. 17. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Ron arrived in San Francisco in about 1975, having studied macrobiotics previously in Ohio from 1974. As far as he knows, he was the first person to make seitan commercially as a real business in America. Before he started, a woman in Marin made seitan at home and sold it at 1-2 stores for a few months. She had no business name. She had learned how to make seitan from Roy Steevensz, a macrobiotic teacher in Los Angeles who also made and sold tempeh. Lima Foods in Belgium started to import a small bottled seitan product long after Ron started. He never had any competition from other seitan makers on the West Coast. When he began, no one had ever heard of seitan. The Kushis and the Aiharas both made and taught others how to make seitan on a home scale.

Ron first learned about and tasted seitan in Key West, Florida, in 1975. A woman named Martha, who was a macrobiotic (originally from Los Gatos, California) was giving a cooking class. His ex-wife Shiwa took the class, then Ron tasted the seitan from the bottom of the pot. He loved it. Shiwa then taught Ron the basic process for making seitan, then he ended up developing some variations on that process and recipe. Shiwa had a small business making pastries (such as date bars) out of her home in San Francisco and selling them at Rising Sun, a macrobiotic food store on Judah St. in San Francisco, owned by Mr. Noboru Muramoto. She suggested that Ron start making seitan to expand the family's line of foods. Ron first began to make seitan out of their home at 187 Downey St. (in the upper Haight-Ashbury district), San Francisco. He sold the first product in bulk at Rising Sun. It was in small dark brown chunks (about 6 pieces/chunks per pound), stored refrigerated in a 5-gallon plastic bucket or earthenware

crock. On the bulk container was written the word "seitan" followed by the ingredients. After about a year he started to sell it in individual packages. To the label he added the pronunciation "SAY-tahn" and the phrase "A high-protein food made from wheat." He always sold only one product in one flavor. The ingredients were organic hard red winter whole wheat (always freshly ground), spring water, tamari (actually shoyu), ginger, and onions. He was one of the few seitan makers to use whole wheat; most others used unbleached white flour, which gave a higher seitan yield. Initially he ground the wheat by hand using a French Samap mill that he bought from Jacques DeLangre's son, Tom. Later he bought his wheat from Joe Schwinn of Deaf Smith–Vital Vittles, who milled his own wheat fresh each day.

Originally Ron's seitan company had no name. He coined the company name "Grain Dance" at about the time he began packaging in individual containers–round plastic deli containers with a snap-on lid. First he sold it by the pound, then in 8 oz packs. Later the name was expanded to Grain Dance Natural Foods. The company was never incorporated. From his first address, Ron moved to another home-based kitchen, then in about 1980 he subleted his first legal commercial space mornings in the kitchen of the Real Good Karma Cafe on Dolores St. in the Mission district. Finally in about 1982 he moved into a commercial space at 422 Haight St. between Fillmore and Webster in the lower Haight Ashbury. By 1987 he was selling seitan to about 100 stores in the greater San Francisco Bay Area. They made seitan 3 or 4 days a week, making 80 pounds of finished seitan each day. Grain Dance introduced seitan to thousands of Californians who were looking for an alternative to meat. At fairs he served deep-fried seitan; it was dipped in a spiced wheat-flour batter and breaded with cornmeal. People loved its meaty texture and savory flavor. Ron's personal favorite was freshly cooked seitan, right out of the pot in his unique broth.

Initially Ron distributed the product himself, then Paul Duchesne distributed it after he was pushed out of Wildwood and started his own distribution company, then when he went out of business, Wildwood distributed it; Wildwood also used seitan in some of their sandwiches. Later David "Devo" Knepler came is as a partner (Devo now works with Wildwood Natural Foods). They had one employee.

For ten years Ron made seitan by hand. He really enjoyed the hand kneading, putting handmade energy into the food, and focusing on quality. By 1987 the business was growing, rents in San Francisco were skyrocketing, and he would have to mechanize the shop in order to expand. The business never made much money. "It was a labor of love, and it really enjoyed making seitan and turning people on to good food and helping them in any way I could." So in 1987 Ron began to phase out the business. He started doing attorney service work (which he is still doing) several days a week, then made seitan on several other days. Initially Wildwood wanted to continue it, so Ron went there and taught a few people how to make seitan. They did it for a while, but found it too labor intensive, and gave it up. There has never been another seitan maker on the West Coast. Address: San Mateo, California. Phone: 415-347-1378.

2300. Belleme, Jan. 1988. Fabulous finger foods. *East West.* Nov. p. 32, 34, 36-39.
• ***Summary:*** Includes recipes for: Tempeh Salad Tea Sandwiches. Walnut-Miso Dip. Deep-Fried Tempeh with Tofu-Mustard Topping. Address: Rutherfordton, North Carolina.

2301. Maeda, Toshiie. 1988. Atarashii daizu hakkô shokuhin bunka no sai sôzo o mezashite: Mura okoshi "tenpe sonjuku" [Aiming to recreate a new fermented soyfood culture: Revitalizing a village–the tempeh village school]. *Daizu Geppo* (*Soybean Monthly News*). Oct/Nov. [Jap]
Address: Kobe Women's Junior College, food processing.

2302. Murata, Kiku. 1988. Re: New developments with tempeh in Japan. Letter to William Shurtleff at Soyfoods Center, Dec. 4. 1 p. Typed, with signature. [Eng]
• ***Summary:*** "Since I wrote you on Sept. 24, I visited a Tempeh Village Group (*Tempeh Sonjuku;* the chief of the group is Mr. T. Maeda) and attended a sampling party at the 'Foods and Green Exhibition,' Hyogo prefecture, Sasayamaguchi."

"After returning from my trip [to Australia] I had tried to start a 'Tempe Study Group.' Since I am now retired from the university and only give a lecture on nutrition once a week, I have no place to do scientific research on tempeh. So I now volunteer my time and money to establish the study group. We now have about 50 members. We plan to have 'The 1st Tempe Research Meeting' in Tokyo, February 1989." Address: 608 Honyakushi, Nara City 630, Japan.

2303. Kanasugi, Goro. 1988. Re: Update on work with tempeh in Japan. Letter to William Shurtleff at Soyfoods Center, Dec. 26. 3 p. Handwritten, on lined paper. [Jap]
• ***Summary:*** He saw the article in *Daizu Geppo* (Dec. 1988) about the work of Shurtleff and Aoyagi. He is still making and selling tempeh. Each day he makes: 1. Tempeh miso. 2. Vegetable steamed buns (Yasai no manju) with cabbage and tempeh. 3. Steamed bread (Mushi-pan). 4. Tekka miso with tempeh. 5. Sui chikuwa. 6. Onchom–skewered or cylindrical.

In Sept. 1988 he started making and selling a Tempeh bentô (lunchbox); it sells well. He sells about 1,000 tempeh dishes a day at his restaurant and sandwich shop. Address: Shimo-cho 3-6, Omiya-shi, Saitama-ken 330, Japan.

2304. Brown, Judy. 1988. The joy of soy: Nutrition for the '80s. *Body, Mind & Spirit.* Nov/Dec. p. 30-32.
• ***Summary:*** Contents (Soyfoods, nutrition, and a healthy

diet). Tofu. Tempeh. Miso. Natto. Okara. Soy cheese & soy yogurt. Soy flour & grits. Soymilk. Soy sauce. Resources: Eden Foods, Fantastic Foods, Inc., Lumen Foods Corp., San-J International. Vitasoy (U.S.A.) Inc., Westbrae Natural Foods (Downey, California). Address: President, In Good Taste, 5923 John Adams Dr., Camp Springs, Maryland 20748.

2305. Dagnelie, Pieter C. 1988. Nutritional status and growth of children on macrobiotic diets: a population-based study. PhD dissertation, Dep. of Human Nutrition, Wageningen Agricultural University, the Netherlands. 144 p. [Eng]* Address: Dep. of Human Nutrition, P.O. Box 8129, Wageningen Agricultural Univ., 6700 EV Wageningen, the Netherlands.

2306. Golbitz, Peter. 1988. Soyfoods sales projected to reach $750 million by 1990. *Soya Newsletter* (*Bar Harbor, Maine*). Sept/Dec. p. 1, 6.
• ***Summary:*** The estimated retail value of soyfoods in the USA in 1988 was $682 million. The various soyfoods had the following market shares: soy sauce 67.3% (est. $460 million retail store valuation), tofu 11.3% (est. $77 million), second generation products 9.5%, soymilk 5.3%, miso 4.1%, soynuts 1.7%, tempeh 0.8%.

All of the 1980 figures used in this study for comparisons and growth rates were taken, without permission, from *Soyfoods Industry & Market: Directory and Databook* by Shurtleff & Aoyagi. Address: Soyatech, Bar Harbor, Maine.

2307. Harayama, Fuminori; Yasuhira, Hitomi. 1988. *Aspergillus*-zoku to *Rhizopus*-zoku no daizu tanpaku bunkai sayô no hikaku [Comparison of hydrolytic action on soybean protein by the genus *Aspergillus* and *Rhizopus*]. *Nippon Jozo Kyokai Zasshi* (*J. of the Brewing Society of Japan*) 83(12)::828-33. Reprinted in Shinshu Miso Kenkyusho Kenkyu Hokoku (Report of the Shinshu-Miso Research Inst.). No. 30. p. 94-99. [19 ref. Jap; eng]
• ***Summary:*** Changes in protein during manufacture of miso and fermented soybeans using fungi of the genera Aspergillus and Rhizopus were examined by SDS-polyacrylamide gel electrophoresis. The protease activity, especially of Rhizopus, was largely inactivated by ethanol in salt-free miso containing 5% ethanol. Aspergillus hydrolyzed soybean protein to products of low molecular weight, whereas Rhizopus only slightly hydrolyzed it, leaving mostly middle and high molecular weight substances. Address: The Shinshu-Miso Research Inst., 469-6 Nakagosho, Nagano City, Japan 380.

2308. Langley, Gill. 1988. Vegan nutrition: A survey of research. The Vegan Society Ltd., 33-35 George St., Oxford 0X1 2AY, England. x + 121 p. Dec. Index. 21 cm. [255* ref]
• ***Summary:*** Contents: Foreword by Dr. Barrie M. Margetts. Introduction. Guidelines on vegan diets. Symbols & abbreviations. Tables. Vegan nutrition: 1. Protein and energy. 2. Carbohydrates. 3. Fats. 4. Vitamins: Vitamin A (retinol and beta-carotene), the B Group vitamins–Vitamin B-1 (thiamin), vitamin B-2 (riboflavin), niacin (nicotinic acid and nicotinamide), vitamin B-6 (pyridoxine), folic acid (folate, known as folacin in the USA), pantothenic acid and biotin, vitamin B-12 (cobalamins), daily requirement of B-12–a controversy, vegan sources of B-12, vitamin B-12–the vegan experience, occasional B-12 deficiency, vitamin C (ascorbic acid), vitamin D (ergocalciferol D-2, cholecalciferol D-3), vitamin D deficiency, vitamin E (tocopherols), vitamin K, summary of vitamins.

5. Minerals: The major minerals–Calcium (meat, protein, and calcium balance, calcium balance and other nutrients, calcium and vegan diets, osteoporosis), iron (iron balance and other nutrients, iron and vegan diets), magnesium, phosphorus, sodium and chloride, potassium, sulphur. The trace elements–Zinc, selenium, iodine, copper, cobalt, chromium, manganese, fluorine, summary of minerals. 6. Milk and health. 7. The general health of vegans. 8. Vegan diets as therapy. 9. Conclusions. Further reading.

This book brings together in a concise, carefully researched, and well documented manner all that is currently known about vegan nutrition. It is the "most comprehensive survey ever undertaken of scientific research on vegan diets. *Vegan Nutrition* shows that a vegan diet can provide all the essential nutrients for health and fitness at any age, without the need to take supplements, as long as a few elementary rules are observed. This proviso is particularly relevant to infants and young children."

Table 12 shows portions of selected vegan foods that provide 100 mg of calcium: Spinach 17 gm, tofu 20 gm (4 times as much calcium as in the same weight of whole cow's milk), molasses 20 gm, parsley 30 gm, figs (dried) 36 gm, almonds 40 gm, soy flour 44 gm, and watercress 45 gm. Calcium is the most abundant mineral in the body. About 99% of it is in the bones and teeth in the form of calcium phosphates. The 5-10 gm of calcium not in the bones and teeth are required for muscle contraction, for the functioning of the nerves, for the activity of several enzymes, and for blood clotting. The British RDAs for calcium are 600-700 mg a day for children and teenagers, and 500 mg for adults (vs. 800 mg in the USA)–rising to 1,200 mg in pregnancy and during lactation. "There have been no reports of calcium deficiency in vegans; the exclusion of meat and the slightly lower amounts of protein in their diets may protect against this."

Concerning vitamin K: This vitamin is fat soluble, and is widespread in plant foods such as spinach, cabbage, cauliflower, peas, and grains. It is provided in roughly equal proportions by diet and from bacterial activity in the gut. Vitamin K is needed for normal clotting of the blood. Vegans

are unlikely to suffer a dietary deficiency. Note: The author, whose first name is pronounced Jill, is a woman. Address: Hitchin, Hertfordshire, England.

2309. Nowak, J.; Steinkraus, K.H. 1988. Effect of tempeh fermentation of peas on their potential flatulence productivity as measured by gas production and growth of *Clostridium perfringens. Nutrition Reports International* 38(6):1163-71. Dec. [15 ref]
• ***Summary:*** "Although the exact nature of the tempeh factor inhibiting flatulence is unknown, it can be shown that it is a substance soluble in water that inhibits growth of *Clostridium* strains. It is likely an antibacterial compound formed by the molds during tempeh fermentation. The factor does not survive steaming pea tempeh cake for 15 min. It corresponds with the substances described by Wang et al. (1969). We found that steamed tempeh fermented with *R. oligosporus* 2710 produced even more gas than unfermented pea." Address: Inst. of Food Science, Cornell Univ., Geneva, New York 14456.

2310. **Product Name:** B-L-T Brown Rice Sandwich (With Tempeh, Tofu Mayo & Tomatoes).
Manufacturer's Name: Paul's Organic Food Works.
Manufacturer's Address: P.O. Box 431, Fairfax, CA 94930. Phone: 415-453-2360.
Date of Introduction: 1988. December.
Ingredients: Short grain brown rice*, spring water, sprouted wheat tortilla*, Fakin' Bacon (smoked tempeh), Tofu Mayonnaise, tomatoes*, sunflower sprouts*, arugula* or mizuni*, sesame oil*, shoyu*, leeks* or scallions*, lettuce*. * = Organically grown per Cal. Health Code Sec. 26569.11.
Wt/Vol., Packaging, Price: 12 oz. Retails for $4.25 (8/89, northern California).
How Stored: Refrigerated.
New Product–Documentation: Label sent by Paul Duchesne. 1989 Aug. 11. 5.5 by 2 inches. Black on purple paper. "12 happy ounces. For the best taste, remove from refrigeration one hour before eating. To eat: Open bag–Tilt sandwich in bag–fold bag down." Illustration of animated product, with smiling face on tortilla, arms, and legs. On the back is the statement, "What is mind? No matter. What is matter? Never mind." The statement is changed weekly. Note: Arugula or arrugula, (pronounced uh-RUE-guh-luh, an Italian term), an ingredient in this product, is a plant of the mustard family resembling a fancy, slightly bitter lettuce grown in Salinas, California. It is expensive and can be replaced with parsley. It is also called "rocket" or "garden rocket" after the French word *roquette.* Mizuni (pronounced mi-ZU-ni) is a mustard green, which is grown in California. It is not listed in any Webster's Dictionary.

2311. Tenpe Kenkyu-kai. 1988. Tempe Kenkyû-kai: Kaiin meibo [Tempeh Research Society: Directory of members (Brochure)]. Japan. 3 p. [Jap]
• ***Summary:*** On 31 Dec. 1988 there were 58 members, each with his or her address listed, but no phone numbers. An appended sheet shows that by 10 Feb. 1989 the number of members had increased to 72.

2312. **Product Name:** Soy Tempeh.
Manufacturer's Name: Bakita Tempeh.
Manufacturer's Address: Parque Industrial Julio N. Matos, Lot 36 (P.O. Box 1828) Carolina, PR 00984. Phone: 809-722-6192.
Date of Introduction: 1988.
New Product–Documentation: Letter from Betty Stechmeyer. 1993. Nov. She says Daniel Padro makes tempeh. Form filled out by Daniel Padro. 1993. Dec. 1. He started making tempeh in 1988.

2313. Beddows, C.G. 1988. The old fashioned way with soya. *Food Science & Technology Today* 2(1):12-15. [6 ref]*
• ***Summary:*** The following soybean products are described briefly: soymilk, bean curd, tofu, tempeh, natto, sufu, miso, shoyu, and yuba. Protein yields are given for a range of plant crops versus milk and beef, e.g. soybeans 3500 kg/ha/annum versus 75 kg/ha/annum for beef. Recipes are included for miso cream cheese dip and deep fried tofu and miso soup. The marked rise in consumption of soybean products in the USA in recent years is noted. Address: Dep. of Applied Sciences, Leeds Polytechnic, Leeds LS1 3HE, England.

2314. Ko Swan Djien. 1988. Recollection of tempeh. *Onko Chishin* No. 25. p. 42-48. [11 ref. Eng]
• ***Summary:*** A brief review of the author's involvement in fundamental tempeh studies. During the late 1950s the author taught Technical Microbiology at the Bandung Inst. of Technology in Indonesia. In 1960 he was granted a sabbatical to study antibiotics and related fermentation processes at the Northern Regional Research Center (Peoria, Illinois) under Dr. Clifford W. Hesseltine. "Dr. Hesseltine's background was in conventional liquid agitated pure culture fermentation. But when Ko arrived, he had just finished his first experiments with a solid substrate fermentation process of an Asian soybean food, by studying aspects of miso fermentation with Dr. K. Shibasaki of Tohoku Univ. Dr. Hesseltine became utterly fascinated with the use of solid substrates and the application of pure mixed cultures in miso fermentation. This made him curious to know more about other non-Western fermented foods which were still unknown to many people in the Western world. During our first conversation, Dr. Hesseltine asked me cautiously, whether I was familiar with an Indonesian food which was made by fermentation of soybeans with a certain mould species. I immediately assumed that he had 'tempe' in mind. Since tempe is a regular ingredient in the Indonesian menu, it was not difficult for me to tell him about the culinary aspects

of tempe. However, knowledge of the microbiological aspects was minimal, because basic background information was not yet available.

"Instead of discussing the latest developments of fermentation technology which was the purpose of my visit to the U.S.A., Dr. Hesseltine and I theorized about tempe fermentation and we became more and more fascinated by the still unknown aspects. We soon agreed that it might be more interesting to study fundamental principles of tempe fermentation during my period of practical training rather than starting a study of one of the many detailed aspects of a modern fermentation process. At that time we could not foresee that this decision was a contribution to sparking a wave of research activities with world wide interest."

This research by Ko and Hesseltine led to the discovery that *Rhizopus oligosporus* was the principal species of mold used for traditional tempeh fermentation in Indonesia. This led to development of a pure-culture tempeh starter/inoculum. "An important aspect during these studies was the unexpected publicity given by the Indonesian press. It aroused curiosity and was a great stimulus to other universities and research institutes to study various aspects of tempe fermentation."

In 1968 the author joined the Agricultural University, Wageningen, Netherlands, where his research showed that *R. oligosporus* does not produce aflatoxins, and actually inhibits their production. A photo shows Ir. Ko Swan Djien. Address: Bandung Inst. of Technology, Indonesia, and Agricultural Univ., Wageningen, Netherlands.

2315. **Product Name:** Tempeh with Sea Veggies.
Manufacturer's Name: Noble Bean.
Manufacturer's Address: R.R. 1, McDonalds Corners (near Elphin), Ontario K0G 1M0, Canada. Phone: 613-278-2305.
Date of Introduction: 1988.
How Stored: Frozen.
New Product–Documentation: Letter (fax) from Allan Brown. 1998. Jan. 21. This tempeh was first sold in 1988.

2316. **Product Name:** [Tempeh].
Manufacturer's Name: Restaurante Lotus.
Manufacturer's Address: Ruo da Boavista 55, 3º, 1000 Lisboa, Portugal. Phone: (1) 60.72.83.
Date of Introduction: 1988.
New Product–Documentation: Letter from Miguel Azguime, owner of Miso Producoes. 1989. Nov. 30. This company started making soyfoods in Portugal in 1988 and is currently in operation.

2317. Shipley, Betsy; Pfaff, Gunter; Reed, Harry. 1988. [Betsy Shipley and Gunter Pfaff demonstrate the manufacture of Betsy's tempeh, a product made from organically grown Michigan soybeans (Sound recording; reel-to-reel tape)]. S&P Farm, 14780 Beardslee Rd., Perry, MI 48872. *
• ***Summary:*** Elizabeth Shipley was born in 1933. Address: Perry, Michigan. Phone: 517-675-5213.

2318. Shipley, Betsy; Pfaff, Gunter; McClaran, Tamara. 1988. [Betsy Shipley and Gunter Pfaff discuss Betsy's tempeh, manufactured in Perry, Michigan appealing to vegetarians and coronary patients (Sound recording; reel-to-reel tape)]. S&P Farm, 14780 Beardslee Rd., Perry, MI 48872. 10 minutes. *
• ***Summary:*** Broadcast on WILX (Lansing, Michigan). Elizabeth Shipley was born in 1933. Address: Perry, Michigan. Phone: 517-675-5213.

2319. **Product Name:** [Tempeh (Regular Soy, or Marinated)].
Foreign Name: Tempeh Natur, Tempeh Mariniert.
Manufacturer's Name: Sojarei Ebner-Prosl (Marketer-Distributor). Made in Austria by Natuerliche Lebensmittel (Paul Stuart Zacharowicz).
Manufacturer's Address: Augasse 2, A-2500 Baden bei Wien, Austria. Phone: 02252/85101.
Date of Introduction: 1988.
Wt/Vol., Packaging, Price: 250 gm.
New Product–Documentation: Brochure sent by Sojarei Ebner-Prosl. 1989. Oct. 12. "Fresh products. Tempeh: The fermented soya product for frying, grilling, or baking." In the company's Jan. 1989 price list are listed Tempeh Natur and Tempeh Mariniert, each 250 gm.

Talk with Guenter Ebner of Sojarei Ebner-Prosl. 1990. May 28. This tempeh is made by Paul Stuart.

2320. Sojarei Ebner-Prosl. 1988. Tofu aus der Sojarei [Tofu from the Sojarei (Leaflet)]. Baden bei Wien, Austria. 6 panels. [Ger]
• ***Summary:*** This full-color orange and red leaflet explains that the company makes and sells many fresh soy products, mostly tofu and tofu products, but also tempeh and soy sprouts. They sell tamari, shoyu, miso, gomashio (sesame salt), many types of vegetables, flakes, and legumes. They also have a soya recipe brochure and a tofu cookbook.

This young family-run business, founded in 1984, focuses on fresh soyfoods of the best quality–pure and natural. Sojarei tofu is described as the culinary wonder child in unpretentious clothes, but with many talents. Tofu is sold in slices, diced, or in strips. It can be pressed or pureed. There are color photos of the two owners and their wives, of tofu, and of 5 tofu dishes. Address: Augasse 2, A-2500 Baden bei Wien (near Vienna), Austria. Phone: 02252/85101.

2321. Wadud, Surruya; Kosar, Saida; Arra, Hussan; Durrani, H. 1988. A process for the pilot plant production of tempeh. *Pakistan J. of Scientific and Industrial Research* 31:435-38. *

Address: PCSIR Lab., Karachi, Pakistan.

2322. Zamora, Regalado G.; Veum, Trygve L. 1988. Nutritive value of whole soybeans fermented with *Aspergillus oryzae* or *Rhizopus oligosporus* as evaluated by neonatal pigs. *J. of Nutrition* 118:438-44. *
Address: 110 Animal Science Research Center, Univ. of Missouri, Columbia, Missouri 65211.

2323. Goetz, Rolf; Queissert, Peter. 1988. Einfach anders essen: Unser Naturkost-Kochbuch [Simply eat differently: Our natural-foods cookbook]. Schaafheim, West Germany: Pala-Verlag. 156 p. Index. [10 ref. Ger]
• ***Summary:*** Contains recipes using miso, seitan, tamari, tempeh, and tofu. Address: Germany.

2324. Hesseltine, C.W. 1988. Transfer of food fermentation technology. In: M.F. Moyal, ed. 1988. Diet and Life Style. New Technology. John Libbey Eurotext Ltd. See p. 159-65. [10 ref]
• ***Summary:*** Describes examples of successful transfer of new technology, especially with Oriental fermented foods, such as tempeh, miso, and sufu. Address: 5407 Isabell, Peoria, Illinois 61614.

2325. Leneman, Leah. 1988. Soya foods cookery. London and New York: Routledge & Kegan Paul. ix + 145 p. Illust. Index. 20 cm.
• ***Summary:*** Contents: Introduction. Recipes–1. Soya milk: Soya milk, soya yogurt, soft cheese [made from soya yogurt], and mayonnaise, soya milk skin (yuba). 2. Tofu: Tofu, frozen and dried-frozen tofu, smoked tofu. 3. Tempeh. 4. Miso. 5. Combi-dishes: Tofu and miso, tempeh and tofu.

An introduction to the subject, with more than 100 recipes. Almost half the book is devoted to tofu and tofu recipes. The author, born in the USA, has lived in Britain for more than 20 years. She was once assistant editor of *The Vegetarian,* and also worked at Cranks Restaurant (on Marshall St. in London W1). Address: 19 Leamington Terrace, Edinburgh EH10 4JP, Scotland.

2326. Lund, Cynthia M. 1988. Effects of inocula and incubation times on selected sensory and physical characteristics of tempeh. MSc thesis, Kansas State University. viii + 90 leaves. Illust. 28 cm. *
• ***Summary:*** Includes bibliographic references (leaves 65-71).

2327. Quigley, Delia; Pitchford, Polly. 1988. Starting over: Learning to cook with natural foods. Summertown, Tennessee: The Book Publishing Co. 144 p. Illust. Index. 23 x 15 cm.
• ***Summary:*** The index to this natural foods, vegetarian (but not vegan) cookbook contains listings for 15 tofu recipes, 7 miso recipes, and 6 tempeh recipes, plus an incorrect definition of "tamari." The book uses a round yin-yang (*t'ai chi*) symbol to mark recipes that "qualify as macrobiotic." The authors have a Florida television show named "The Granary Gourmet." Address: Florida.

2328. Rohidi, Tjetjep Rohendi. 1988. Laporan penelitian tingkah laku kesehatan dalam memproduksi, mendistribusi, dan mengonsumi bongkrek suatu kajian kasus di Desa Ajibarang Kulon, Kabupaten Banyumas, Propinsi Jawa Tengah [Report of a study on the socioeconomic, cultural, and health aspects of bongkrek (tempeh) in Kabupaten Banyumas, Kawa Tengah]. Semarang: Institut Keguruan dan limu Pendidikan Semarang, Departemen Pendidikan dan Kebudayan. viii + 158 leaves. Illust. Maps. 29 cm. [Ind]*

2329. Salsman, Norma J. 1988. Quality characteristics of soy and soy-wheat tempeh. MSc thesis, Kansas State University. v + 57 leaves. Illust. 28 cm. *
• ***Summary:*** Includes bibliographic references (leaves 49-55).

2330. Suparmo, -. 1988. Vitamin B-12 formation in tempeh fermented by mixed culture. PhD thesis, Michigan State University. v + 101 leaves. Illust. 29 cm. *
• ***Summary:*** Includes bibliographic references (leaves 93-101). Address: Dep. of Food Science.

2331. Wood, Rebecca T. 1988. The whole foods encyclopedia: A shopper's guide. New York, NY: Prentice Hall Press (Simon & Schuster). xv + 218 p. Foreword by Michio Kushi. Illust. 28 cm. [200* ref]
• ***Summary:*** This book is mistitled. It should be titled "Rebecca Wood's Macrobiotic Views on Natural Foods." The parts on quinoa, teff, amaranth, and many "macrobiotic foods" provide good information. There is extensive information on soyfoods, all from a macrobiotic viewpoint, but with many errors or undocumented controversial assertions never seen before in the literature, such as the following: "Cold Tofu. Foods that are cooling, like tofu, tend to reduce the fire in the lower organs. This explains why tofu was eaten by Buddhist monks to abate their sexual desires. This is not a prescription against tofu. Well-cooked tofu is less cooling. For optimum health, we need a balance of warming as well as cooling foods. However, if you are feeling cold, or if it is a cold day, or if you have strenuous activities planned, then you may opt for salmon over tofu."

Foods discussed are: Cheese (imitation soy), ice cream and frozen desserts (soy or tofu ice cream), miso, natto, nigari, soybeans (black, yellow, and "just harvested green soy"), soy flour, soy protein isolate, soy milk, soy nut ("Those oversalted, beggarly little crunches found in everything from trail mix to salads are soynuts,..."), soy oil, soy sauce ("Also known as *Shoyu* and *Tamari*), and soy

yogurt, tempeh, tofu, and TVP (texturized vegetable protein {textured soy flour}).

Note: This is the earliest English-language document seen (Feb. 2005) that contains the term "cooling food." Address: P.O. Box 30, Crestone, Colorado 81131. Phone: 303 (or 719) -256-4939.

2332. Shipley, Betsy. 1988? Cooking with Betsy's tempeh. Perry, Michigan: S&P Farms, 14780 Beardslee Rd., Perry, MI 48872. [6] p. Undated. 28 cm. *
• ***Summary:*** Includes a sheet of handwritten information on tempeh plus a folded sheet or recipes. Address: Perry, Michigan. Phone: 517-675-5213.

2333. Theses on soybeans and soyfoods: Dissertation Abstracts (Database search report). 1989. 234 p. Jan. 20. 28 cm. Unpublished manuscript. [1106 ref]
• ***Summary:*** The Dissertation Abstracts database contains virtually every American PhD dissertation accepted at an accredited institution since 1861. A search yielded 1,106 theses on soybeans and soyfoods not including records with the terms pathogen*, Disease*, weeds, or insect* in the title or abstract. * = truncated term.

It contained the following number of theses on soyfoods: Soymilk 9-14, tofu 6, tempeh 6, miso 4, soy sauce 3, and natto 2.

The most valuable records for us are in the subject categories Food Science & Technology; Health Sciences, Nutrition; and Economics, Agricultural. Other subject categories include: Agriculture (Agronomy, Animal Culture & Nutrition, General, Plant Culture, Plant Physiology); Biochemistry; Botany; Chemistry (Agricultural and Biological, Analytical); Engineering, Chemical; Entomology.

A count of the records in which we were interested by state where the thesis was written shows the following: Illinois 128, Iowa 68, Indiana 37, New York 30, Missouri 28, Michigan 26, Minnesota 25, and Ohio 17.

2334. **Product Name:** Tofu, Tempeh, and Soymilk.
Manufacturer's Name: Gabriella Benjis Soyfoods.
Manufacturer's Address: Johannesburg, South Africa.
Date of Introduction: 1989. January.
New Product–Documentation: Talk with Paul Cohen, her friend. 1989. Oct. 27. Gabriella has been making these 3 products at home since about Jan. 1989. She also works at a natural food store, where she sells them, and distributes them through the Organic Soil Association. There is a Chinese tofu manufacturer in South Africa, but Paul does not known the company name, address, or year started.

2335. **Product Name:** [Natto, and Fried Tempeh].
Foreign Name: Natto, Tempeh Frit.
Manufacturer's Name: Gaec de La Lix: United Macrobiotic Company.
Manufacturer's Address: 32260 Tachoires–Seissan, France. Phone: 62.65.35.04.
Date of Introduction: 1989. January.
New Product–Documentation: Form filled out for Anthony Marrese. 1989. Sept. The natto was introduced in Jan. 1989, and 6 kg/week are produced at present. The fried tempeh was launched in June 1989, and 7 kg/week are now produced. Anthony visited the community in mid-Oct. 1989 and noted: "They are a small group similar to Terre Nouvelle, but doing more with soya. Very nice kitchen production (see color slide), which is growing. They sell through markets and through 10 stores, which helps them to educate people. They are all Germans who came to France about 5 years ago mainly because land prices were lower in France.

Label for Fried Tempeh. 1989. 4 by 3 inches. Black photocopy on pink. "Aliment fermente de soya." Nature et Progres logo. 200 gm. On the back is information about tempeh.

2336. **Product Name:** Soy Tempeh, and Sesame-Soy-Rice Tempeh.
Manufacturer's Name: Natural Pacific.
Manufacturer's Address: P.O. Box 11001, Hilo, Island of Hawaii, HI 96721. Phone: 808-935-3220.
Date of Introduction: 1989. January.
Ingredients: Soy: Soybeans, okara, water, rice vinegar, tempeh culture. Sesame: Soybeans, okara, brown rice, sesame seeds, rice vinegar, tempeh culture.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label. 1989, Dec. Received. 2.5 by 2.75 inches. Rounded top. Self adhesive. Green and orange on white, or Purple and red on white. Illustration of sun over mountains. "Made with organically grown soybeans." The soy was introduced in Jan. 1989, the Sesame-Soy-Rice in July 1989. Talk with (call from) Benjamin Hills on the Island of Hawaii. 1993. May 28. This company, run by Tyler (Ty) Katibah, makes refrigerated tempeh. Benjamin offered to work for Ty and after 30 minutes of talking Ty offered to sell Benjamin the entire company. Benjamin declined the offer.

2337. *Plenty Canada News* (*Lanark, Ontario, Canada*).1989. Volunteers receive recognition. Winter 1988/89. p. 1.
• ***Summary:*** "Five Plenty supporters are soon to receive a certificate acknowledging their 'significant contribution' to Plenty's work. These certificates, to be signed by the President of CIDA, are being given to many Canadians across the country in celebration of 20 years of voluntary sector and Canadian government partnership in international development.

"The five Plenty supporters are: Allan Brown, Jim Creighton, Percy Henkelman, Kathleen Purdy, Valerie Unwin."

"Allan Brown, from McDonald's Corners, Ontario, a founding member and the first Executive Director of Plenty Canada who has continued his support of the organization ever since."

Note: Allan Brown, and his wife Susan, founders of Noble Bean in Sept. 1979, were pioneer tempeh makers in Canada. Address: R.R. #3, Lanark, Ontario K0G 1K0, Canada. Phone: (613) 278-2215.

2338. Shurtleff, William; Aoyagi, Akiko. comps. 1989. Bibliography of tempeh and tempeh products: 1,416 references from 1815 to 1989. Lafayette, California: Soyfoods Center. 177 p. Subject/geographical index. Author/company index. Partially annotated. Printed Jan. 19. 28 cm. [1416 ref]

• ***Summary:*** The most comprehensive bibliography on the subject. Contains all known commercial products. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

2339. Sojarei Ebner-Prosl. 1989. Preisliste [Price list]. Augasse 2, A-2500 Baden bei Wien, Austria. 10 p. Manufacturer's catalog. [Ger]

• ***Summary:*** The company has two catalog/price lists: one (green) for food processors and one (yellow) for retail stores. Products made by the company have been marked by the author with an "S." In the front of each catalog is an organic certificate. The retail catalog contains 20 fresh products, 3 books, and 30 non-fresh products. Fresh products made by the company include Tofu Natur, Tofu Mariniert, Tofu Geräuchert, Tofu Pastete Siddhartha, Tofu Pastete Toscana, Tofu-Burger, Soja-Getreide-Laibchen, Gruenkern Laibchen, Dinkel Laibchen, Reis-Laibchen, Weizengluten Laibchen, Weizengluten, Badener Bratwuerstchen, Badener Grillwuerstchen, Brotaufstrich "Rusticana", Brotaufstrich "Holzknecht." Fresh products sold but not made by the company include soy tempeh, marinated tempeh, and soy sprouts. The company sells 3 recipe books: (1) Their own recipe book *Wichtig für Ernährungsbewusste* (Important for understanding of nutrition); (2) *Tofu: Essen mit Zukunft* (Tofu: Eating with the future) by Brigitte Vogenreiter and Clemens Kuby, and (3) *Schlank mit Tofu* (Slim with tofu; 117 recipes) by A.W. Dänzer.

The company also sells many non-fresh products including yellow soybeans (organically grown), soya flakes (*Sojaflocken,* not defatted), whole soy flour, tamari, shoyu, barley miso, Hatcho miso, brown rice miso, soba (buckwheat) miso, nigari, Bonsoy soyadrink (natural and cacao), Pinoccio Soybean coffee, and soynuts.

In the catalog for food processors, for example, the regular tofu, marinated tofu, and smoked tofu are each sold in 1 kg, 30 kg, 60 kg, 100 kg, and 200 kg amounts. Address: Baden (near Vienna), Austria.

2340. Ritterband, Vicki. 1989. Lightlife Foods receives loan for expansion projects. *Recorder* (*Greenfield, Massachusetts*). Feb. 20. p. 2.

• ***Summary:*** The $756,000 loan package, which came from four sources (including the state and a local bank) will be used to double the size of Lightlife Foods' 6,000-square-foot plant, expand its product line and buy new equipment. The 10-year-old Fairview Street company, best known for its "Tofu Pups," has grown 35% annually for the past two years. The expansion will allow the company to make Tofu Pups in Greenfield.

2341. Agosin, Eduardo; Diaz, D.; Aravena, R.; Yañez, E. 1989. Chemical and nutritional characterization of lupine tempeh. *J. of Food Science* 54(1):102-04, 107. Jan/Feb. [21 ref]

• ***Summary:*** Tempeh was made from bitter lupine and sweet lupine grits (full-fat). The product had a Net Protein Ratio of 1.72, compared with 3.98 for casein, and a digestibility of 86-88%. Fried lupine tempeh was well accepted by a Chilean taste panel. "... these results clearly indicate that lupine tempeh has a potential as a food for the Chilean population." Address: Instituto de Nutricion y Tecnologia de los Alimentos, INTA, Universidad de Chile, Casilla 15138, Santiago 11, Chile.

2342. Mulyowidarso, Robert K.; Fleet, G.H.; Buckle, K.A. 1989. The microbial ecology of soybean soaking for tempe production. *International J. of Food Microbiology* 8(1):35-46. Feb. [27 ref]

• ***Summary:*** "Soybeans soaked in tap water for 26 to 36 hours at 20, 30 or 37ºC underwent a natural fermentation that was characterized by the growth of microorganisms to 100 million to 10,000 million colony forming units (cfu) per ml (depending on the temperature) and a reduction of pH from 6.5 to 4.5. *Lactobacillus casei, Streptococcus faecium, Staphylococcus epidermidis* and *Streptococcus dysgalactiae* dominated the fermentation but, significant contributions were also made by *Klebsiella pneumoniae, Klebsiella ozaenae, Enterobacter cloacae, Enterobacter agglomerans, Citrobacter diversus* and *Bacillus brevis,* and the yeasts *Pichia burtonii, Candida diddensiae* and *Rhodotorula rubra.* Fermentation of surface-decontaminated beans in sterile water with pure cultures of these isolates showed *L. casei, Strep. faecium* and *Staph. epidermidis* to be the main species responsible for the pH reduction. Soybeans were the main source of microorganisms for the fermentation. Boiled beans did not undergo an acid fermentation." Address: Dep. of Food Science and Technology, The Univ. of New South Wales, Kensington, NSW, Australia.

2343. Tenpe Kenkyushu-kai. 1989. Dai ikkai Tenpe Kenkyû shûkai: Kôen yôshi [Tempeh Research Society: First meeting lecture outline]. Kobe Park City 2-1110, 6-2-1 Minatojima, Chuo-ku, Kobe 650, Japan. 5 p. [Jap]

• ***Summary:*** The first meeting took place on 25 Feb. 1989 at the offices of the Yuki-jirushi (Snow Brand) Milk Co. in Shinjuku, Tokyo. Three talks on tempeh were presented: Yasuko Torii, a natural foods expert, presented "Report on the Natural Foods Expo: Soyfoods in America and Australia," focusing on the Anaheim Expo (April 1988) with its Soyfoods Pavilion and tempeh. Noriyuki Okada of the National Food Research Inst. (Tsukuba) discussed "Searching for the origin of useful genes." And Toshiie Maeda of Hyogo prefecture talked about "Revitalizing a village with a tempeh industry."

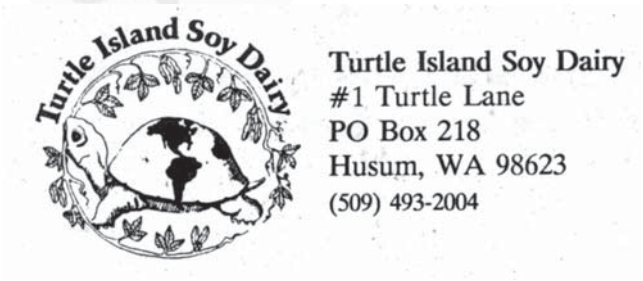
The second meeting took place on 24 June 1989 in Osaka. Masahiko Terajima of Fuji Oil Co. Research Dept. spoke on "The present status of soy protein and soy protein foods in Japan." Eihachiro Kato of Meiji Univ. discussed "Low-pressure frying of tempeh." And Nobu Kawabata of Kyoto City Univ. spoke on the "Okara tempeh and its usage." Address: Kobe, Japan. Phone: 078-302-7065.

2344. *Voice of the Turtle* (*Husum, Washington*).1989. A brief history of Turtle Island Soy Dairy. 1:1. Feb.
• ***Summary:*** This is first issue of the Newsletter of Turtle Island Soy Dairy (see next 2 pages). "Turtle Island was founded by Seth Tibbott on December 1, 1980 in Forest Grove, Oregon. Seth had been making tempeh for family and friends for two years" starting [in the summer of 1977] in Tennessee.

"Hope Co-op Cafe: Seeing that no one was making the product in Portland and that his tasted better than the commercial varieties on the market, Seth quit his job as a naturalist and set up shop in the kitchen of the cafe at Hope Coop in Forest Grove. The cafe was open from 11 am to 4 pm and the tempeh shop was open from 4 pm on (sometimes all night). It had it's drawbacks and many a night Seth spent crashed out in the day care pen while he waited for that last batch to ripen. In the end, those long nights allowed Seth to take his product from a hobby to a business with a minimal investment of 2,000 dollars.

"In the early days tempeh was very new to the natural food market and sales grew quickly. For Thanksgiving that year, (1981), Seth created the nation's first multi-grain tempeh calling it Five Grain Tempeh. When nearly every other manufacturer in the country followed suit, he knew he was onto something.

"Seth then took on four new partners, Belinda Hanley,




Voice of the Turtle
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Alex Lyon, and two silent partners. Alex, the George Washington of American Tempeh, was largely responsible for bringing the product out of the scientific journals and into the production kitchens.

"On to Husum: In 1982, Seth approached the White Salmon School board about renting out the vacant school building in Husum, Washington. Husum is a small town of about 200 in the White Salmon River Valley, 65 miles east of Portland, Oregon. When the board accepted his offer (after a snack of tempeh salad), Turtle Island moved into the 10,000 square foot facility. In many ways it was the perfect home. The location, an hour and a half drive from a large urban area, assured the turtles that their products would be made with plenty of fresh air and clear water. (Seth had read that in Indonesia, the best tempeh came from the mountain regions, so he figured that the same might apply here.) The area also met Seth's personal desire to live and do business from a rural base.

"Here, on the banks of the White Salmon River (designated a National Scenic River in 1986), Turtle Island has prospered. Since moving here 6 years ago, sales have increased on the average of about 20% a year. Turtle Island has become a major social and commerce center in the valley."

"Turtle Island currently makes tempeh six days a week. Since it is a two-day process we put in batches on Monday, Wednesday and Friday and harvest on alternating days. One day a week we load up a truck with our products and drive to Portland, Oregon where we ship to distributors from Los Angeles to Seattle. Turtle Island is the leading manufacturer of tempeh products in the Pacific Northwest. We take great pride in making high quality tempeh from our rural locale. It's a little more inconvenient, but a lot more satisfying."

The newsletter goes on to note that as of 1 Nov. 1988 all of the company's products are sold in 100% recyclable plastic. Sloppy Joe Tempeh and Meatless Country Stew were launched on 25 Feb. 1988. Tests show that Turtle Island Tempeh contains 2.5 to 5.4 micrograms of vitamin B-12 per 4 oz portion.

Talk with Seth Tibbott. 1990. During 1989 the company almost doubled its production by creating a few new products and getting into new markets via a few new distributors. They have now outgrown their building. This year has been one of slower but steady growth. Over 3 years the average growth has been about 30% a year. They are now making 2,000 to 3,000 lb/week of tempeh. Their basic promotional vehicle is in-store demos. Address: #1 Turtle Lane, P.O. Box 218, Husum, Washington 98623. Phone: 509-493-2004.

2345. Calvert, Ken. 1989. Utilisation of low grade wheat. Report on laboratory production of tempeh in Southland. Renertech, R.D. 2, Winton 9662, New Zealand. 3 p. March 20. Unpublished manuscript.
• ***Summary:*** Dr. Richard Beyer at Otago Univ. in Dunedin suggested that waste of low grade wheat and breadcrumbs might be minimized if they were made into tempeh. An Indonesian student of his had made tempeh from these substrates. Soy Foods of Christchurch makes commercial soy tempeh. Calvert has spent the last 3 months 4-8 hours/week using a variety of locally grown materials to make tempeh. Address: Winton, New Zealand.

2346. Ashenafi, Mogessie; Busse, Martin. 1989. Inhibitory effect of *Lactobacillus plantarum* on *Salmonella infantis, Enterobacter aerogenes* and *Escherichia coli* during tempeh fermentation. *J. of Food Protection* 52(3):169-72. March. 1 fig., 4 tables. [20 ref]
• ***Summary:*** Lactic acid bacteria have long been used in food fermentations to improve flavor and palatability, to preserve foods and to suppress undesirable microorganisms by lowering the pH of the food. "Inoculation of unacidified soybeans with *L. plantarum* at a level of 10^6 per gram resulted in a complete inhibition of the 3 tests organisms which are known to cause food poisoning. Even a much lower level of inoculation (10^2 per gram) was enough to show a complete inhibitory effect. Conclusion: "The lowering of the pH in fermenting [soy] beans by *L. plantarum* might have played a role in the destruction of the test microorganisms. Address: Bakteriologisches Institut, Sueddeutsche Versuchs- und Forschungsanstalt fuer Milchwirtschaft Weihenstephan, Technische Universitaet Muenchen, 8050 Freising, Weihenstephan, Germany.

2347. Colbin, Annemarie. 1989. The natural gourmet: Delicious recipes for healthy, balanced eating. New York, NY: Ballantine Books. x + 325 p. March. Illust. by Laura Hartman Maestro. Index. 24 cm. [16 ref]
• ***Summary:*** Pat McNees of *The Washington Post* has called Annemarie "The Julia Child of natural foods cooking." Her photo, in color, graces the cover. The book incorporates "The Five Phases of Food" theory from China, based on a book by John W. (Jack) Garvey (1983), as an aid to meal balancing. Below each recipe name is given the major phase and minor phase that it represents. Soybeans, tofu, tempeh (as well as brown or white rice and mochi) are metal (declining state), while black soybeans are water (maximum rest before growth).

Page 27 notes: "You will not find any recipes in this book with whole soybeans; I find their taste too unpleasant, and tend to believe some research that indicates they may contain oxalates and other elements that prevent nutrient absorption. Soybean products such as miso, shoyu (the natural soy sauce made with wheat), tamari (a wheat-free natural soy sauce), tofu, and tempeh, on the other hand, are delicious; tofu and tempeh are good protein sources when combined with the grains. You will also find the condiments miso and shoyu or tamari used in many of the recipes."

Soy-related recipes include: Black and white aioli dip (with tofu, p. 49; Note: "Aioli" is derived from the French words for "garlic" + "oil." Aioli sauce is made from crushed garlic, egg yolks, olive oil, and lemon juice). Tofu and spinach turnovers (Spanakopitas, p. 66-67). Bean-of-the Orient miso soup (p. 74-75). Shoyu consommé with enoki mushrooms (p. 77). Collard miso soup (p. 78-79). Carrot-beet soup with tofu sour cream (p. 83-84). Tofu sour cream (p. 84-85). Baked [kidney] beans with miso and apple butter (p. 136). Vegetable-tofu sauté (p. 154-55). Tofu mushroom stroganoff with bulgur (p. 155). Tofu sour cream (p. 156). Broccoli-tofu quiche with wild mushrooms (p. 157-58). Open herbed tofu sandwiches (p. 158-59). Tempeh with shallots and white wine (p. 160-61). Tempeh in sweet and sour sauce (p. 161-62). Tempeh with creamy horseradish sauce (p. 163). Stir-fried bak choy with marinated tofu (p. 169-71). Green peppers with miso (p. 182-83). Spinach-nori rolls with tofu and wild mushrooms (p. 186-87). Green salad with miso-coriander dressing (p. 203). Red and white cabbage salad with miso-onion dressing (p. 208). Radish-watercress salad with soy-sesame dressing (p. 209; with ½ tablespoon black sesame seeds and ¼ cup toasted sesame oil). Salad of wilted collard greens with yellow peppers and white miso dressing (p. 210). Spiced glazed pears with tofu cream (p. 271-72). White miso and orange dressing (p. 285).

Note: This is not a vegetarian cookbook. There is a chapter of fish recipes, and other recipes for the use of alcoholic beverages/seasonings (wine, mirin). Address: Founder and director, Natural Gourmet Cookery School / Inst. for Food and Health, 365 West End Ave., New York City, NY 10024.

2348. GEM Cultures. 1989. Catalog [Mail order]. 30301 Sherwood Rd., Fort Bragg, CA 95437. 4 p. March. [4 ref]
• ***Summary:*** Contents: 1. Powdered cultures for soycrafters: Powdered starter cultures for tempeh, miso, amazake, shoyu, and tamari. In home and commercial sizes. Rice koji. 2. Cookbooks with culture (lists 4 books). 3. Coagulants for curding tofu: Natural nigari or Terra Alba calcium sulfate in 1 lb or 5 lb bags. 3. Self renewing cultures: Viili, sourdough, kefir, miso. 4. Sea vegetables from the Mendocino Sea Vegetable Co. 5. Recyclables: Cheesecloth, super sealers (lids).

"We at GEM Cultures are a husband and wife team, Gordon & Betty, with between us 37 years of professional experience in culturing microorganisms and teaching people about them. In 1980 we set up GEM cultures with the goal of providing dependable, low cost cultures and related items for the growing number of people who wish to have a hand

in creating a healthier diet through cultured foods." Address: Fort Bragg, California. Phone: 707-964-2922.

2349. Harayama, Fuminori; Yasuhira, Hitomi. 1989. *Aspergillus*-zoku to *Rhizopus*-zoku no kakushu kôso kassei no hikaku [Comparison between several hydrolytic enzyme activities of the genus *Aspergillus* and those of *Rhizopus*]. *Shinshu Miso Kenkyusho Kenkyu Hokoku* (*Report of the Shinshu-Miso Research Inst.*) No. 30. p. 100. [Jap] Address: Shinshu-Miso Research Inst., 469-6 Nakagosho, Nagano-shi, Nagano-ken 380, Japan.

2350. **Product Name:** Barbeque Chili with Tempeh.
Manufacturer's Name: Homestyle Foods (Formerly Sonoma Specialty Foods).
Manufacturer's Address: 2317 Bluebell Dr., Santa Rosa, CA 95401. Phone: 707-525-8822.
Date of Introduction: 1989. March.
Ingredients: Tempeh (organic soybeans*, culture), tomatoes, onions, soy oil, mustard, lemon juice, molasses, tamari, apple cider vinegar, natural herbs and spices. * Made in accordance with California H&S Code 26569.11.
Wt/Vol., Packaging, Price: 8 oz plastic tub.
How Stored: Refrigerated.
New Product–Documentation: Label. 1989. 4.5 inches diameter. Plastic lid. Red and black on white. Illustration of a cottage. "Microwaveable. New! Non-dairy. Cholesterol free. Heat or ready to eat in sandwiches & salads as an entree. Natural. No preservatives. Nutritious. Delicious. Kosher."

Talk with Benjamin Hills. 1989. June 6. The product was launched in March. He is now working on a Tropical Pudding. The company seems to be going downhill.

Product served at World Vegetarian Day in San Francisco. 1990. Oct. 6. Note that Homestyle's products are now made by White Wave in their plant at 1990 N. 57th Ct., Boulder, Colorado.

2351. Okada, Noriyuki. 1989. Role of microorganisms in tempeh manufacture–Isolation of vitamin B-12 producing bacteria. *JARQ* (*Japan Agricultural Research Quarterly*) 22(4):310-16. March. [12 ref. Eng]
• ***Summary:*** The vitamin B-12 content of tempeh made in Indonesia was found to be 4.6 micrograms (mcg) per 100 gm fresh weight, much higher than any other vegetarian food tested. But this was based on one sample transported slowly from Indonesia to Japan and its smell was no good when the value was measured. A sample brought quickly from Indonesia with good smell contained 0.7 mcg/100 gm. A sample prepared in Japan with tempeh starter from Indonesia contained only 0.05 mcg. And tempeh prepared in Japan with *Rhizopus oligosporus* NRRL 2710 contained 0.03 to 0.06 mcg/100 gm. Other vegetarian foods containing significant amounts of vitamin B-12 were thua-nao (Thailand) 1.5 mcg and fermented tofu (Singapore, also called Sufu) 1.1 mcg. Flesh-based foods with a high B-12 content included Ka-pi shrimp paste (Thailand) 5.3 mcg, fermented shrimp (Thailand) 2.5 mcg, and fish sauce, 3 month fermentation (Thailand) 2.4 mcg. The vitamin B-12 in vegetarian foods is produced by the fermentation process and it increases during fermentation. Flesh foods contain their own B-12. The daily requirement of vitamin B-12 for adults is estimated to be 3 mcg.

Bacteria that produced vitamin B-12 in tempeh were isolated and identified. The most prolific producer was *Klebsiella pneumoniae,* which had a maximum relative B-12 productivity of 1350. All prolific producers were members of the genus *Klebsiella* but some *Bacillus* species also produced B-12. The author suggests that intraspecific cell fusion techniques might be used to transfer this ability to *Bacillus natto,* the natto bacterium, which is presently unable to produce vitamin B-12. Address: Dep. of Applied Microbiology, National Food Research Inst., Tsukuba, Ibaraki 305, Japan.

2352. Tüncel, G.; Nout, M.J.R.; Rombouts, F.M. 1989. Effect of acidification on the microbiological composition and performance of tempe starter. *Food Microbiology* 6(1):37-43. March. 3 tables. [19 ref. Eng]
• ***Summary:*** The microbiological quality and the acceptance of tempeh are influenced by the initial lactic fermentation of the substrate (rice, soybeans) and by the addition of certain lactic bacteria to the fermentation. Address: Dep. of Food Science, Agricultural Univ., Wageningen, Netherlands. G. Tünzel is presently at: Faculty of Engineering, Ege Univ., Izmir, Turkey.

2353. Brown, Judy; Bates, Dorothy R. 1989. Judy Brown's guide to natural foods cooking. Summertown, Tennessee: The Book Publishing Co. 160 p. Index. With 8 pages of color photos. 23 cm.
• ***Summary:*** This natural foods, vegan cookbook, which does not require the use of dairy products or eggs, includes more than 200 recipes, many of which contain soyfoods. In the chapter titled "The Natural Foods Pantry" is a sub-chapter titled "Soy Foods," which gives brief introductions to tofu, tempeh, miso, soy milk, soy cheeses, soy yogurt, soy flour, and soy pulp or okara. There are also sub-chapters on sea vegetables, sprouts (including soy sprouts), organic foods, macrobiotics (which is "heavily emphasized in this book"), more natural foods ingredients (which, under soy sauce, discusses the differences between shoyu and tamari).

The number of recipes featuring various soyfoods are: Tofu (15), tempeh (5), miso (4), soymilk (1), shoyu (1), and okara (1; soysage).

The author, a specialist in consumer education, presently organizes culinary carnivals and natural foods tasting fairs. She has written extensively on natural foods and holds a Master's degree in Consumer Economics from the Univ.

of Maryland. She is president of Judy Brown Enterprises, a public relations company for natural foods products. Address: 9 Dovetree Court, Indian Head, Maryland 20640. Phone: 301-753-6548.

2354. Flinders, Carol. 1989. Tofu and tempeh: Back to basics. *Vegetarian Times.* April. p. 76, 78-79.
• ***Summary:*** An introduction with six recipes. Address: Petaluma, California 94952.

2355. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Le Caméléon.
Manufacturer's Address: 12 place de Lenche, 12002–Marseille [Marseilles], France. Phone: 91-56-69-71.
Date of Introduction: 1989. April.
New Product–Documentation: Letters from Girard and Marie Forgue. 1989 Nov. 19. and 1990 Jan. 15. They own this macrobiotic restaurant that started making its own tempeh in April 1989. They now sell their tempeh at the restaurant and at 2-3 other places, and plan to expand the scale of production. They live at 154 boulevard de la liberation, 13004–Marseille. Phone 91-48-20-54.

2356. **Product Name:** Sloppy Joe Tempeh, and Tempeh Chili. Renamed Vegetarian Sloppy Joe, and Vegetarian Chili in about June 1990 (Both still made with Tempeh).
Manufacturer's Name: White Wave, Inc.
Manufacturer's Address: 1990 North 57th Court, Boulder, CO 80301.
Date of Introduction: 1989. April.
Ingredients: Soy rice tempeh (cultured soybeans, water, brown rice), tomato paste, textured vegetable protein (soy flour), green pepper, soy oil, dehydrated onion, soy sauce, water, honey, apple cider vinegar, molasses, spices, garlic powder, salt.
Wt/Vol., Packaging, Price: 15 oz cup. Changed to 10 oz cup. Retail for $2.89 to $3.19 each.
New Product–Documentation: Talk with Steve Demos. 1989. May 13. Sloppy Joe Tempeh, and Tempeh Chili were introduced in April 1989 in 15 oz. tubs. Talk with Lon Stromnes. 1989. May 15. Clarifies names. The White Wave booth, with all its new products and T-shirts, was the hit of the NFM show at Anaheim last April. Soya Newsletter. 1989. May/June. p. 8.

White Wave News. 1991. Vol. 4, No. 1. June. "White Wave debuts new Size Vegetarian Sloppy Joe and Vegetarian Chili." The new size is a 10 oz. reclosable plastic tub. The products are made with diced White Wave Soy Rice Tempeh. Recommended retail price: $1.69 to $2.19.

Letter from Lon Stromnes. 1991. July 30. The new 10 oz package was launched in June 1991. White Wave color postcard. 1992. Aug. "Think fast. For no-meat heat & eat, we serve the All-American favorites. Vegetarian Sloppy Joe. Vegetarian Chili. All the sizzle... None of the steak." The product appears to be sold in a red plastic tub, like tofu.

2357. **Product Name:** Tempeh Barbecue.
Manufacturer's Name: White Wave, Inc.
Manufacturer's Address: 1990 North 57th Court, Boulder, CO 80301. Phone: 303-443-3470.
Date of Introduction: 1989. April.
Ingredients: Soy tempeh (cultured soybeans, water), tomato paste, soy oil, honey, soy sauce, water, molasses, concentrated lemon juice, onion powder, granulated garlic, spices, salt. Our soybeans are organically grown in accordance with Section 26569.11 of the California Health and Safety Code.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Talk with Steve Demos. 1989. May 13. These tempeh products were introduced in April 1989. Talk with Lon Stromnes. 1989. May 15. Clarifies names. The White Wave booth, with all its new products and T-shirts, was the hit of the NFM show at Anaheim last April. Label. 1989. April. Black, white, and yellow on red. "All the sizzle... None of the steak."

Soya Newsletter. 1989. May/June. p. 8.

2358. Wood, Rebecca. 1989. Quinoa the supergrain: Ancient food for today. New York, NY: Japan Publications Inc. Distributed by Kodansha International USA/Ltd. 202 p. April. Illust. Index. 26 cm. [51 ref]
• ***Summary:*** Quinoa (pronounced KEEN-wa; scientific name *Chenopodium quinoa* Willd.) originated in the *altiplano,* the high plains of the Andes in Peru and Bolivia. It was called the "mother grain" by the ancient Incas. The protein content of quinoa seeds ranges from 7.5% to 22.1%. The two men most responsible for creating a quinoa market in the USA are Stephen Gorad and Don McKinley of the Quinoa Corporation in Boulder, Colorado.

Note: *Webster's Dictionary* defines quinoa (derived from Spanish, via the Quechua *quinua;* the term was first used in 1625) as "a pigweed (*Chenopodium quinoa*) of the high Andes whose seeds are ground and widely used as food in Peru."

Chapter 8, "All about cooking quinoa," contains many recipes. A number of these use soyfoods, including natural soy sauce or tamari (p. 65): Star canapés with tofu-caper topping (p. 88-89). Noodle salad with fresh soy mayonnaise (with soymilk, p. 110). Tofu, quinoa, and dulse salad (p. 114-15). Sweet and sour quinoa tempeh (p. 129-30). Address: Crestone, Colorado.

2359. Ridenour, Jeremiah. 1989. Recent developments at Wildwood Natural Foods (Interview). *SoyaScan Notes.* May 4 and 7. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Wildwood is now a distributor, carrying 80

products including about 30 of their own products based on soy, plus amazake, mochi, salsa, rocket cheese, and juices, etc. They claim to be the only full-service distributor in the Bay Area. With their 11 trucks (from Wildwood North) they deliver their own products directly to northern California stores–including Safeway supermarkets–rather than going through the central Safeway warehouse. They stock the shelves, set their own retail prices, have a vendor number in Safeway's computer, have bar codes on some products, yet do all this without paying any slotting allowances. Service and quality are considered to be the keys to success. A number of these products are now in 30 California Safeway supermarkets; the salsa played a key role in getting them in. The company got into its first supermarket about 18 months ago. At the Safeway in Lafayette, California, 9 products are sold in the dairy case, between the yogurt and cottage cheese, and the bacon. In some stores they have 8 feet of shelf space.

"We go in with confidence. We just say 'either we get this or we don't come in. We know your customers want no-cholesterol, low-fat foods, don't they?' And the buyers are forced to agree with us, but they don't even know what we are selling. We tell them 'This is it. This is the best on the market. Its the freshest. We'll deliver. What more can you ask for?' At the Mission Safeway in Santa Cruz, we do about $800 to $900 a week. They have let us put in our own refrigerated case, titled Wildwood Natural Foods, as have two other stores, in premium spots such as right next to the dairy case or end of aisles. We started by getting in anywhere, even in the produce section. Then after we were in, we'd explain that we didn't want to be in produce since it was too warm and was a risk to both parties and consumers. So we asked for 2 feet in the dairy case. When sales were good there we went back and told them, 'Look, we've got this whole line of products.' Some agreed to let us try it; others didn't."

Wildwood can no longer produce all the tofu they need for second generation products, so they buy some tofu from Gary Stein at San Diego Soy Dairy. Wildwood Santa Cruz, Wildwood Fairfax, and Monterey Bay Soyfoods (the tempeh company) are three separate companies. All three use about 350 acres x 30 bu/acre x 60 lb/bu = 630,000 lb/year of Vinton soybeans. They get about 1.6 to 1.8 lb of firm tofu from 1 lb of these soybeans, thus about 20,000 lb/week of tofu. They make only nigari tofu, none with calcium sulfate. Their main problem in making tofu is the curding step. The main variable affecting curding is the soybean variety. Wildwood Santa Cruz has 40 employees, which are the equivalent of 20 full-time employees. A major problem is rapid growth, which they now control by raising prices. There is lots of duplication of managers, equipment, etc. between Wildwood north and south.

Note: Soyfoods Center has heard from a source that asked not to be mentioned that Wildwood's gross sales are presently estimated to be $5 million a year. Two-thirds of that is estimated to come from products the company sells but does not make, such as Mrs. Wiggly's juices, Rademacher's sandwiches, solar tacos, salsa, etc. They try very hard to get an exclusive on everything they distribute. Address: Santa Cruz, California. Phone: 408-476-4448.

2360. Library of Congress, Subject Cataloging Div., Processing Services. 1989. Library of Congress subject headings. 12th edition. Washington, DC: Cataloging Distribution Service, Library of Congress. 3 volumes.
• ***Summary:*** This 12th edition (LCSH 12) contains approximately 173,000 headings established by the Library through Sept. 1988. The book was available on 3 May 1989. Approximately 10,000 headings were added since the 11th edition in 1988. Among these headings are 139,000 topical subject headings, 22,000 geographic subject headings, 10,000 personal names (incl. 9,000 family names), 2,600 corporate headings. This book should be used with the Subject Cataloging Manual (1989. 3rd ed.).

These subject headings have been accumulated by LC since 1898 and the first edition of LCSH was printed between 1909 and 1914. Subject headings are listed in boldface type. Approximately 40% of headings are followed by LC class numbers, which are added only when there is a close correspondence between the subject heading and the provisions of the LC classification schedules.

References show the relationship between terms: (1) The equivalence relationship: Use of UF (Use for) references. (2) The hierarchical relationship: Broader terms (BT) and narrower terms (NT). BT and NT function as reciprocals. A term appearing as a BT must be matched by the reversed relationship as an NT (e.g., Motor Vehicles. BT Vehicles. NT Trucks). (3) The associative relationship: Related terms (RT. Ornithology. RT Birds). May Subd Geog (MSG) = May subdivide geographically. Soy related subject headings, listed alphabetically, are:

Fermented soyfoods (MSG). BT Food, Fermented. Soyfoods. NT Fermented soymilk. Miso. Natto. Soy sauce. Tempeh.

Fermented soyfoods industry (MSG). BT Soyfoods industry. NT Miso industry. Nattô industry. Soy sauce industry. Fermented soymilk (MSG). BT Fermented soyfoods. Soymilk.

Hydrogenation [QD281.H8]

Information storage and retrieval systems–Soyfoods.

Lecithin [QP752.L4 (Physiology), or RM666.L4 (Therapeutics)]. UF Phosphatidylcholine. BT Phospholipids. NT Lysolecithin. Also: Lecithinase.

Margarine (MSG) [TP684.M3 (Manufacture)]. UF Butter, artificial, Margarin, Oleomargarine. BT Oils and fats, edible. NT Vanaspati. Margarine industry (MSG) [HD9330. M37-374] BT Oil industries. NT Vanaspati industry.

Meat substitutes [TX838]. BT Food substitutes. Vegetarianism.

Miso (MSG) [TP438.S6 (Manufacture)]. UF Paste, Soybean. Soybean paste. BT Fermented soyfoods. NT Cookery (Miso).

Miso industry (MSG). BT Fermented soyfoods industry.

Nattô (MSG) [TP438.S36 (Manufacture)] [TX558.S6 (Nutrition)]. BT Fermented soyfoods.

Nattô industry (MSG). BT Fermented soyfoods industry.

Natural food restaurants (MSG). UF Restaurants, Natural food. BT Restaurants, lunch rooms, etc. RT Food, Natural.

Natural foods industry (MSG) [HD9000-HD9019]. UF Health foods industry. BT Food, Natural. Note: Natural food (Use Food, Natural). Natural food cookery (Use Cookery (Natural foods)).

Nonfermented soyfoods.

Nonfermented soyfoods industry.

Shortenings–Use Oils and fats, edible.

Soy ice cream (MSG). Here are entered works on no-dairy frozen desserts in which soy protein largely or completely replaces the dairy proteins. UF Ice cream, Soy. Soymilk ice cream. Tofu ice cream. BT Non-dairy frozen desserts. Nonfermented soyfoods.

Soy ice cream industry (MSG) [HD9330.S63-HD9330.S633]. BT Nonfermented soyfoods industry.

Soy sauce (MSG) [TP438.S6 (Manufacture)]. [TX407.S69 (Nutrition)]. UF Sauce, Soy. Soy. Soya Sauce. BT Fermented soyfoods. NT Cookery (Soy sauce).

Soy sauce industry (MSG) [HD9330.S65-HD9330.S653]. BT Fermented soyfoods industry. NT Strikes and lockouts–Soy sauce industry.

SOYA (Information retrieval system [SoyaScan from Soyfoods Center]) [Z695.1.S68]. BT Information storage and retrieval systems–Soyfoods.

Soybean (MSG) [QK495.L52 (Botany)]. [SB205.S7 (Culture)]. UF Glycine max. Soja bean. Soja max. Soy-bean. Soya. Soya bean. BT Beans. Forage plants. Oilseed plants.

Soybean–Diseases and pests (MSG). NT Diaporthe phaseolorum. Heterodera glycines [Nematodes]. Soybean mosaic disease. Soybean rust disease.

Soybean as feed [SF99.S]. NT Soybean meal as feed.

Soybean flour. UF soya flour. BT Flour. Soybean products.

Soybean glue. BT Glue. Soybean products.

Soybean industry (MSG) [HD9235.S6-HD9235.S62]. BT Vegetable trade. NT Soybean oil industry.

Soybean meal (MSG). UF Soybean oil meal. Soybean oilmeal. BT Meal. Soybean products

Soybean meal as feed [SF99.S]. BT Soybean as feed.

Soybean mosaic disease (MSG) [SB608.S7]. UF Soybean chlorosis. Soybean leaf curl. BT Soybean–Diseases and pests. RT Soybean mosaic virus.

Soybean mosaic virus. BT Plant viruses. RT Soybean mosaic disease.

Soybean oil (MSG) [TP684.S]. UF Bean oil. Chinese bean oil. Soy oil. BT Drying oils. Soybean products.

Soybean oil industry (MSG) [HD9490]. BT Soybean industry.

Soybean oil mills (MSG). BT Oil mills. Soybean processing plants.

Soybean processing plants (MSG). BT Factories. Food processing plants. NT Soybean oil mills.

Soybean products (MSG). NT Soybean flour. Soybean glue. Soybean meal. Soybean oil. Soyfoods.

Soybean rust disease (MSG) [SB608.S7]. UF Rust disease of soybean. BT Fungal diseases of plants. Soybean–Diseases and pests. RT Phakopsora pachyrhizi.

Soyfoods (MSG). [TX401.2.S69 (Nutrition)]. [TX558.S7 (Composition)]. UF Soybean as food. BT Food. Soybean products. RT Cookery (Soybeans). NT Fermented soyfoods. Nonfermented soyfoods.

Soyfoods industry (MSG) [HD9235.S6-HD9235.S62]. BT Food industry and trade. NT Fermented soyfoods industry. Nonfermented soyfoods industry. Soymilk industry.

Soymilk. UF Beverages, Soy. Milk, Soy. Milk, Soybean. Soy beverages. Soy milk. Soybean milk. BT Nonfermented soyfoods. NT Fermented soymilk.

Soymilk industry (MSG) [HD9235.S6-HD9235.S62]. UF Soy milk industry. Soybean milk industry. BT Soyfoods industry.

Tempeh (MSG) [TX558.T39]. UF Bongkrek. Tempe. BT Fermented Soyfoods. RT Cookery (Tempeh).

Tofu (MSG).

Note: Changes in this edition from the 11th edition. Changed: Soybean as food to Soyfoods. Changed: Soybean milk to Soymilk. Changed: Soybean milk industry to Soymilk industry. Added: Soyfoods industry. Added: Fermented soyfoods. Added: Fermented soyfoods industry. Added: Nonfermented soyfoods. Added: Nonfermented soyfoods industry. Added: Fermented soymilk. Address: Washington, DC.

2361. Preisnitz, Heidi. 1989. Between the cracks: Making tempeh a family business–A series of profiles about people who are living the art they believe in. *Natural Life* (*Ontario, Canada*) Spring.

• ***Summary:*** A photo shows "The Noble Bean family: producers of tempeh and growers and distributors of Shiitake mushrooms at their home-based workplace near Elphin, Ontario." All are standing on an old pickup truck.

2362. **Product Name:** Tempeh Lasagna, and Herbal Garden Tofu (With 6 Herbs & Spices in the Curds).
Manufacturer's Name: San Diego Soy Dairy.
Manufacturer's Address: 1330 Hill St., Suite B., El Cajon, CA 92020. Phone: 619-447-8638.
Date of Introduction: 1989. May.
New Product–Documentation: Talk with Gary Stein. 1989. Feb. 17. He expects that these products will be launched

in about Aug. 1989. Talk with Gary Stein. 1989. Oct. 25. Tempeh Lasagna was introduced in May, 1989. It contains Pizsoy soy cheese ($1.60/lb). He also distributes the cheese. He also does a private labelled version for Heart & Soul, as well as own label. Herbal Tofu is expected out by the end of November, 1989. He will soon be putting out an iced herbal tea (non-soy).

2363. Mann, Oscar. 1989. Re: Problems in trying to introduce tofu to Kenya. Letter to William Shurtleff at Soyfoods Center, June 7. 2 p. Typed, with signature on letterhead.
• ***Summary:*** "I was making my own tofu for a while, then supplying friends and now a main deli/grocery in town. It's little known here but sales are steadily growing and are now at around 20 kg/week. I'm also producing soysage and have just begun okara Tempeh."

The main problems are: 1. Very strict government health regulations; all products must undergo strict government testing. 2. Poor quality soybeans and concern with aflatoxins on soybeans. "I have one person whose job it is to sit and sort soaked beans–particularly any that look moldy or infected in any way. We actually discard 20-30% of our raw stock... For some reason Kenya is having a hard time producing soy beans. The market has been low but their main problem is that the beans rot as soon as they are ready, necessitating 2 or even 3 pickings per day! Beans on the market currently come from Uganda or Tanzania and are old. I buy what I can (at around $0.50/lb) and there are never two loads the same which makes control and scientific methodology difficult." 3. Local coagulants are expensive. Lab grade calcium sulfate, the least expensive, costs $1.66/lb. So the cost of producing tofu is about $0.95/lb (with labor costing only $0.50/hour); it wholesales for $1.25 and retails for $1.66/lb. 4. Tofu and other soyfoods are not well known.

"I am holding a tofu-making class this coming week end and will have samples of tempeh and soysage to try. Next is a tofu cooking class, a small recipe book and a soya festival with one of the largest restaurants."

"My analysis of the situation soy-wise here is that probably the most accepted products will be flavored soy milk in tetra bricks, burgers, soysage, and dried frozen tofu for the various hunger and famine-relief projects. (I actually thought I had invented this stuff before finding it in your books. I use it as my main staple on safari and have given samples to trekking companies.) I would like to see a full-scale soy dairy in operation." Address: Kenya Natural Products Development Co., P.O. Box 20360, Nairobi, Kenya. Phone: 60099.

2364. Hesseltine, C.W. 1989. Tenpe bisei-butsu–Rizoopusu-zoku kin ni tsuite [Tempeh microorganisms–On molds of the genus *Rhizopus*]. *Shokuhin Kogyo* (*Food Industry*) 32(12):34-40. [3 ref. Jap]
Address: NRRC, Peoria, Illinois.

2365. Kanasugi, Goro. 1989. Zen-Nô-Ren tenpe jigyô-kô [The Japan National Natto Association's thoughts on the tempeh industry]. *Shokuhin Kogyo* (*Food Industry*) 32(12):41-47. [Jap]
Address: Zenkoku Natto Kyodo Kumiai Rengokai, Fuku Kaicho.

2366. Kimura, Eiichi. 1989. Tenpe ni kansuru bunken kaidai–*Daizu Geppo* keisai kiji no shôkai [An introductory bibliography on tempeh–Documents on tempeh published in *Daizu Geppo*]. *Shokuhin Kogyo* (*Food Industry*) 32(12):48-54. [30 ref. Jap]
• ***Summary:*** Those articles are reprinted here. Address: Shadan hojin, Daizu Kyokyu Antei Kyokai Sha, Daizu Geppo, Henshu-nin.

2367. Life Food. 1989. Taifun Produkte: Preisliste fuer die Gastronomie. Preisliste fuer Wiederverkaufer [Taifun Products: Price list for restaurants, and for retail food stores]. Robert-Bunsen-Strasse 6, D-7800 Freiburg, West Germany. 4 p. [Ger]
• ***Summary:*** One price list is valid until 15 June 1989, and the other until 1 July 1989. On the earlier one for restaurants, Anthony Marrese has written in the year and month each product was introduced, and the amount presently produced per month. Prices are printed for each product: 1 DM equals about $0.50. Address: Freiburg, West Germany. Phone: 0761/50 61 55.

2368. *Prevention* (*Emmaus, Pennsylvania*).1989. The trouble with tempeh. 41(6):44. June.
• ***Summary:*** Tempeh now lacks vitamin B-12, in part because of better testing techniques and in part because the tempeh industry's improved hygienic techniques have destroyed the B-12 carrying bacteria that were once in tempeh. So strict vegetarians [vegans] should take a B-12 supplement.

Note: This is a sidebar in a larger article on vitamin B-12.

2369. Steinkraus, K.H. 1989. Tenpe no seizô–dentô to kindai [Tempeh production–traditional and modern]. *Shokuhin Kogyo* (*Food Industry*) 32(12):20-28. [3 ref. Jap]
Address: Cornell Univ., New York.

2370. Steinkraus, Keith H. 1989. Tenpe ni okeru bitamin B-12 no seisei [Formation of vitamin B-12 in tempeh]. *Shokuhin Kogyo* (*Food Industry*) 32(12):30-32. June. [3 ref. Jap]
Address: Cornell Univ., New York.

2371. Welters, Sjon. 1989. Soyfoods in Europe: Influenced

by a colonial past. *Soya Newsletter* (*Bar Harbor, Maine*). May/June. p. 1, 12-15. [1 ref]

• ***Summary:*** This is a historical overview of the introduction of soyfoods to Europe since 1945. The Indonesians who immigrated to the Netherlands after World War II played a major role in introducing soyfoods (especially tofu, tempeh, and a sweet soy sauce called ketjap) to that country and to Europe. Ketjap was the most popular soyfood in Indonesia. Asian immigrants started small manufacturing companies, restaurants, and importing companies (such as Conimex and Heuschen Schrouff). The macrobiotic movement also played a key role in introducing soyfoods, especially soy sauce, miso, and tofu. In Belgium, the Gevaert family founded Lima and began to make miso on a large scale, but a fire and other financial problems soon forced them to close the plant. Only recently have they started to make miso again.

During the 1970s, especially in Belgium and the Netherlands, inspired by the macrobiotic movement and with information from books by Shurtleff and Aoyagi, a new generation of non-Asian tofu makers emerged. "The first tofu shop in Europe owned and operated by non-Orientals was Manna Natuurvoeding. Opened in Amsterdam in 1977, Manna was a macrobiotic manufacturer, distributor, and retailer run by a non-profit foundation. Soon after opening, Manna was visited by entrepreneurs from Germany, England, Portugal, Denmark, France, Sweden, Austria, and Italy, hoping to learn about making tofu."

During the early 1980s, tempeh was rediscovered. "Yakso Farms in the Netherlands was one of the first non-Oriental companies to produce tempeh, made from organic soybeans, and to process it into spreads, paté, sauces, and marinated products."

In the mid-1980s the focus shifted from production to marketing and to second-generation soyfoods. Most European soyfoods are made with organic soybeans. Address: President, Craft International Consultants, 21 Wetherbee St., Acton, Massachusetts 01720. Phone: 617-264-9511.

2372. Ebata, Junko. 1989. History of Japan's Tempeh Discussion Society and Tempeh Research Society (Interview). *SoyaScan Notes*. July 3. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** The first meeting of the Tempeh Discussion Society (*Tenpe Danwa-kai*) was held on 30 Jan. 1984 at Kyushu University. The most active founding members in the following years were Dr. Tadao Watanabe and Dr. Kiku Murata.

The purpose of the society was to establish a platform for discussion of matters related to tempeh. The first meeting was held at Kyushu University, the second in Tokyo, the third at Osaka Teikoku Joshi Daigaku, the fourth at Marusan-Ai in Okazaki, and the fifth at *Kasuga-cho Shoko-kai* (Hikami-gun, Kasuga-cho, Kuroi, Hyogo-ken). Most of the group's members were affiliated with a university, a food manufacturing company, or a government research laboratory. In 1988 the group changed its name to Tempeh Research Society (*Tenpe Kenkyu-kai*) in order to establish a more formal, research-oriented feeling and to attract new members. The 16 founding members of the new society were: Goro Kanasugi (Takuma-kai), Makio Takato (Takashin Shokuhin), Yasuko Torii (Shizen Shoku Hyoron-ka), Masaharu Horii (Norinsho Sogo Kenkyujo), Teruo Ohta (Fuji Seiyu K.K.), Eiichi Kimura (Daizu Kyokyu Antei Kyokai), Gyo Nikaido and Mikitoshi Iwatsuki (Marusan-Ai K.K.), Hajime Kashio (Nagoya Eiyo Senmon Gakko), Kiku Murata (Teikoku Gaku-en, Kyoiku-ken, Moriguchi City, Osaka), Toshiie Maeda (Tempeh Sonjuku), Machiko Asano (Teikoku Joshi Daigaku), Teijiro Miyamoto (Osaka Shidai), Tadao Watanabe (Torigoe Seifun and Kyushu Univ.), Kazuko Noguchi (Saga Joshi Tandai), Asao Matsuoka (Kassui? Joshi Tandai), and Naokazu Ohta (Kumamoto Joshi Daigaku).

The first meeting under the new name was held on 25 Feb. 1989 in Tokyo. Talks on tempeh were presented by Yasuko Torii, Nobuyuki Okada, and Toshiie Maeda. On 31 Dec. 1988 the Society had 58 members, increasing to 77 by Feb. 1989. During 1989 meetings are planned on June 24 at Osaka City Univ. and on September 1 at Teikoku Joshi Daigaku (Moriguchi city, Osaka prefecture). The group will attend the Second Asian Non-Salt Fermented Soybean Symposium at Jakarta, Indonesia. Address: Prof., Faculty of Science of Living, Osaka City Univ. Sugimoto 3-3-138, Sumiyoshi-ku, Osaka 558, Japan. Phone: 06-605-2811.

2373. Perez Baez, Oswaldo. 1989. Re: New developments with soyfoods in Venezuela. Letter to William Shurtleff at Soyfoods Center, July 10. 3 p. Typed, with signature on letterhead. [Eng]

• ***Summary:*** "In my last visit to Caracas I contacted: Prof. Makie Kodaira and Prof. Amaury Martinez of the 'Instituto de Ciencia y Tecnología de Alimentos, Facultad de Ciencias, U.C.V.' (Universidad Central de Venezuela) who are very interested in offering a theoretical and practical course about soyfoods, using their pilot plant (the second of importance in Venezuela). Prof. Kodaira studied in Hiroshima, Japan in 1977 and she is a specialist on seafoods. They would like the 'Centro de Alimentos de soya de Venezuela' to organize this course.

"I think this is the time to offer in Venezuela a complete course about soyfoods and I have thought to invite you to come to Venezuela. I am thinking about 2 courses:

"(a) One oriented to Institutional level (Instituto Nacional de Nutrición, Fundación Polar, CIEPE, Universidades, Industry, etc.) for professional people. This course could be in Caracas, Instituto de Ciencia y Tecnología de Alimentos, U.C.V.

"(b) Another one oriented to the general public (not necessarily professional level). This course could be here in

La Azulita which is a rural and beautiful place, epicenter of the Venezuelan movement for alternative lifestyles.

"I have thought of the following content for these courses: (1) Soymilk. (2) Tofu. (3) Tofu and soy milk ice cream. (4) Miso. (5) Tempeh. (6) Shoyu.

"I am working on a book about soyfoods, and am enclosing an outline of the contents: I. Introduction. II. Agronomic aspects. III. Soya and food security. IV. The most important soyfoods. V. Industrial potential of the soybean. VI. Bibliography. VII. Index." Address: Ing., Centro de Alimentos de Soya de Venezuela, Granja Tierra Nueva, Aldea San Luis, La Azulita, Estado Merida, C.P. 5102, Venezuela.

2374. Turtle Island update: Plastics and recycling. 1989. P.O. Box 218, Husum, WA 98623. 6 p. July 10. Unpublished manuscript. 28 cm.
• ***Summary:*** Turtle Island started its plastics recycling program in Nov. 1988. The company has gotten an enthusiastic response from the many customers who have sent in plastic tempeh wrappers and requested information on how they could recycle plastics in their home towns. Turtle Island is recycling its plastic wrappers into milk jugs and yo-yos. Contains a directory of national and state (Washington, Oregon, California) organizations involved with recycling, plus suggested reading (books and periodicals). Address: Husum, Washington. Phone: 509-493-2004.

2375. Welters, Sjon. 1989. Re: A brief history of Yakso in the Netherlands. Letter to William Shurtleff at Soyfoods Center, July 24. 1 p.
• ***Summary:*** "Yakso Farms (originally named Jakso Farms) in the Netherlands was founded by Tomas Nelissen in about 1980; he was joined by Peter Dekker in 1982. The organization was basically a farm with several hundred acres of land, upon which was a food processing plant. Yakso was one of the first non-Oriental companies to produce tempeh, starting in early 1982. It was made from organic soybeans

Their fried and marinated tempeh products were introduced in early 1983 and their tempeh spreads in the fall of 1983. The farm part of Yakso was sold and its name and products were taken over by Kees Middelwert, who runs the company now. Initially he ran it from another facility in the province of Groningen, but now is in the process of moving it into a new and much larger facility in Wolvega. He is not the sole owner any more–if he ever was. Frans Andringa, who owns an organic cheese company, invested substantially in the company.

"On 2 July 1989 De Morgenstond, the tofu making company, moved into the same building as Yakso, expanding its production capacity and switching to a Takai high pressure cooker system. De Morgenstond is now owned by Frits Steunenbeg and Mank DenBok."

Sjon adds in March 1990: Yakso is now one of the leading soyfoods companies in the Netherlands. They make a lot of Indonesian-style soyfood products. Tomas Nelissen is now living in Vienna, Austria, making his living by shiatsu. Address: Craft International Consultants, 21 Wetherbee St., Acton, Massachusetts 01720. Phone: 508-264-4011.

2376. Business Trend Analysts, Inc. 1989. The health and natural food market: A product-by-product marketing analysis and competitor profile. 2171 Jericho Turnpike #342, Commack, NY 11725. 280 p. Price $950.00. *
• ***Summary:*** Section 6 of this report is titled "The Market for Soyfoods" (24 pages). It projects 6.2% growth for the soyfoods industry, and contains the following (much of it provided by Soyatech, Inc. and Soyfoods Center): Analysis and summary. Manufacturers' sales of soyfoods. Manufacturers' sales of soyfoods to major outlets. Manufacturers' sales of soyfoods, by type of outlet. The top six soymilk producers in the U.S. U.S. per capita consumption of soymilk. Retail sales of soyfoods. Retail sales of soyfoods at major outlets. Retail sales of soyfoods, by type of outlet. Graph: Product mix of U.S. soyfood sales. Estimated mix of distribution channels used to market various soyfoods. U.S. soybean production. Characteristics of women's use of soy sauce. Quick Tamari tips. Selected 1988/89 new product introductions: Soyfoods.

Under "Report Highlights and Special Features" we read: "Soyfoods continue to gain popularity with mainstream consumers, as sales are expected to top the $380 million mark, at the wholesale level, by year-end. At the retail level, sales of tofu alone are currently pegged at $77 million, with supermarkets capturing close to 60% of dollar volume."

Overall report Contents: 1. Executive summary. 2. The overall market for health and natural foods (including Soyfoods 1979-1988, with forecast to 1998). 3. The market for health and natural dairy foods. 4. The market for health and natural grocery products. 5. The market for health and natural snack food products. 6. The market for soyfoods. 7. The market for health and natural grains and cereals. 8. The market for health and natural frozen foods. 9. The market for herbal products. 10. Distribution channels. 11. Factors affecting demand. 12. Trends in organic farming. 13. Competitor profiles: Alta-Dena Certified Dairy, Arrowhead Mills, Barbara's Bakery, Celestial Seasonings, Golden Temple, San-J International, Thompson Kitchens. Tivall U.S.A./Garden Gourmet, U.S. Mills (partial list). 14. Directory of more than 200 health and natural food producers. Address: Commack, New York. Phone: 516-462-2410.

2377. Coffey, Rory. 1989. Lupins as an energy-rich protein source for feed and food. In: T.H. Applewhite, ed. 1989. Proceedings of the World Congress on Vegetable Protein Utilization in Human Foods and Animal Feedstuffs. Champaign, IL: American Oil Chemists' Society. xii + 575 p.

See p. 410-14.
• ***Summary:*** Contents: Abstract. Introduction. Lupin consumption and usage. Dehulled lupin. Human consumption: Lupin concentrate, miso soup, lupin tempeh, lupin flour.

Miso soup: Although about 200,000 tons of soybeans are used each year in Japan to make miso soup, there is a problem with oxidation, which causes discoloring. The Shinshu Research Institute has investigated the use of lupins as a substitute for soybeans in an attempt to solve this problem. Oxidation does not occur with lupins and to date results have been encouraging. Table 8 shows a sensory evaluation of the two types of miso (high score is more favorable): Color–Lupin 12, soy 0; Taste–Lupin 10, soy 2; Aroma–Lupin 7, soy 5; Texture–Lupin 6, soy 6.

Lupin tempeh: In 1986 an Indonesian company began to investigate the feasibility of using lupins as a substitute for soybeans in making tempeh–with the assistance of the Grain Pool of Western Australia and R. Yu of the Victorian Food Research Institute. Despite some problems at the beginning, the efforts by all 3 parties have proved successful and the Indonesian company is now using a significant tonnage of lupins to make tempeh.

Lupin flour: In 1987, the Grain Pool initiated an evaluation of lupin flour in human food products.

Lupins have been grown and used in Western Australia for over 30 years. After extensive genetic engineering, the composition of the present day varieties is far superior to those grown originally. Over 90% of the lupins grown in Western Australia, and all that are available for export, are varieties from the species *Lupinus angustifolius,* a sweet, white, narrow leaf lupin.

In terms of world lupin production in 1985, Australia has the largest area (606,000 ha), followed by the USSR (280,000), and Europe (148,000). In the USSR and Eastern Europe much of the lupins are grown for forage or green manure; not much grain is harvested. A photo shows R. Coffey. Address: Grain Pool of Western Australia, Grain Pool Bldg., 172 St. George's Terrace, Perth 6000, Western Australia, Australia.

2378. Natufood B.V. 1989. Prijs-bestelboek [Natufood price list and catalog, July-Sept. 1989]. Fahrenheitstraat 18, 3840 BN Harderwijk, Netherlands. 73+ p. [Dut]
• ***Summary:*** This catalog of a Dutch natural foods distributor lists the farming method (organic or not), wholesale and retail prices for each product: Page 8: Witte Wonder tofu spreads (mushroom, chili, green peppercorn, garlic, paprika, celery), Lima Limapast contains sunflower seeds, miso, and soy flour. Page 30. Joannusmolen roasted soy flour. Page 31. Natufood defatted soy flour (sifted). Ad for the Vetara line of ready-to-eat foods, many of which contain TVP. Page 33. Avita soybeans (Avita Natufood's organic food line). Natufood soybeans. Ad from Nutricia for canned powdered infant foods. Nutri-Soja complete infant food based on soy. Nutri-Soja Plus based on soy for infants that have been weaned. Page 34. Nutricia infant formulas: Nutrisoja in 400 gm or 1000 gm and Nutrisoja-Plus in 900 gm. Page 35. Avita little soybeans (regular and large, organic).

Page 36. Witte Wonder soybeans in tomato sauce. Ad for Vetara organic tofu, which is produced by Heuschen-Schrouff B.V. in a completely new facility under extremely sanitary conditions. It is made with organic soybeans with a natural coagulant (Serempi) in the traditional way. "Best quality, lowest price." The product label (250 gm) is shown. Page 37. Refrigerated miso products made in Europe. Lima barley miso and rice miso, both unpasteurized. Page 38. Meat replacers. Seitan is sold by Vetara, Witte Wonder, Yakso, and Manna. Vetara herb tofu, Napolitan tofu, rice tofu, bali tofu, rames tofu, rames tempeh, Tjap Tjoy. Witte Wonder tofu in curry/pineapple sauce, and in peanut sauce. Ad for Vetara vegetarian burgers, frankfurters, and schnitzels.

Page 39. Soya meat replacers and vegetarian mixes: Lists 11 Vetara products based on or containing TVP (textured soy flour) or HVP (hydrolyzed vegetable protein). Nutana meat replacers (9 products). Jonathan natural tofu. Cenovis and Huegli bouillon tablets (14 types, probably contain miso). [Sjon Welters adds that Huegli, a multi-million dollar Swiss food company, owns a major part of Natufood B.V.]. Western bouillons (Miso): Lima barley and rice misos. Heiwa Hatcho miso and instant miso soup. Huegli ad.

Page 42. Vegetarian refrigerated products: Vetara smoked tofu, natural tofu (EKO mark), saté tofu, vetaburgers with pineapple, with cheese & onion, natuburgers. Soyadrinks and desserts: Provamel (8 drinks and 6 desserts [puddings]). Lima (3 drinks).

Page 43. Seasonings: Vetara sweet soy sauce (Ketjap zoet). Yakso sweet soy sauce (Ketjap manis). Soy sauce. Lima shoyu (orange label) and tamari (blue label). Heiwa shoyu and tamari. Vetara shoyu. Page 44. Witte Wonder organic tofu dressings (Italian, Mexican, Garden herbs, or Natural). Mayonnaise and Tofunaise: Witte Wonder organic tofunaise (regular or with lemon).

Page 52. A. Vogel products: Vogel Sojaforce. Page 67. Natufood non-organic soynuts (natural, paprika, curry, or onion). A photo of the soynuts is given at the bottom of the page. Page 69. Non-organic soynuts in bulk (same 4 flavors as page 67). Page 73. Bulk defatted soy four, and soybeans (organic or non-organic). Ad for Vetara Vegetable Bouillon, which probably contains soy. Address: Harderwijk, Netherlands. Phone: 03410-23240.

2379. **Product Name:** [Vetara Tempeh Rames, and Tjap Tjoy (Indonesian-Style)].
Foreign Name: Vetara Tempeh Rames, Tjap Tjoy.
Manufacturer's Name: Natufood B.V.

Manufacturer's Address: Fahrenheitstraat 18, 3840 BN Harderwijk, Netherlands.
Date of Introduction: 1989. July.
Ingredients: Organic.
Wt/Vol., Packaging, Price: 325 gm.
New Product–Documentation: Natufood Catalog. 1989. July/Sept. p. 38.

2380. **Product Name:** Soy Deli Tofu Burgers [Barbecue Style, Cajun Spice, Curry Spice, Garden Style, Italian Spice, Original, Taco Spice, Tofu-Tempeh, or Teriyaki].
Manufacturer's Name: Quong Hop & Co.
Manufacturer's Address: 161 Beacon St., South San Francisco, CA 94080. Phone: 415-873-4444.
Date of Introduction: 1989. July.
Wt/Vol., Packaging, Price: 6.1 oz.
How Stored: Refrigerated.
New Product–Documentation: Ad, quarter page black-and-white, in Whole Foods. 1989. Sept. p. 132. "Make a healthy choice. New! From Soy Deli. The original organic tofu burger. Nine organic meals in a minute. Strengthen your health food line with the nine new international flavors of Soy Deli organic tofu burgers. All natural ingredients, no preservatives, made from the finest nigari tofu. Pre-cooked with a delicious blend of natural spices. Simply heat and serve, or add to your favorite recipes in place of meat. Good shelf life. High protein, low sodium, no cholesterol, meat or dairy products. Refrigerated or frozen." A photo shows the label. Note: Quong Hop & Co. first introduced a tofu burger in Jan. 1979.

Talk with Ben Lee of Quong Hop. 1989. Sept. 1. These products were launched in July 1979. The full-color label is printed using a 6-color process. The company hopes the new product will make the transition to the typical deli case in delis; they are not shooting for the deli case in supermarkets. Soyfoods Center product evaluation. 1989. Sept. 9. So-so. Quite dry and crumbly, not juicy. Poor cohesiveness. No instructions for cooking in microwave oven. Flavors are okay, but what is the need for so many? It is not clear whether or not the product is fried.

Spot in Whole Foods. 1989. Nov. p. 83. Available in 9 international flavors. "The burgers are pre-cooked in high-oleic safflower [oil]... contain no meat or dairy products." Ad (5 by 7 inches, black and white) in Whole Foods. 1990. Feb. p. 36. "Make a healthy choice. New! From Soy Deli. Nine organic meals in a minute." Lists the 9 flavors.

2381. Winarno, F.G. 1989. Production and utilization of tempeh in Indonesian foods. In: T.H. Applewhite, ed. 1989. Proceedings of the World Congress on Vegetable Protein Utilization in Human Foods and Animal Feedstuffs. Champaign, IL: American Oil Chemists' Society. xii + 575 p. See p. 363-68. Contains 1 table and 2 pictures. [18 ref]
• ***Summary:*** Contents: Abstract. Introduction. Tempeh. Tempeh making: Microorganisms involved, starter for tempeh production. Tempeh preparation: Traditional, pilot plant production, losses and yields. Utilization and storage stability: Harvesting and storage. Tempeh in Indonesian foods: Nutritive value, storage stability. Problems of contamination.

"The total annual consumption of tempeh is about a half million tons... Most of the 41,000 cottage industries that make fresh tempeh daily are family run and employ about 128,000 workers. Each small cottage industry employs about three workers and uses approximately 11 lb (5 kg) of dry soybeans per day to produce 21 lb (10 kg) of fresh tempeh. The large cottage industries employ 10 to 20 workers and use 600 to 1,100 lb (500 kg) of dry soybeans per day to produce tempeh. The average retail price of tempeh is about US $0.25 per kg (1)." A photo shows F.G. Winarno. Address: Food Technology Development Center, Bogor Agricultural Inst., Kampus Darmaga, P.O. Box 61, Bogor, Indonesia.

2382. *SoyaScan Notes.* 1989. Brief history of Witte Wonder in the Netherlands (Overview). Aug. 12. Compiled by William Shurtleff of Soyfoods Center.
• ***Summary:*** The main sources of this information are letters from and interviews with Sjon Welters and Richard Leviton. In 1979 a non-profit natural foods foundation called Stichting Natuurvoeding den Haag was started by Cees van Rest as the framework within which to start a store that sold natural and macrobiotic foods. Many of the early Dutch natural food companies were set up as non-profit foundations based on the idea and model started by Manna (Stichting Natuurvoeding Amsterdam). The foundation was governed by a board of directors, in which van Rest and his father and wife played key roles. The store was located at Piet Heinstraat 80, 2518 CK Den Haag (The Hague). The foundation soon decided to expand its activities from retailing to include food manufacturing. So it established Witte Wonder Products as its food manufacturing division and registered Witte Wonder as its brand. For a logo, they used an illustration of a traditional tofu master taken from *The Book of Tofu* by Shurtleff and Aoyagi. In April 1981 they began to make 100 kg/week of tofu and tempeh, plus seitan, in the back of the retail store. In Nov. 1983 Nico van Hagen and his wife Loes Witteman were the principal tofu makers. They made 900-1,200 kg/week of tofu, plus 500 kg/week of seitan.

At one point, they changed the store into a restaurant with a space to give classes, but kept making soyfoods there. Then they started to make tofu dips at another shop. Finally they sold the restaurant and consolidated the two soyfood production operations. By Oct. 1984 they were making 2,000 lb/day of tofu.

In about 1985 Witte Wonder moved into a new plant at Gelreweg 4b, 3843 AN Harderwyk, Netherlands. They needed more money to make the move successful, so they invited Solnuts B.V. to join Witte Wonder as a source of

capital. But the capital needs increased and Solnuts agreed to provide the additional capital in exchange for a controlling interest in Witte Wonder. This put the van Reests in a difficult position, but without much choice. So on 1 April 1986 Witte Wonder was acquired in an unfriendly silent acquisition by Solnuts B.V. Cees van Rest and his father owned 50% of the company's stock plus one majority vote. Solnuts owned the other 50%. The majority vote changed hands at the moment Solnuts made a new investment in Witte Wonder. With this the van Rests lost the controlling interest. Cees van Rest resigned as a director, becoming unemployed.

In late March 1990 Solnuts B.V. was just completing an agreement to sell the company back to Wim Bakker, who had been running it for them since 1986. Solnuts considered Witte Wonder to be too far away from their core activities.

2383. Ebata, Junko. 1989. Antimutagenicity of tempe (Abstract). Abstract of a lecture presented at the 14th International Congress of Nutrition of Nutrition, Seoul, Korea. 1 p. Held 20 Aug. 1989. [1 ref. Eng]
• ***Summary:*** "The antimutagenicity of tempe toward AF2 was examined using the streptomycin-dependent strain SD100 of *Salmonella typhimurium.* Tempe in the process of fermentation was antimutagenic as the number of spontaneously reverted colonies on the tempe-test plate was fewer than that on the tempe-free control plate. The same inhibitory effect was also found in both pan-fried and deep fat-fried tempe-samples... The antimutagenic activity... increased with fermenting time and reached a maximum at 20 hours, then decreased."

Note: In July 1989 Prof. Ebata traveled the USA to attend several symposia on Mutagens & Carcinogens in Diet, and on Genetic Toxicology in Developing Countries. She is now preparing a paper on antimutagenetic activity in tempeh to present at the 14th International Congress of Nutrition in Seoul, Korea (20-25 Aug. 1989). Address: Faculty of Science of Living, Osaka City Univ., Osaka, Japan.

2384. **Product Name:** Lightlife Lemon Grill (Tempeh Burger).
Manufacturer's Name: Lightlife Foods, Inc.
Manufacturer's Address: 74 Fairview St., Greenfield, MA 01301. Phone: 413-774-6001.
Date of Introduction: 1989. August.
Ingredients: Organic soy-rice tempeh (organically grown soybeans, brown rice, water, tempeh culture), fresh lemon juice, soy sauce, canola oil, olive oil, granulated garlic, onion powder.
Wt/Vol., Packaging, Price: 5.5 oz (155 gm) vacuum pack.
How Stored: Refrigerated or frozen.
New Product–Documentation: Talk with Richard McKelvey, sales manager of Lightlife Foods. 1990. June 20. This round tempeh burger was launched in Nov. 1989. It is marinated in pure lemon juice as a opposed to lemon

concentrate. The product is doing very well and growing. "If you try the Lemon Grill, you'll love it. So the company is working to get people to try it."

Label sent by Richard McKelvey. 1990. July 20. 4.25 by 5 inches. Green, yellow, and white on black. "Meatless. All natural. Two tempeh cutlets. Delicious as an entree or in a sandwich. Just grill in a lightly oiled pan, under the broiler or on a grill. Microwavable: 1-2 minutes."

2385. **Product Name:** Tempeh [Sari Ayam–Chicken Flavour].
Manufacturer's Name: Nutrisoy Pty. Ltd.
Manufacturer's Address: 255 Forest Road, Arncliffe 2205, NSW, Australia.
Date of Introduction: 1989. August.
Ingredients: Organic soybeans, water, cider vinegar, chicken flavour (salt, maltodextrin, flavour enhancer {621}, wheat starch, chicken fat, chicken meat, beef fat, yeast extract, onion powder, spices), and culture (*Rhizopus oligosporus*).
Wt/Vol., Packaging, Price: 250 gm in plastic bag.
How Stored: Refrigerated.
New Product–Documentation: Label with date sent by Tony Wondal of Nutrisoy. 2005. April 26. He started making and selling this product in Aug. 1988. Red, green and white on yellow. Front panel: "Delicious. Nutritious. Fitness food. Fry, bake, grill or steam for a quick & easy meal. Fitness food. Bermutu Tinggi."

2386. **Product Name:** [Viana Tempeh].
Foreign Name: Viana Tempeh.
Manufacturer's Name: Viana Naturkost GmbH.
Manufacturer's Address: Neusserstr. 199, D-5000 Cologne 60, West Germany. Phone: (02233) 41323.
Date of Introduction: 1989. August.
Ingredients: Whole soybeans*, apple vinegar*, Rhizopus oligosporus**. * = Organically grown. ** = Beneficial/edible fungus (Edelschimmelpilz).
Wt/Vol., Packaging, Price: 200 gm.
How Stored: Refrigerated.
New Product–Documentation: Letter from Anthony Marrese. 1990. March 22. This company was started by Bernd Drosihn after he left Soyastern.

Talk with Bernd Drosihn, founder of Viana. 1990. April 7. He started to make tempeh in about Aug. 1989 after leaving Soyastern. He makes 3 types of tempeh, 2 tempeh burgers, and 2 tempeh spreads (introduced in 1990). The burgers and spreads are selling well. The basic tempeh is going slower.

Bernd Drosihn. 1989. Tempeh: Ein traditionelles Nahrungsmittel mit Zukunft [Tempeh: A traditional food with a future]. p. 38. Says the company makes fresh tempeh from whole soybeans, tempeh fritters, tempeh salad, tempeh burgers, tempeh spreads, and tempeh in a glass. A source of tempeh starter culture. The company also makes seitan.

Tempeh Label sent by Bernd Drosihn. 1990. April 14. 4.75 by 2.75 inches. Self adhesive. Reddish-purple, black, beige, and light purple. "Fresh, unpasteurized. A whole-food fermented soy product. Contains much vitamin B-12, Rich in bulk/fiber. Easily digested. Free of cholesterol. Try Viana tempeh cut into thin slices and roasted or fried until crisp or crunchy. Delicious!" The company address is now 5030 Huerth 6, West Germany.

Brochure. 8.5 by 11 inches. 6 panels. Black and brown on white. The front panel reads: "Sometimes you should say loud and clear, 'Tempeh!'" Gives an explanation of tempeh and how it is made, plus nutritional information and 2 recipes.

Note: This is the earliest record seen (Feb. 2003) concerning Viana Naturkost GmbH of Germany. However Bernd Drosihn, the founder of Viana, was an owner of Soyastern by 1987.

2387. **Product Name:** [Viana Deep-fried Tempeh].
Foreign Name: Viana Fritierter Tempeh.
Manufacturer's Name: Viana Naturkost GmbH.
Manufacturer's Address: Neusserstr. 199, D-5000 Cologne 60, West Germany. Phone: (02233) 41323.
Date of Introduction: 1989. August.
Ingredients: Soybeans*, water, shoyu*, Rhizopus culture, vegetable oil, sea salt. * = Organically grown.
Wt/Vol., Packaging, Price: 200 gm.
How Stored: Refrigerated.
New Product–Documentation: Bernd Drosihn. 1989. Tempeh: Ein traditionelles Nahrungsmittel mit Zukunft [Tempeh: A traditional food with a future]. p. 38. Says the company makes deep-fried (fritierter) Tempeh.

Label sent by Bernd Drosihn. 1990. April 8. The company address is now Schmittenstr. 106, D-5030 Huerth 6, West Germany. 4.75 by 1.5 inches. Self adhesive. Reddish-purple, brown, and yellow. Dot-matrix printed.

2388. **Product Name:** [Viana Tempeh Salads].
Foreign Name: Viana Tempehsalate.
Manufacturer's Name: Viana Naturkost GmbH.
Manufacturer's Address: Neusserstr. 199, D-5000 Cologne 60, West Germany. Phone: (02233) 41323.
Date of Introduction: 1989. August.
New Product–Documentation: Bernd Drosihn. 1989. Tempeh: Ein traditionelles Nahrungsmittel mit Zukunft [Tempeh: A traditional food with a future]. p. 38. Says the company makes Tempehsalate. But these have been discontinued by May 1990.

2389. *SoyaScan Notes.* 1989. Sixty-five books on tofu have been published in the Western World since 1970 (Overview). Sept. 17. Compiled by William Shurtleff of Soyfoods Center. • ***Summary:*** Definition: The work must be more than 48 pages long, must have the word "tofu" or its equivalent in the title, and must be written in a non-Asian language. It may be either a popular or a professional/technical work.

By country of publication, 40 of these books (61% of the total) have been published in the USA, 6 in Canada, 5 in Switzerland, 5 in Japan (but written in English for sale primarily outside of Japan), 3 in West Germany, 3 in France (but 2 of these were published simultaneously and primarily in Quebec, Canada), 2 in England, and 1 each in Italy, Sweden, and Brazil. By region of publication: North America 46 (71% of the total), Europe 15, East Asia 5, and Latin America 1.

By language, 49 of these books (75%) have been published in English, 7 in French, 6 in German, and 1 each in Italian, Portuguese, and Swedish.

By year of publication, the first of these books was published in 1974; eleven (17% of the total) were published from 1974 to 1979, forty (62%) from 1980 to 1984, and fourteen (22%) from 1985 to 1989. The peak years of publication were 1981 and 1982, when 12 books on tofu were published each year.

The best sellers among these books have been *The Book of Tofu* by Shurtleff & Aoyagi (1975, Ballantine Books, Autumn Press, and Ten Speed Press, about 450,000 copies sold in English editions and 9,000 in foreign editions), *Tofu Cookery* by Louis Hagler (1982, The Book Publishing Co., about 175,000 copies sold), *The Tofu Cookbook* by Cathy Bauer and Juel Andersen (1979, Rodale Press, 105,500 copies sold, still in print), *Cook with Tofu* by Christina Clarke

(1981, Avon Books, 57,500 copies printed; still in print), and *Tofu, Tempeh, & Other Soy Delights* by Camille Cusumano (1984, Rodale Press, 25,688 copies sold; out of print). These best-sellers have sold a combined total of 822,700 copies, and all tofu books have probably sold over 1 million copies.

2390. Gaec de La Lix: United Macrobiotic Company. 1989. Re: Work with soyfoods and seitan in France. Letter from Ben of Gaex to Anthony Marrese, Sept. 25. 1 p. Typed, with signature on letterhead. [Fre]
• ***Summary:*** "Since October 1985 we have been building up our project. We are 20 adults and meanwhile three children. Four years ago we bought a very nice farm in the beautiful landscape of the Pre-Pyrenees 80 kilometers southwest of Toulouse. Today we work on more than 90 hectares of land.

"At the beginning we started by establishing a common macrobiotic kitchen. We worked mainly in the garden and in the fields, trying ideas of permaculture and those of Masanobu Fukuoka. In this behalf we were assisted by Thomas Nelissen, who lived for some time at Fukuoka's farm in Japan, and Declan Kennedy, the most important teacher of permaculture in Europe...

"This is our fourth year growing soybeans. We have a garden of one and a half hectares, mostly for self-sufficiency.

"With a status as 'transformateurs' we set up a stand on the organic market ("marche bio") at Toulouse, shortly after we started to make tofu for ourselves. In time we began to make tempeh, natto... certain types of soyaburgers, sushis and vegetable rolls. Today we deliver our products to more than 40 biological [organic] health stores in the surrounding 100 kilometers...

"We teach the making of tofu and seitan, amasake, mochi and tempeh as well as giving macrobiotic cooking classes and agricultural seminars."

A 1989 leaflet titled "What are Tofu, Tempeh, Seitan, Kombu?" in French (4 panels) is included with the letter. A color slide showing five people from the company waving is taped to the letter. Address: 32260 Tachoires–Seissan, France. Phone: 62.65.35.04.

2391. Bates, Dorothy R. 1989. The tempeh cookbook. Summertown, Tennessee: The Book Publishing Co. 96 p. Contains 11 color photos and some line drawings. Index. Sept. 26 cm.
• ***Summary:*** This is a vegetarian (but not a vegan) cookbook. Contents: Introduction to tempeh: Nutritive values, how tempeh is made, storing tempeh, cooking tempeh. Ingredients and suggestions: Discusses soymilk, soy oil, and tamari. Making tempeh at home. Appetizers. Salads. Soups. Sandwiches. Main dishes: Oriental, Italian, Mexican, American, International. Dessert. Contains 100+ recipes. Address: Summertown, Tennessee.

2392. **Product Name:** Organic Soybean Tempeh, and Soy & Cracked Wheat Tempeh.
Manufacturer's Name: Central Soyfoods.
Manufacturer's Address: 11 W. 14th St., Lawrence, KS 66044. Phone: 913-843-0653.
Date of Introduction: 1989. September.
Wt/Vol., Packaging, Price: 6-8 oz vacuum pack. Retails for $3.50/lb.
How Stored: Refrigerated.
New Product–Documentation: Talk with Tom Ballew of Central Soyfoods. 1990. March 24. This product is pasteurized but not frozen. Only a small amount of the soy & cracked wheat variety is made. Tom started working with the company in Sept. 1987. Label sent by Tom Ballew. 1990. March. It is a combination leaflet and label. 4 panel, with each panel 4 by 5.5 inches. Photocopied black on white on both sides. States that the company was established in 1978. "Made with a pure culture of Rhizopus oligosporus and organically grown soybeans. From the land of Kansas. Approximate weight: 6-8 ounces. Best if used by: The inside 2 pages contain a description of tempeh and the Rhizopus fermentation, how Central Soyfoods tempeh is made (the beans are steamed, not boiled); "the mature tempeh is then steam pasteurized to deactivate the enzymes and vacuum packed to ensure freshness." There are recipes for Sweet & Sour Tempeh, Tempeh with Indonesian Peanut Sauce, and Curried Tempeh.

Talk with Jim Cooley. 1990. April 3. This product was introduced in Sept. 1989. The tempeh is vacuum packed, then this combination label and recipe leaflet is slipped in between the tempeh bag and an outer poly bag, which is sealed with a twist tie.

2393. Johnson, Dale W. 1989. General uses of whole soybeans. In: E.W. Lusas, D.R. Erickson, and Wai-Kit Nip, eds. 1989. Food Uses of Whole Oil and Protein Seeds. Champaign-Urbana, IL: American Oil Chemists' Society. vii + 401 p. See p. 12-29. Chap. 2. Proceedings of the Short Course on Food Uses of Whole Oil and Protein Seeds held at Makaha, Hawaii, May 11-14, 1986. [35 ref]
• ***Summary:*** Contents: Introduction: Introduction. Oriental nonfermented products: Yuba, kinako Thai desserts (tofu guan, med khanoon), Thai foods (protein crisp, cooked baby food, canned evaporated soybean milk, taow-huey, kanom ping kaset). Fermented foods: Natto, hama-natto, tao tjo (a miso-type product made in Indonesia and Thailand), ontjom (made from peanuts, coconut press cake, or okara), kochu chang, ketjap, sufu, yogurt-type products, tauco, soy sauce, miso, tempeh. Western world type products. Full fat soy flour (enzyme active, heat treated). Soybean hulls. Whole soybeans in animal feed. Chapatty [chapati]. Full fat soy grits. Heat treatment of soybeans. Heat treatment and texturizing. Low-fat products. Snacks (soynuts–dry roasted or oil roasted, plain or seasoned). Soybean sprouts. Soy butter [soynut butter]. Combinations of soybeans and cereals.

Soybeans as vegetables (mao-tou, edamame, or fresh green soybean). Defatted products. Nutrition. Soybean handling and equipment considerations. Solvent plant considerations. Address: Food Ingredients (Minnesota) Inc., 2121 Toledo Ave. North, Golden Valley, Minnesota 55422.

2394. Lusas, Edmund W.; Erickson, D.R.; Nip, Wai-Kit. eds. 1989. Food uses of whole oil and protein seeds. Champaign-Urbana, Illinois: American Oil Chemists' Society. v + 401 p. Proceedings of the Short Course on Food Uses of Whole Oil and Protein Seeds held at Makaha, Hawaii, May 11-14, 1986. No index. 24 cm. [300+ ref]
• ***Summary:*** Of the 24 chapters, the first 10 are entirely about soybeans and soyfoods, and 5 of the remaining 14 chapters are partly about soya. Many individual chapters are cited separately. Address: 1. Protein R&D Center, Texas Engineering Experiment Station, The Texas A&M.

2395. Winarno, F.G. 1989. Production and uses of soybean tempeh. In: E.W. Lusas, D.R. Erickson, and Wai-Kit Nip, eds. 1989. Food Uses of Whole Oil and Protein Seeds. Champaign-Urbana, IL: American Oil Chemists' Society. vii + 401 p. See p. 102-17. Chap. 7. Proceedings of the Short Course on Food Uses of Whole Oil and Protein Seeds held at Makaha, Hawaii, May 11-14, 1986. [35 ref]
• ***Summary:*** Contents: Introduction and early history. Methods of preparation: Active microorganisms, tempeh starter, tempeh making/production. Material balances, losses, and yield. Shelf life of tempeh and tempeh products. Conclusions. Address: Food Technology Development Center, Bogor Agricultural Univ., P.O. Box 61, Indonesia.

2396. Marrese, Anthony. 1989. Re: Soyfoods in France. Letter to William Shurtleff at Soyfoods Center, Oct. 28. 2 p. Handwritten. [Eng]
• ***Summary:*** The author conducted a soyfoods market study in France for William Shurtleff of Soyfoods Center, sending out forms which were filled out by 12 companies, visiting or interviewing 9 companies, and visiting 5 companies at the Diet Expo '89 held 21-23 Oct. 1989 in Paris. It seems like there are 4 types of companies working with soya in France:

1. Independents, both large and small, mainly in primary soymilk, tofu, or tempeh production, or in second generation burgers, smoked products, or desserts production, with either organic (biological) or non-organically grown products. Examples: Le Ferme du Jas, Innoval/Sojalpe, Société Soy, Le Bol en Bois/Tama/Daizou, La Maison du Tofu, Les 7 Marches, Boulangerie Artisinale des Maures, Odile Corbel & Dan Ludington [named Gaia Enterprises by Feb. 1992], Communauté de la Lix (United Macrobiotic Company), Tofu Kuehn.

2. Non-Independents owned by large companies or agricultural co-ops: Gerblé, Bonneterre/Triballat, Sojadoc, Cacoja (C.A.C.), Renaitre.

3. Bean or cereal (agricultural) companies: Celnat.

4. Specialty manufacturers for the Asian-European (Japanese, Chinese, Korean, etc.) markets: Yamato.

"I had some very good talks with Bernard Storup of Société Soy, the Bol en Bois people, Celnat, Bonneterre, Gerblé and others. In general the market and usage seem to be going nowhere but up and it is still in the very early stages of 'real consumer' type foods, not just health store specialties. Some French soybeans are used but a lot are imported... Real quantity information is not available since it is changing so fast (mainly in an upward direction and mostly with secondary processed products which use tofu or soya in them)." Address: c/o Terre Nouvelle, Eourres, 26560 Séderon, France. Phone: 92.65.10.95.

2397. Kuo, J.C.; Wang, S.Y.; Peng, A.C.; Ockerman, H.W. 1989. Effect of tempeh on properties of hams. *J. of Food Science* 54(5):1186-89, 1233. Sept/Oct. [26 ref]
• ***Summary:*** Hams made with meat plus 2% or 3.5% tempeh were not as acceptable as hams made without tempeh; they also had a lower moisture and cooking yield. and TBA values were slightly lower than the all-meat ham after 30 days. Address: 1-2. Dep. of Food Science, Tunghai Univ., Taichung, Taiwan; 3. Dep. of Horticulture; 4. Dep. of Animal Science. Last 2: The Ohio State Univ., 2001 Fyffe Court, Columbus, Ohio 43210.

2398. **Product Name:** Lightlife American Grill (Vegetarian Tempeh Burger).
Manufacturer's Name: Lightlife Foods, Inc.
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01302. Phone: 413-774-6001.
Date of Introduction: 1989. October.
New Product–Documentation: This product is similar to their original tempeh burger, but it has been renamed and the ingredients changed slightly.

Talk with Michael Cohen. 1991. Sept. 17. This tempeh burger has a regular hamburger-like flavor. It is marinated.

2399. Lima N.V. 1989. Lima: Tarif détaillant [Lima Foods catalog and price list]. Edgar Gevaertdreef 10, B-9830 Sint-Martens-Latem, Belgium. 9 p. [Fre]
• ***Summary:*** This macrobiotic food catalog was bound into the back of the Bonneterre catalog at a 1989 food expo in Paris. Lima sells the following soyfoods, each proceeded by its product category: Fresh products: Skewered seitan/tofu, Presto natural tofu, Presto tofu legumes/vegetables, Presto tofu cheese. Legumes: Yellow soybeans. Sprouts: Green soy/mung (500 gm or 5 kg). Flours: Roasted soy flour. Vegetarian preparations: Lima soy sauce (500 ml or 1 liter), tofu, natural tempeh, tempeh with shoyu. Dressings: Salad dressing with soy and tomato, Salad dressing with soya herb. Specialties: Organic miso (1 month), Hatcho miso, Barley miso (organic or regular), Rice miso (organic or regular), Heiwa brand

Instant miso soup (regular or red, From Japan), Tamari (250 ml, 1 liter, 18 liters), Mansan Tamari from Japan, Shoyu (250 ml, 1 liter, 18 liters), Sakai shoyu from Japan. They also carry one book titled "Tofu dans le Cuisine Macrobiotique" (Eddie Hara, 1982).

Accompanying the catalog is a packet of individual full-color sheets with of photos of products in a folder titled Lima: Quality is our passion." There are sheets titled "Vegetable products rich in protein," "Tamari and shoyu," "Japanese specialties (incl. Heiwa brand shoyu and tamari), and a brochure titled "Lima: 30 years as a producer of organically grown (biological) foods." It describes the life and work of Edgar Gevaert (poet, artist-painter, ecologist, and a leader of the European peace movement). Address: Sint-Martens-Latem, Belgium.

2400. Demos, Steve. 1989. White Wave's strategy for marketing soyfoods in America as cholesterol-free protein foods (Interview). *SoyaScan Notes.* Nov. 1. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** "White Wave welcomes the movement of tofu, a potentially hazardous food, out of the produce case. I think were are positioned and prepared as well as we possibly could be for this kind of change. This is what we've been waiting for! Years ago, White Wave designed its boxed, vacuum-packed tofu with a 60 day shelf life to sell in the dairy case. The disruption of an existing habit pattern opens up to opportunities for innovative companies." Demos does not see, even in the short term, any major loss of sales. At least 2/3 of White Wave's tofu is already out of the produce case and into either the dairy case or temperature controlled cases. He feels the best place to sell tofu is next to yogurt, ideally between yogurt and the deli meats in the dairy/deli case. White Wave conceives of itself as selling a new category of foods, "cholesterol free protein foods." This category should be well defined unto itself. Eventually Demos would like to see this heart/smart concept evolve into the "soyfoods section." Since signs identifying sections are generally not allowed in supermarket cases, the section/category might be partitioned off with plastic dividers at each end, like the Pillsbury Doughboy category. King Soopers has already pioneered this idea, starting in about 1983, putting tofu between the yogurt and the milk (with no plastic dividers), on the basis of the demographics, then building the concept by adding other soyfoods and soymilk. But tempeh, a slow mover, is now in the frozen foods case, and the meatlike products (such as hot dogs) are next to Armour in the deli meats.

Safeway seems to have made a top level decision to aggressively promote soyfoods. This year they called White Wave and said, "We don't know what you make, but give us everything. Then in August, in their two largest new classy "Safeway Marketplaces" in Boulder (and maybe in a few newer or college-oriented stores in Denver), entirely on their own initiative, they installed temperature controlled end-aisle cases at the end of the produce section facing the cash registers. The location is very prominent–an impulse location. Each case has the word "Tofu" in large letters on it. Many different types of soyfoods (and nothing but soyfoods) are sold in these cases–tofu, tofu dressings, tofu hot dogs, soy cheeses, Stir Fruity (soy-based yogurt), etc. All White Wave soyfood products in these 2 stores are sold in the Tofu case. Demos feels that "Tofu" this is the best title for the case. Also the "Approved by Healthmark" with the Healthmark logo on each display case identifies these as healthy foods. Only foods that are low in cholesterol, fat, and sodium get the Healthmark. Each case, constructed like an open dairy case, 5 feet wide by 6 feet high, has a temperature range of about 35-40º. Demos would definitely prefer to have his products sold in these cases rather than any other location in the store. White Wave's main strategy is to "identify a category," and to group foods in that category together. Again, the current category definition is cholesterol-free protein foods, but the long term goal is to have the category defined as "soyfoods." It is too early to say how the new isolated cases are affecting sales, but preliminary signs all look very positive.

White Wave started pasteurizing its tofu in Dec. 1988. Since then they have not had a single complaint of spoilage or sourness. Pasteurization does effect the tofu texture, making it firmer, but it also makes tofu much more profitable. White Wave makes both a 16 ounce vacuum packed and a 10-ounce single serve water-pack tofu. He prefers the vacuum pack and has worked the bugs out of his Tiromat so that it is no longer a significant source of problems. Tree of Life on the East Coast sells un-boxed vacuum-packed White Wave tofu very successfully, but Demos strongly prefers to box it. He has a whole new tofu plant at his new facility with automatic cooking and curding, conveyorized press tables and pasteurization.

Concerning the competition: Demos compliments Morinaga on a brilliant strategy. The net result is to help in the Americanization of tofu by identifying it clearly as a protein food and therefore forcing it out of the produce case. The irony is that when the dust settles, Mori-Nu Tofu may be the only brand left in what becomes an outdated, foreign location–with the oriental vegetables instead of with the protein foods. Azumaya and Hinode are rooted in the produce distribution network. Getting kicked out of the produce section will be very hard on them and their reaction will probably be to fight it rather than use it to their advantage. Address: President, White Wave Inc., 1990 North 57th Court, Boulder, Colorado 80301. Phone: 303-443-3485.

2401. **Product Name:** [Deep-fried Tempeh Coins].
Foreign Name: Tempeh Taler.
Manufacturer's Name: Life Food GmbH.
Manufacturer's Address: Robert-Bunsen-Strasse 6,

D-7800 Freiburg, West Germany. Phone: 0761/50 61 55.
Date of Introduction: 1989. November.
New Product–Documentation: Talk with Klaus Kempff. 1990. May 9. The tempeh is made in sausage skins. The resulting tempeh sausages are sliced into rounds, cold marinated, then deep-fried, and sold 2 pieces at a time. It was first developed in May 1989, but really launched in Nov. 1989, with a brochure. The product is delicious, and has become the company's best-selling tempeh product.

2402. McCarty, Meredith. 1989. Fresh from a vegetarian kitchen. Turning Point Publications, 1122 M Street, Eureka, CA 95501-2442. ii + 263 p. Illust. by Bernice Kagan. Index. 28 cm.
• ***Summary:*** A macrobiotic cookbook containing over 450 recipes, many using tofu (at least 20, including many innovative sauces and dressings), tempeh, miso, amazake, soy sauce, soymilk, and amazake. A section titled "Soyfoods: Tofu and tempeh" (p. 151-55) contains 6 recipes and several variations. On page 202 is a recipe titled "Amazake-Soymilk" in which 3/4 cup soymilk is mixes with ¼ cup plain amazake. The author has co-directed this natural health center in northern California since 1977. Address: Eureka, California.

2403. **Product Name:** [Tempeh with Tomato].
Foreign Name: Tempé à la Tomate.
Manufacturer's Name: Société Soy.
Manufacturer's Address: 1 rue du Crêt de la Perdrix, 42400 Saint-Chamond, France. Phone: 77.31.24.42.
Date of Introduction: 1989. November.
Ingredients: Tempeh 90% (water, soybeans*), selected cultures (ferments), sunflowerseed oil, tomato sauce (5%; tomatoes*, onions*, carrots*, soy sauce, spices and aromatics). * = Organically grown.
Wt/Vol., Packaging, Price: 180 gm.
How Stored: Refrigerated.
Nutrition: Per 100 gm.: Protein 18.1 gm, fats (lipids) 10.7 gm, carbohydrates (glucides) 6.4 gm, calories (Kcal) 194 (812 kJoules).
New Product–Documentation: Form filled out for Anthony Marrese by Bernard Storup. 1989. Nov. The product will be launched in Nov. 1989.

Label sent by Bernard Storup. 1990. Dec. 26. 3 by 5.5 inches. Red, green, yellow, purple, and brown or white. Illustration of palm trees in front of purple mountains. "A world of equilibrium. Biona certification symbol. Nature et Progres organic certification symbol. Dehulled soya is cooked and inoculated with a mold (champignon; Rhizopus oligosporus). From this fermentation is born tempeh, with such a savory flavor. Reheat in a saucepan (casserole) over low heat, stirring (remuant) from time to time."

2404. Krieger, Verena. 1989. Soja als Nahrungsmittel: genutzt oder missbraucht? [Soya as a food: Used or misused?]. *Zum Beispiel* (*Switzerland*) No. 12. p. 15-17. Dec. 21. [Ger]
• ***Summary:*** Soybeans can be fermented to make miso, soy sauce, tempeh, or natto. Or the protein can be extracted in traditional ways to make soymilk, tofu, or yuba. One can also make soy sprouts. In the Western world, soybeans are mostly misused to make high-protein meal for livestock fodder, and vegetable oil. Address: Lucerne, Switzerland.

2405. Kuntjoro, Sri Utami; Kusnadi, N.; Sayogyo, -. 1989. Demand for corn, cassava and soybean in human consumption: A case study in Java, Indonesia. *CGPRT Working Paper* No. 2. xvii + 116 p. Dec. 25 cm. [19 ref]
• ***Summary:*** Contains much original, detailed information and statistics on consumption, demand, and demand elasticity for secondary food crops (*palawija*) in Indonesia. The main secondary food crops are soybeans (including the soybean products *tahu* {tofu}, *tempe* {tempeh}, *kecap* {soysauce}, and *tauco* {Indonesian-style miso}), corn, cassava, and peanuts. "Pulses, soybean in particular, represent (after cereals) the most important source of vegetable protein for the people of Indonesia. On the whole, soybeans are consumed in the form of tahu (bean curd), tempe (fermented soybean) and kecap (soysauce). Among low-income households, tahu and tempe, which are relatively cheap in price, are (after cereals) a major source of vegetable protein. According to Sayogyo (1985), tempe is also popular among people in the high income groups.

The National Socio-Economic Survey (Susenas), conducted by the Central Bureau of Statistics, collects socio-economic data from a large number of households throughout Indonesia. The use of chemical fertilizer on soybeans has increased from 5.19 kg/ha in 1973 to 80.39 kg/ha in 1982. Per capita consumption of soybeans has risen from 3.28 kg/year in 1968 to 4.45 kg/year in 1983. In the peak year, 1979, it was 5.33 kg/year.

Table 4.2 shows protein consumption from secondary food crops in 5 Javanese provinces in 1981. The amount of protein contributed daily per capita to the Indonesian diet by soyfoods (in the forms of tempeh, tofu, soybeans, soy sauce [kecap], and miso [tauco]) is greatest in Yogyakarta (22.57 gm; 61.1% of total protein consumption), followed by Central Java (14.57 gm; 37.4% of total), Greater Jakarta (13.78 gm; 33.3% of total), East Java (12.96 gm; 32.8% of total), and West Java (6.44 gm; 14.9% of total). As people's income rises, they tend to consume more soyfoods. Soyfoods provide Tempeh makes the greatest contribution to protein intake in every province, followed by tofu, soybeans, soy sauce (kecap), and tauco (Indonesian miso). Tempeh makes the greatest contribution in Yogyakarta, where it provides 17.86 gm/capita/day of protein, or 60% of the protein supplied by secondary crops, and more than any other single source. The amount of daily protein per capita contributed

by tempeh is next most important in Central Java (11.48 gm/day), followed by East Java (9.28), Greater Jakarta (8.98), and West Java (4.16). Tofu makes its greatest protein contribution in Greater Jakarta (4.54 gm/day), followed by Yogyakarta (3.57), East Java (3.49), Central Java (2.80), and West Java (1.99). Address: Agricultural economists, Bogor Univ. of Agriculture.

2406. Altemeier, Klaus; Bottema, J.W.T.; Adinugroho, B.; Daris, N. 1989. Quality and price determinants of secondary crops in Indonesia. *CGPRT Working Paper* No. 1. 57 p. *
• ***Summary:*** This paper reports on extensive research conducted in East and West Java covering grain quality and implicit prices of maize, soybean and groundnut. Government quality standards are compared to traders practices and the quality checks run by animal feed and Tahu and Tempe industries. It is concluded that domestic quality of maize, soybean and groundnut falls below quality of imported grains. Floor prices are indicated to be of theoretical value only, because domestic prices never move below floor prices. It is suggested a policy on nutritional standards be considered, which could have a beneficial effect for all participants in the market system.

2407. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Atlantis Tofurei.
Manufacturer's Address: Insterburgerstr. 7, D-6454 Bruchkoebel, near Frankfurt, West Germany. Phone: 06181/71438.
Date of Introduction: 1989.
New Product–Documentation: Bernd Drosihn. 1989. Tempeh: Ein traditionelles Nahrungsmittel mit Zukunft [Tempeh: A traditional food with a future]. p. 38.

2408. **Product Name:** [Tempeh Chips].
Foreign Name: Tempehchips.
Manufacturer's Name: Byodo Naturkost GmbH.
Manufacturer's Address: Hirschbergstr. 9, D-8000 Munich 19, West Germany. Phone: (089) 16 85 70.
Date of Introduction: 1989.
New Product–Documentation: Bernd Drosihn. 1989. Tempeh: Ein traditionelles Nahrungsmittel mit Zukunft [Tempeh: A traditional food with a future]. p. 38. Says the company makes fresh tempeh from whole soybeans, tempeh burgers, and tempeh chips. A source of tempeh starter.

2409. Djurtoft, Robert; Jensen, J.P. 1989. Changes in lipids during solid fermentation of soybean tempeh and cowpea tempeh. In: Proceedings, 14th International Congress of Nutrition. Seoul, Korea: Korean Nutrition Society. Held 20-25 Aug. 1989, Seoul, Korea. Poster P5 No. 87. [Eng]*
Address: The Technical Univ. of Denmark, DK-2800 Lyngby.

2410. **Product Name:** [Tempeh, and Okara Tempeh].
Foreign Name: Tempeh, Okara Tempeh.
Manufacturer's Name: Ferme de Jas.
Manufacturer's Address: Eourres, 26560 Séderon, France. Phone: 92.65.10.95.
Date of Introduction: 1989.
New Product–Documentation: Letter from Anthony Marrese. 1989. May and June 7. The company presently makes 50 kg/week of tofu. They plan to introduce okara tempeh and soy tempeh in 1989. Marrese will be actively involved with the tempeh.

Letter from Michel Claude and Joël Pichon in response to questions from William Shurtleff of Soyfoods Center. 1996. July 4. "Our production of Tempeh and Okara Tempeh (same names in French) was on a small scale and limited in time; it stopped with the departure of Anthony Marrese."

2411. Grzeskowiak, B.; Berghofer, Emmerich. 1989. Production of a stable, fried snack food containing tempeh. In: Book of Abstracts, International Conference on Biotechnology and Food. Stuttgart, Germany: Hohenheim University. Held 20-24 Feb. 1989 at Stuttgart, Germany. Poster session 4. *
Address: Inst. fuer Lebensmitteltechnologie der Universitaet fuer Bodenkunde.

2412. **Product Name:** Tempeh.
Manufacturer's Name: Haiku Foods.
Manufacturer's Address: 1, Sydenham Rd., Cotham, Bristol.
Date of Introduction: 1989.
Ingredients: Soya beans, brown rice, Rhizopus oligosporus culture, cider vinegar.
Wt/Vol., Packaging, Price: 8 oz (227 gm).
How Stored: Frozen.
New Product–Documentation: Label. 1990. Received from David Greenslade. 4.5 inches square. Black on tan paper. Illustration of a house and trees by a stream. "100% organic." Talk with British Consulate in San Francisco. 1990. Feb. 9. Can't find this company. Call international operator. The area code is 272. Not listed anywhere in the British Isles.

2413. **Product Name:** Tofu, Soy Milk, Tempeh, Soy Ice Cream, Soy Punch.
Manufacturer's Name: Natural Cafe. Expanded to include La Soyarie by June 1994.
Manufacturer's Address: Mailing address: 73 Chaussee Rd., Castries, St. Lucia, West Indies. Plant: Union Hilltop Choc, Castries. Phone: 809-452-6421.
Date of Introduction: 1989.
New Product–Documentation: Plenty International. 1994. Jan. A Guide to Growing and Using Soybeans for Food. p.

30. This company makes fresh soyfoods.

Form filled out by Johnson Clarke, Manager. 1994. May 25. The plant is now located at Union Hilltop Choc, Castries, and the phone number is 809-450-2570. The company was founded in 1989. The founders were Johnson Clarke, Maya Clarke, and Ignatius Longville. The original purpose was to work as a group to produce high-quality foods at an affordable price and to educate the populace about soybeans. There have been no changes in the company address or ownership. Milestones: (1) When Johnson built a proper structure of concrete for processing; and (2) When CIDA (Canadian International Development Agency) gave the group a grant to purchase some equipment in 1991. Reasons for success: "I am the only person on the island that is processing [soybeans] on a commercial scale, and I take pride and joy in what I'm doing." The company makes tofu, soy milk, and tempeh, and it buys and markets Vitasoy soymilk, miso, soy oil, Mori-Nu tofu, and soy powder. They make about 100 lb/week of tofu, and they use about 7 gallons of soy milk to make soy ice cream and soy punch. The company's three best-selling products (in descending order of dollar value) are tofu, soy punch, and soy ice cream. The company now employs 6 people. Their factory is 14 x 30 feet. Offices are in a separate building. Net sales last year were "not much" and the net worth of the business is "not much." "We are a small group of six and just making ends meet. We still have a long way to go in making the population of St. Lucia realize the true potential of soybeans. I don't know if we can continue since were are poorly equipped for processing the beans and packaging the products to sell at supermarkets and shops. We are presently selling only at one small outlet we own. We could sell at hotels, supermarkets, and shops if we had proper packaging equipment such as a vacuum packer." Note: This is the earliest known commercial soy product made in St. Lucia.

2414. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Renaitre.
Manufacturer's Address: 860 Ave d'Ardus, 82000 Montauban, France. Phone: 63.03.49.45.
Date of Introduction: 1989.
New Product–Documentation: Order from Mr. Petitel of Association Renaitre, La Longagne Valprioude, 46800 Montcuq, France. 1988. June 15.

Letter from Renaitre, 860 Ave. d'Ardus, 82000 Montauban, France. Phone: 63.03.49.45.

Letter from Jean-Luc Alonso of Gaia in Graulhet, France. 1994. May 16. "In 1989, a new attempt [at producing tempeh] was made by the firm named Renaitre (meaning "to be reborn") close to Cahors. Another failure. One year later the business closed its doors."

2415. **Product Name:** [Tofu, Tempeh].
Manufacturer's Name: SoyaLab.
Manufacturer's Address: Zagreb, Croatia.
Date of Introduction: 1989.
New Product–Documentation: Talk with Zlatko Pejic of BioVega in Zagreb, Croatia. 1998. March 17. This company, which was started by Nad Miljenko (pronounced Nadj Milyenko), makes tofu and tempeh.

2416. **Product Name:** [Tempeh Burger].
Foreign Name: Tempehburger.
Manufacturer's Name: Tofumanufaktur Christian Nagel GmbH.
Manufacturer's Address: Osdorfer Landstrasse 4, D-2000 Hamburg 52, West Germany. Phone: 040/89 49 37.
Date of Introduction: 1989.
New Product–Documentation: Bernd Drosihn. 1989. Tempeh: Ein traditionelles Nahrungsmittel mit Zukunft [Tempeh: A traditional food with a future]. p. 38. Says the company, "Tofumanufaktur Christian Nagel," makes fresh tempeh and tempeh burgers.

2417. **Product Name:** [Viana Tempeh Burger].
Foreign Name: Viana Tempehburger.
Manufacturer's Name: Viana Naturkost GmbH.
Manufacturer's Address: Neusserstr. 199, D-5000 Cologne 60, West Germany. Phone: (02233) 41323.
Date of Introduction: 1989.
New Product–Documentation: Bernd Drosihn. 1989. Tempeh: Ein traditionelles Nahrungsmittel mit Zukunft [Tempeh: A traditional food with a future]. p. 38. Says the company makes Tempehburger.

Talk with Bernd Drosihn, founder of Viana. 1990. April 7. He started to make tempeh in about Aug. 1989 after leaving Soyastern. He makes 3 types of tempeh, 2 tempeh burgers, and 2 tempeh spreads (introduced in 1990). The burgers and spreads are selling well.

2418. **Product Name:** [Viana Tempeh Spreads (Regular, or Chutney)].
Foreign Name: Viana Tempeh Pastete, Tempeh Chutney.
Manufacturer's Name: Viana Naturkost GmbH.
Manufacturer's Address: Neusserstr. 199, D-5000 Cologne 60, West Germany. Phone: (02233) 41323.
Date of Introduction: 1989.
Ingredients: Chutney: Tempeh*, apple-pear puree*, rolled oats*, shoyu*, spices, sea salt. * = Organically grown.
Wt/Vol., Packaging, Price: 200 gm.
New Product–Documentation: Bernd Drosihn. 1989. Tempeh: Ein traditionelles Nahrungsmittel mit Zukunft [Tempeh: A traditional food with a future]. p. 38. Says the company makes Tempehaufstriche (Tempeh Spreads).

Talk with Bernd Drosihn, founder of Viana. 1990. April 7. He started to make tempeh in about Aug. 1989 after leaving Soyastern. He makes 3 types of tempeh, 2 tempeh

burgers, and 2 tempeh spreads (introduced in 1990). The burgers and spreads are selling well.

Label sent by Bernd Drosihn. 1990. April 8. The company address is now Schmittenstr. 106, D-5030 Huerth 6, West Germany. "4.75 by 1.5 inches. Self adhesive. Reddish-purple, black, gold or orange, and light purple. A fruity, sharp spread for bread." Ingredients for the pastete are: Organic tempeh, onions, shoyu, herbs, spices, and sea salt. "A spicy spread for bread."

2419. Acuff, Steve. 1989. Das makrobiotische Gesundheitsbuch [The macrobiotic health book. 2nd ed.]. Munich, West Germany: Goldmann Verlag. 256 p. Recipes by Karen Acuff. [Ger]
• ***Summary:*** This book of macrobiotic philosophy and cookery contains 5 tempeh recipes, and also mentions miso, tofu and tamari. Flora Yap (4/92) notes that the author travels from town to town, lecturing and selling his book. Certain groups are inviting him to speak, renting a place for him to lecture and doing the publicity (paid admission). Address: Idaho, USA.

2420. Cituk, Kathy; Finnegan, John. 1989. Natural foods and good cooking. Elysian Arts, 20 Sunnyside Ave. Suite A161, Mill Valley, CA 94941. 122 p. No index. 22 cm. [64 ref]
• ***Summary:*** This non-vegetarian cookbook contains considerable introductory information about and recipes using amazake (p. 16, 41, 56, 91, 98-99, 103), miso (p. 43), soymilk (p. 43), mochi (p. 44, 54), tamari soy sauce (p. 46), tofu (p. 46, 51, 80, 88, 96), tempeh (p. 46). Numerous references are made to a book by John Finnegan (1989) titled "Amazake Rice Nectar." Address: Mill Valley, California.

2421. Drosihn, Bernd. 1989. Tempeh: Ein traditionelles Nahrungsmittel mit Zukunft [Tempeh: A traditional food with a future]. Viana Naturkost GmbH, Neusserstr. 199, D-5000 Cologne 60, West Germany. 38 p. No index. 21 cm. Spiral bound. [Ger]
• ***Summary:*** Contents: Introduction. 1. Tempeh: The soybean, production of tempeh, the nutritional value of tempeh, advantages and qualities (easily digestible), rich in protein, a whole food, free of cholesterol, helps in reducing cholesterol, rich in vitamins and minerals.

2. Tempeh recipes, incl. how to make tempeh at home, soups, salads, main courses, glossary. Appendixes: 1. Addresses of 4 tempeh producers in West Germany (Atlantis, Byodo Naturkost GmbH, Tofumanufaktur Christian Nagel, Viana Naturkost GmbH). 2. Tempeh importers and wholesalers (Arche Naturkost, Biogarten).

A color photo of deep-fried tempeh chips graces the cover of this attractive booklet. Address: Cologne, West Germany. Phone: 0221/733437.

2422. Echols, John M.; Shadily, Hassan. 1989. An Indonesian-English dictionary. Third ed. Ithaca, New York, and London: Cornell University Press. xix + 618 p. 24 cm. [Ind; Eng]
• ***Summary:*** Soy-related words include: (1) bijan (sesame; also wijen or bijen). (2) bungkil kedelai (soybean meal). (3) kacang (pea, bean, peanut), including kacang asin (salted peanuts), kacang atom or kacang ganéfo (peanuts fried in batter), kacang goréng (peanuts fried crisp), kacang hijau or kacang ijo (mung bean), kacang kedelai (soybean), kacang tanah (peanut). (4) kécap (soy sauce; kecap ayam {chicken prepared with soy sauce}). Note: kecap manis is not mentioned here or at "manis." (5) kecipir (four-sided bean eaten as a vegetable [winged bean; *Psophocarpus tetragonolobus*]). (6) kedelai, kedelé (soybean). (7) oncom (fermented cake made from soybean sediment). (8) ragi (yeast, fermentation agent). (9) tahu (tofu, soybean curd), including tahu goréng (fried tofu), tahu isi (tofu filled with meat), tahu kuning (firm yellow tofu), tahu pong (deep-fried puffy tofu), tahu témpé (tofu and tempeh).

(10) tahua (a by-product of tofu similar to yogurt in consistency). (11) takoa, takoah (see takua). (12) takua (firm spiced tofu). (13) taosi (see tauci [soy nuggets]). (14) tapai, tapé (sweet cake made of slightly fermented rice or tubers). (15) tauci, tauco, taucyo (fermented bean paste [like miso] used as a condiment).

Note: This is the earliest (and only) English-language document seen (Feb. 2009) that uses the word "taucyo" to refer to Indonesian-style miso. "Taoci" probably refers to soy nuggets, not to miso.

(16) taugé (bean sprouts). (17) témpé (fermented soybean cake, tempeh; something trivial and unimportant or low grade in quality; *Dlm jaman penjajahan org Indo témpé pribumi* = "During the colonial times the Eurasians considered the natives to be no better than tempeh"). Address: 1. Ithaca, New York; 2. Jakarta, Indonesia.

2423. Fukushima, Danji. 1989. Historical development of soy sauce and soy nuggets in China (Document part). In: K. Steinkraus, ed. 1989. Industrialization of Indigenous Fermented Foods. New York and Basel: Marcel Dekker, Inc. xii + 439 p. See p. 2-8.
• ***Summary:*** "1. Chiang. In 1979, Kinichiro Sakaguchi proposed a unique hypothesis regarding the origin of soy sauce and miso as a result of historical biochemical investigations, and this hypothesis was later introduced by this author in English (Fukushima, 1985a, 1986b). However, new literature on the origin of soy sauce and miso appeared based on more detailed historical evidence (Pao 1982a, 1982b; 1984a, 1984b). According to these papers, soy sauce was derived from a Chinese food called 'chiang' ('hishio' in Japanese).

"Chiang is a tasty mash product and does not come in a liquid form. Therefore chiang belongs in the category of 'miso' in Japan. The first record of chiang can be found in

the book entitled *Chou-li* (*Shurai* in Japanese) by Chou-kung (*Shuko* in Japanese), which was published around 1,000 B.C. in the Chou (*Shu* in Japanese) dynasty (1,222 BC to 249 BC). This book covers the matters on the early years of the Chou dynasty in ancient China (about 3,000 years ago). According to this document, chiang was made by the following procedure. First, yellow aspergilli were grown on millet. (Such mold-grown cereals are called 'koji' in Japanese.) Then the millet koji and the meat of fish, flesh, or fowl and salt were mixed with a good liquor in a bottle and kept for 100 days. Soybeans were not used in this chiang. The first literature in which soybeans appeared as a substitute for meat in chiang was the *Ch'i-min Yao-shu* (*Saimin-Yojutsu* in Japanese) by Chia Ssu-hsieh (Ka Shikyo in Japanese), the world's oldest encyclopedia of agriculture, published in 535 AD in China. This indicates that the chiang in which soybeans was used originated sometime between the Chou and Han dynasties, when the cultivation of soybeans prevailed. The meats in the chiang described in *Chou-li* were gradually replaced by soybeans in the course of time and further cereals such as wheat, barley, and rice came to be used instead of millet, resulting in the production of many types of chiang. In the process of making chiang during these periods, soybeans were not used as a raw material in koji; rather they were added to the harvested koji prepared from the other cereals. The soybeans were digested by the enzymes of the koji. This digestion mixture was the final product, which was in the form of a mash. The liquid products which belong to the category of soy sauce did not appear in the literature before the later Han dynasty (about 25-220 A.D.).

"There is a description of the liquid product which was made by separating the liquid portion from the chiang in *Ssu-ming Yueh-ling* (*Shimin-Getsurei* in Japanese), published by Ts'ui Shih (Sai Shoku in Japanese) in the later Han dynasty. This liquid was called chiang ch'ing which means 'clear chiang.' The manufacturing processes of chiang and chiang ch'ing are shown in Figs. 1 and 2. Chiang ch'ing is a prototype of soy sauce but it differs from 'chiang-yu' which means literally shoyu or soy sauce in the Chinese characters. The first appearance of the name of chiang-yu was in *Shan-chia Ch'ing-kung* (*Sanya-Seikyo* in Japanese) by Lin Hung (Rin Ko in Japanese) in the Sung dynasty (960-1127 AD).

"The first record indicating use of all the raw materials to prepare koji for soybean chiang appeared in the *Nung-sung I-shin Ts'o-yao* (*Noso-Ishoku-Satsuyo* in Japanese) by Lu Ming-Shan (Ro Meizen in Japanese), published in the Yuan (Gen in Japanese) dynasty (1271-1368 AD). The flow sheet of this soybean chiang is shown in Fig. 3." (In this process, soybeans are roasted, dehulled, cooked, then mixed with wheat flour and spontaneously molded to form koji. The koji is dried in the shade, winnowed, and pounded, then mixed with spices and salt water to form a mash. which is insulated and aged to make the soybean chiang.) The chiang-yu described in *Pen-ts'ao Kang-mu* (*Honso-Komoku* in Japanese), published in 1590 by Li Shih-chen (Ri Jichin in Japanese) in the Ming (Min in Japanese) dynasty, was also made with koji manufactured by using soybeans and cereals (Fig. 4). (In this process soybeans were cooked in water, mixed with wheat, and spontaneously molded to form koji. Salt water was mixed in with a paddle, then the mash was insulated and aged. Finally it was filtered to make chiang-yu). The ratio of soybeans to wheat in the koji making was 3:2. This ratio is very close to that used in making regular Japanese shoyu, which is made by using equal amounts of soybeans and wheat, as will be described later. The general manufacturing methods of soy sauce in the Ch'ing (Shin in Japanese) dynasty are recorded in *Ch'ing-yuan Lu* (*Seienroku* in Japanese), written by Li Hua-nan (Ri Kanan in Japanese). Cooked soybeans and uncooked wheat were the raw materials used in koji making. The resultant koji was mixed with brine. After aging, the soy sauce was collected by pressing a deep bamboo colander into the aged mash and ladling out the liquid which had accumulated.

"The original chiang was a mash-type product made with a koji that had been prepared from wheat, barley, rice, etc., and not from soybeans. Therefore, the soybean constituents were only changed through the in vitro biochemical reaction by the enzymes from the mold grown on the cereals. Accordingly, the degree of change of the soybean constituents was not very great and most of the soybean proteins were partially hydrolyzed into polypeptides through the in vitro enzyme action. The degree of liquefaction was not very large and the flavor was not as strong. In the case of chiang-yu, however, mold is grown on both the soybeans and cereals and, as a result, the soybean constituents are changed largely through the biochemical reaction both in vivo and in vitro by the mold throughout the entire process of manufacturing. Accordingly, much of the soybean constituents can be liquefied. The soybean proteins are hydrolyzed to single amino acids and, therefore, the flavor is sharp and strong in chiang-yu. Thus, it can be concluded that (a) the progenitor of miso is chiang, originated in China about 3,000 years ago; (b) the progenitor of soy sauce is chiang ch'ing, originated in China about 2,000 years ago; (c) chiang ch'ing had developed into chiang-yu in China and the regular type of shoyu called koikuchi in Japan at least 1,000 years ago.

"It is an amazing fact that the Chinese had utilized the enzyme action of mold in food manufacturing as early as 3,000 years ago. They deliberately selected yellow aspergilli from many types of aspergilli because they best facilitated the manufacture of chiang. If the definition of 'biotechnology' is to make the products necessary for the welfare of humans by using life phenomena, it can be said that people in ancient China had already produced foods by biotechnology as early as several thousand years ago. In this sense, it is not an exaggeration to say that soy sauce was a

pioneer of the actual application of biotechnology.

"2. Shih. Shih is a fermentation product of soybeans, the form of which is a tasty nugget with or without salt. Shih is classified into five types by the kind of microorganism used in its manufacture. Those are *Aspergillus* type (called shih in the areas of Pei-ching, Hu-nan sheng, and Taiwan; and called hamanatto in Japan), *Mucor* type (shih in the area of Shan-tung sheng and natto in Japan), *Rhizopus* type (tempeh in Indonesia), *Bacillus* type (shih in the area of Shan-tung sheng and natto in Japan), and *Neurospora* type (oncom in Indonesia). The shih described here is the shih of *Aspergillus* type, which relates to soy sauce.

"The earliest literature in which shih appeared is *Shih-chi* (*Shiki* in Japanese) by Ssu-ma Ch'ien (Shiba Sen in Japanese), which was published in 85 BC. Shih is also described along with chiang in *Shuo-wen Chie-tzu* (*Setsubun-kaiji* in Japanese) by Hsu Shen (Kyoshin in Japanese), the oldest dictionary in China published in 121 AD in the later Han dynasty. The raw material of the shih is soybeans as shown in Fig. 5. (In the process described in the *Shi-ching* by Hsie Feng (which survives only in the *Ch'i-min yao shu*), soybeans are washed, soaked, drained, and steamed. The cooked soybeans are cooled, then spread, furrowed, and piled. The last 3 steps are repeated 3 times a day for 3 days until the beans have become spontaneously molded. The resulting soybean koji is mixed with soybean cooking liquid, barley koji, and salt, put into an earthen pot, sealed, and insulated. It is then dried in the shade, mixed with a mulberry leaf extract, and steamed. The last 3 steps are repeated 3 times, resulting in salted soybean shih. In the second process described in the *Ch'i-min yao-shu,* soybeans are winnowed, cooked, drained, and cooled. They are piled, the temperature is measured, and then they are stirred. The last 3 steps are repeated 3 times until they are spontaneously molded. They are then spread and furrowed to make soybean koji. This is winnowed, washed, drained, dried, moistened, piled, fermented, and dried to give unsalted soybean shih.) Therefore the resultant shih (soybean nugget) contains a high amount of protein. In shih, much of the soybean constituents are present in a liquid state. The soybean proteins are hydrolyzed to single amino acids and, therefore, the flavor is sharp and strong. The flavor constituents of shih can be extracted easily by a salt solution. The original shih was served as nuggets; the brine extract came to be used as a seasoning gradually. In *Chi-min Yao-shu* (535 AD), there is a description of about 70 kinds of cookeries using shih extracts. It should be mentioned that shih and its brine extract developed into today's tamari shoyu in Japan." Address: Managing Director, Kikkoman Corp., Chiyoda-ku, Tokyo, Japan.

2424. Harris, David R.; Hillman, Gordon C. eds. 1989. Foraging and farming: The evolution of plant exploitation. London: Unwin Hyman. xxxiii + 733 p. Index. 24 cm. "Results of a symposium held at the World Archaeological Congress, held in Southampton, England, in Sept. 1986."
• ***Summary:*** Soybean fermentation is mentioned briefly in: Stahl, Ann B. 1989. "Plant food processing: implications for dietary quality." p. 171-94 (See p. 178, 180).

Contains some very interesting papers on the origins of agriculture (See Chapters 1-2). There is a "continuum of interaction" and the assumptions of the model are ecological and evolutionary. The basic transition is from hunting and gathering (dependence on wild foods) to agriculture (dependence on domesticated plants and animals). In 1936 and 1942 Gordon Childe set forth the seminal concept of the "Neolithic Revolution" as a relatively abrupt event. But in recent years the earlier rigid dichotomy between hunter-gatherers and agriculturists has become blurred, for in the past people exploited both wild and domesticated plants and animals. For plants: Casual gathering, systematic gathering, limited cultivation, developed cultivation, and intensive cultivation.

Note: Domestication of animals for food (herding, especially rugged goats and sheep in the Middle East) probably came long before domestication of plants for food.

Two interesting chapters (although they do not mention soy) are: 41. "Prehistoric agriculture in China," by An Zhimin (p. 643-49; 12 refs.). 42. "Coastal adaptation, sedentism, and domestication: a model for socio-economic intensification in prehistoric Southeast Asia," by Charles Higham and Bernard Maloney. Address: Dep. of Human Environment, Inst. of Archaeology, University College London, UK.

2425. Hesseltine, C.W. 1989. Fermented products. In: Ruth H. Matthews, ed. 1989. Legumes: Chemistry, Technology, and Human Nutrition. New York and Basel: Marcel Dekker, Inc. x + 389 p. See p. 161-85. [29 ref]
• ***Summary:*** Contents: Introduction: Fermented legume products. A table lists about 85 products with the vernacular name, legume from which it is made, country, and microorganism(s) used. Products made from soybeans include: Miso (bean paste), Shoyu (soy sauce), Sufu (Chinese cheese), Ontjom (Oncom), Hamanatto, Idli (with and without soy), Natto, and Tempeh. Address: Human Nutrition Information Service, USDA, Hyattsville, Maryland (and NRRC, Peoria, Illinois).

2426. Hoshijo, Kathy. 1989. Kathy cooks: Vegetarian, low cholesterol. New York, NY: Simon & Schuster (A Fireside Book). 728 p. Illust. Index. 24 cm.
• ***Summary:*** Previously published as *The Art of Dieting Without Dieting* (1986). A whopper of a cookbook, with 350 easy-to-prepare vegetarian recipes from the star of the PBS television series "Kathy's Kitchen"–which airs in 180 cities nationwide. Each recipe contains a detailed (full-page!) nutritional analysis.

This book contains a wealth recipes using tofu, tempeh, soymilk, miso, and whole soybeans.

2427. Leneman, Leah. 1989. The single vegan: Simple, convenient and appetizing meals for one. Wellingborough, Northamptonshire, England: Thorsons Publishing Group. 127 p. Illust. Index. 21 cm.
• ***Summary:*** Vegan recipes for one, grouped seasonally, and within each season by day of the week, with weekly shopping lists and staples to be kept on hand. Soy-related recipes include: Smoked tofu à la king (with smoked tofu and soymilk, p. 21). Strawberry cheese (with plain soy yogurt, p. 29). Spaghetti stir-fry (with tofu, p. 34). Mediterranean-style potato salad with yogurt dressing (with soy yogurt, p. 37). Savoury mushroom bake (with tofu, soy yogurt, and miso, p. 38). Tofu and green pepper savoury (p. 44). Bean and potato salad (with soy yogurt and vegan mayonnaise, p. 47). Courgette (zucchini) and tomato flan (with tofu, p. 48). Tofu and vegetable stew (p. 51). Tofu pot pie (p. 53). Scalloped tofu au gratin (incl. soymilk, p. 58). Nasi goreng (with tofu, p. 63). Chilled cream of tomato soup (with soy yogurt, p. 65). Cream of cauliflower soup (with soymilk, p. 69). Scrambled tofu and leek (p. 79). Irish stew with frozen tofu (p. 84). Tempeh and sweetcorn roast with tahini/mushroom sauce (p. 92-93). Tempeh and mushroom stew on a mashed potato base (p. 98). Sweet tofu 'omelette' (incl. soymilk, p. 105). Curried tofu (p. 107). Mushroom miso gravy (p. 115; shows a pack of Sunwheel brown-rice miso). Tropical blancmange (with soymilk, p 116).

Note: Soymilk and soy sauce are used in small amounts in many other recipes. This book is distributed in the USA by Sterling Publishing Co. Address: 19 Leamington Terrace, Edinburgh EH10 4JP, Scotland.

2428. Leneman, Leah. 1989. Slimming the vegetarian way. Revised and reset ed. Wellingborough, Northamptonshire, England: Thorsons Publishers Ltd. 144 p. Index. 20 cm. 1st. ed. 1980.
• ***Summary:*** The menus in this natural-foods, vegan cookbook are designed for 1 person and the daily calories intake is kept at about 1,000 calories. The book takes a positive attitude toward dieting by focusing on those foods you can eat, rather than those you should avoid. Each "menu" consists of breakfast, lunch, and dinner for 1 day. For each meal there is one column for Imperial (Metric) measurements, one for American measurements, and one for calories, with a calories for each meal and for the day. There are menus for each of the four seasons plus chapters on crash diets, desserts, and a vegetarian wholefood calorie chart.

The preface to the new edition notes: "The greatest change which has occurred since the first edition of this book appeared has been the phenomenal proliferation of soya foods (soyfoods in American parlance). Tofu is arguably the best friend a slimmer ever had, for no other food so low in calories and high in protein is as versatile as tofu. Tempeh is another fine soya food for slimmers, though as it is not as readily available as tofu, I have confined its use to only one recipe. Since soya milk and yogurt are now so easy to obtain, I have given them as alternatives to the dairy versions, so that vegans, and others trying to cut down on dairy produce, will be able to use the book in the same way as lacto-vegetarians."

Soy-related recipes include: Pineapple tofu salad (p. 36). Tofu celery loaf (p. 39). Tofu-stuffed aubergine (eggplant, p. 66). Scrambled egg or tofu, sausalata and tomato (p. 89, 118). Tofu slices on toast with creamy gravy (p. 98). Miso soup with tofu (p. 102). Spaghetti with tempeh and mushroom sauce (p. 127). Vegetable charlotte with smoked tofu (p. 129). Soya milk and soya yogurt are always listed as alternatives to skim milk or yogurt from cows. TVP is used as an ingredient in many recipes, and "Tamari (soy sauce)" is widely used as a seasoning. Address: 19 Leamington Terrace, Edinburgh EH10 4JP, Scotland.

2429. Quong Hop & Co. 1989. The Soy Deli: Good food for healthy living (Leaflet). South San Francisco, California. 1 p. 28 cm.
• ***Summary:*** This black on beige leaflet shows the front panel of ten soy products made by Quong Hop & Co., including tofu burgers, tempeh burgers, baked five-spice tofu, baked savory tofu, and hickory smoke flavored baked tofu. Address: 161 Beacon St., South San Francisco, California 94080. Phone: 415-761-2022.

2430. Reddy, N.R.; Salunkhe, D.K. 1989. Fermentation. In: D.K. Salunkhe and S.S. Kadam, eds. 1989. CRC Handbook of World Food Legumes: Nutritional Chemistry, Processing Technology, and Utilization. Vol. III. Boca Raton, Florida: CRC Press, Inc. 323 p. See p. 177-217. [233* ref]
• ***Summary:*** Contents: Introduction. Soy sauce: Types of soy sauce, preparation of *Shoyu* composition, safety. Miso: Preparation, composition, nutritional quality, miso-like products. Sufu: Preparation, microorganisms, biochemical changes and composition, toxicology, method of preparation, chemical composition, physical properties, nutritional quality. Tempeh: Preparation, nutrient composition, nutritional quality, antinutritional and/or toxic factors, *tempeh* and *tempeh*-like foods from other legumes. Address: 1. Community Research Service, Atwood Research Facilities, Kentucky State Univ., Frankfort, Kentucky; 2. Dep. of Nutrition and Food Sciences, Utah State Univ., Logan, Utah.

2431. *SoyaScan Notes.* 1989. Terms related to soyfoods, soybeans, and the soybean industry: Library of Congress subject headings and call numbers (Overview). Compiled by William Shurtleff of Soyfoods Center.
• ***Summary:*** Two different types of call numbers are used by

American libraries for cataloging their books. Most larger libraries use the Library of Congress call numbers (LC numbers, which start with two letters) and many smaller libraries use the Dewey Decimal System (Dewey numbers, which contain only numbers).

The following are from the Library of Congress Subject Headings (12th ed. 1989) and the Library of Congress Classification Schedules. The first edition of Class S (Agriculture), for example, was published in 1911, and the 4th edition in 1982. BT = Broader terms. NT = Narrower terms. UF = Use for. May Subd Geog = May subdivide geographically, e.g., Soy sauce industry-Japan.

Class H is Social sciences and economics. Class Q is science. Class S is agriculture (SB is plant culture. SB205 is field crops, legumes). Class T is technology (TX includes nutrition). Class Z is bibliography and library science.

HD9000-HD9019 Natural foods industry

Shortenings–Use oils and fats, edible.

HD9235.S6-.S62 Soybean industry

HD9235.S6-.S62 Soyfoods industry

HD9235.S6-.S62 Soymilk industry

HD9330.S63-.S633 Soy ice cream industry

HD9330.S65-.S653 Soy sauce industry

HD9330.T68-.T683 Tofu industry

HD9490 Soybean oil industry

QK495.L52 Soybean botany

SB205.S7 Soybean culture (Incl. *Soybean Digest* and Soya Bluebook)

SB608.S7 Soybean–Diseases and pests

SF99.S Soybean as feed

SF99.S Soybean meal as feed

TP438.S36 Nattô manufacture

TP438.S6 Soy sauce manufacture

TP438.S6 Miso manufacture. BT Soybean as food. NT Cookery (Soy sauce or miso)

TP684.S Soybean oil

TX401.2.S69 Soyfoods nutrition.

TX558.S6 Nattô nutrition. BT Fermentation, Soybean as food, Soybean products.

TX558.S7 Soyfoods composition. UF Soybean as food. NT Miso, Natto, Tempeh

TX558.T39 Tempeh

TX558.T57 Tofu

Z5074.S73S5 Bibliographies related to soybeans, or all soya in various countries

Z5776.S63S5 Bibliographies on soyfoods

Z696.1.S68 SOYA (Information retrieval system)

The following soy-related terms have a subject heading but no LC call number: Miso industry, Natto industry, Soy sauce, Soybean flour, Soybean glue, Soybean meal, Soybean milk, Soybean products.

2432. Steinkraus, Keith H. ed. 1989. Industrialization of indigenous fermented foods. New York, NY: Marcel Dekker. xii + 439 p. 24 cm.

• ***Summary:*** This book contains the following chapters on soyfoods: 1. Industrialization of fermented soy sauce production centering around Japanese shoyu, by Danji Fukushima. 2. Industrialization of Japanese miso fermentation, by Hideo Ebine. It also contains chapters on the industrialization of the production of sake, tapai, African beers, magehu, ogi, and gari. The final chapter is titled "Industrialization of indigenous fermented food processes: Biotechnological aspects."

The book is dedicated "To the memory of Prof. Andre G. van Veen, a pioneer in the study of indigenous fermented foods." Address: Inst. of Food Science, Cornell Univ., Geneva, New York.

2433. Vegan Restaurant (The). 1989. January. New soyfoods restaurant or deli. 115 Baldwin Ave., Paia, Maui, Hawaii 96779.

• ***Summary:*** Talk with Michael Klaper. 1990. Feb. Gentle World has recently opened this vegan restaurant on Maui. Menu sent by Jeanie Greenbaum of Gentle World in Alachua, Florida. 1991. March 13. The restaurant is now open for dinner only. Soyfoods on the menu include: Tofu eggless salad. Tofu eggless salad sandwich. The vegan burger (with seitan and tempeh). Entrees ($5.95 to $6.95): Lasagna tofucci. Tofu loaf. Lemon broiled tempeh with scalloped potatoes. Side orders: Tofu roll (with broccoli, onions and seasonings, wrapped and baked). Crispy tofu chunks. Desserts: Rice Dream Sundae. Assorted Barat Tofu Chocolates. Smoothies: Float with a scoop of Rice Dream. Address: Paia, Maui, Hawaii. Phone: 808-579-9144.

2434. Byodo Naturkost GmbH. 1989? Tofu & tempeh: Traditionelle japanisch, indonesisch, in handwerklicher Herstellung [Tofu & tempeh: Traditional Japanese and Indonesian, made by hand (Poster)]. Hirschbergstr. 9, D-8000 Munich 19, West Germany. Undated. Reprinted in Soyfoods Marketing. Lafayette, CA: Soyfoods Center. [Ger]

• ***Summary:*** This large and colorful poster, 19.5 inches wide by 27.5 inches high, has the company name in the top one-third of the space, the text in the bottom third, and a color photo in the middle. The photo shows a cake of tofu and a cake of tempeh on a bed of soybeans in front of two sacks of organic soybeans. Address: Munich, West Germany. Phone: (089) 16 85 70.

2435. Broom, Maria. 1990. Serulada Spiritual Foundation in Uganda, and soybeans (Interview). *SoyaScan Notes.* Jan. 21. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** This foundation is a spiritual, vegetarian community of about 200+ people who live on the land at Sseesamirimbe, near Masaka, Uganda. They grow a lot of soybeans and eat them as such; they do not do any processing, but are interested in making tofu, soymilk, and

tempeh. Maria gave them three Soyfoods Center books on these subjects. She has visited the community twice, for 1 month each time. They have been together for about 15 years, have an African spiritual master named Bambi Baaba, but their spiritual practice resembles East Asian practices. They have a city address too: P.O. Box 5374, Kampala, Uganda.

Maria visited Dr. D. Warren Harrison of Africa Basic Foods. He hopes to contact the community and teach them more about soyfoods. Address: 1728 Linden Ave., Baltimore, Maryland 21217. Phone: 301-462-5370.

2436. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Flora Yap Tempeh.
Manufacturer's Address: Am Muehlenwaeldchen 1a, W-6670 St. Ingbert, Germany.
Date of Introduction: 1990. January.
New Product–Documentation: Letter from Flora Yap. 1993. April 23. After 17 years work at a chemical/pharmaceutical firm (Chephasaar) in Rohrbach, St. Ingbert, she was laid off in 1987 when the firm had financial problems. She did some translation work then used this money to buy an incubator to prepare tempeh starter. Her original cultures came from the Centraal Bureau voor Schimmelcultures in Baarn, The Netherlands. Then she started making tempeh herself in her home and selling it to "Mutter Erde" in Saarbruecken (beginning on 28 Jan. 1990). Then she started introducing tempeh in German cooking courses concerning whole foods ("Vollwert Ernährung").

2437. **Product Name:** [Tempeh, Ready-to-Eat Tempeh, Marinated and Grilled Ready-to-Eat Tempeh. Tempeh with Fines Herbes, Tempeh Saté].
Foreign Name: Temeph, Tempeh Away, Tempeh–Plus Away, Tempeh met Kruiden, Tempeh Sate.
Manufacturer's Name: Food for Freedom.
Manufacturer's Address: Nylense [Nijlense] Steenweg 72, B-2270 Herenthout, Belgium. Phone: 014 / 51 7237.
Date of Introduction: 1990. January.
Ingredients: Basic tempeh: Organically grown soybeans, water, Rhizopus starter.
Wt/Vol., Packaging, Price: 200 gm.
How Stored: Refrigerated.
New Product–Documentation: Letter, label, and leaflet sent by Lucio de Berti, owner of Food For Freedom. 1992. Jan. 4. This product, called simply "Tempeh," was introduced in Jan. 1990. The company now makes about 80 kg/week of tempeh. "Our company is meant to be mainly a fresh tempeh producer, since we believe that tempeh is the best way to use soyabeans for mankind. Our second goal is to help spread the use of soya products integrated into a more philosophical lifestyle, based on macrobiotics." Note: Lucio started making tempeh in Italy in the fall of 1987 with La Finestra sul Cielo; he was Italy's first tempeh maker.

Labels. 3 by 4 inches. various pairs of colors. In Dutch and French.

Leaflet (in French). "Fresh tempeh." Contents: What is tempeh? Why does the fermentation of tempeh make it a unique food? Why fresh tempeh? How we make Food for Freedom tempeh. When did Food for Freedom start? For more information. Four tempeh recipes.

Form filled out by Mr. Frederik Dossche and two leaflets sent by fax. 2001. June 7. Food for Freedom and De Hobbit seem to have merged. Both make tempeh at: Nijverheidslaan 7, 9980 Maldegem, Belgium. Phone: 050 71 70 20. Food for Freedom makes Tempeh and Smoked Tempeh. De Hobbit makes Tempeh, Smoked Tempeh, and Tempeh Bacon.

Label sent by Sjon Welters. 2004. March. "Tempeh. 100% Bio." 4.5 by 3 inches. Blue, white, green and black on orange. 300 gm. Maldegem. In Dutch.

2438. *Indonesia Times.*1990. Prospect of non-salted soybean fermentation is good. Feb. 14.
• ***Summary:*** This article is about the Second Asian Symposium on Non-Salted Soybean Fermentation, held 13-15 Feb. 1990 in Jakarta, Indonesia. It covers lectures or papers presented by Prof. Darwin Karyadi (chairman of the symposium), M. Adhyatma (Indonesia's Health Minister), etc.

Moreover: "In Japan, Dr. Kiku Murata, together with a number of scientists and industrialists, have established the Tempeh Club, to encourage research on tempe and to popularize it there."

2439. Stromnes, Lonnie. 1990. New developments at White Wave (Interview). *SoyaScan Notes.* Feb. 14. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** It now looks like the White Wave line may get into west coast Safeway supermarkets. Safeway will start them off in the hot regions like Berkeley, San Francisco, Marin, and Santa Cruz–and let them try to prove themselves. In a year or two, there will be more distribution. In late Dec. 1989 White Wave decided to stop having Wildwood Natural Foods distribute their line of tofu and tempeh products; there were too many conflicts of interests. Rock Island, a major California natural foods distributor, picked up the White Wave line on Jan. 5 and distributes it to 120 Safeway stores, as well as to most natural foods stores. When Rock Island took on the White Wave line, Rock Island also dropped the Island Spring and Quong Hop lines (Lonnie had nothing to do with this), and asked White Wave (as part of the deal) to drop 3 other smaller distributors, including Wildwood. With this move, White Wave became Rock Island's leading line of soyfoods products. Lonnie thinks that Island Spring was a headache to Rock Island, the numbers were not there, and maybe some products were late. Rock Island was always very upset with Quong Hop because the latter cherry picked

the best accounts in Northern California and delivered everything with their own trucks. Rock Island doesn't like to play second fiddle and pick up the fringe markets. Safeway in California now sells Wildwood, Quong Hop, and Azumaya. White Wave is now on a roll–they are the hot soyfoods company, and they are shooting for the big time. White Wave hopes to at least double sales in 1990 compared with 1989.

Steve Demos is now on the Board of Directors of the Soyfoods Assoc. Address: White Wave, Inc., 14670 Doolittle Dr., San Leandro, California 94577.

2440. Achter-Theiss, Elke. 1990. Speise statt Futter [Food instead fodder]. *Oeko-Test Magazin* (*Frankfurt, West Germany*). Feb. p. 57-59. [Ger]
• ***Summary:*** Discusses whole dry soybeans, soybean meal, soy sauce, soymilk, tofu and silken tofu, tempeh, and miso.

2441. Arbianto, Purwo. 1990. Preliminary studies on the genetic system of *Rhizopus* Sp. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 83-90. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [9 ref. Eng]
• ***Summary:*** The goal of this study is the mass production of inocula using modern methods. Discusses: Protoplast formation. DNA isolation. Regeneration and identification. Fig. 1 shows the three ecosystems considered to be part of the tempe fermentation. Contains 8 tables. Address: Chemistry Dep., Bandung Inst. of Technology (ITB).

2442. Barz, W.H.; Börger-Papendorf, G.; Rehms, H. 1990. Characterization of glycohydrolases, phosphatases and isoflavone metabolism in tempe-forming Rhizopus-strains. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 20-32. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [Eng]
• ***Summary:*** Contains 12 figures and 5 tables. Address: Dep. of Plant Biochemistry, Westfälische Wilhelms–Universität, Hindenburgplatz 55, D–4400 Muenster, Federal Republic of Germany.

2443. Baumann, Uwe; Bisping, B.; Rehm, H.J. 1990. Content and release of amino acids during the tempe fermentation. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 33-47. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [Eng]
• ***Summary:*** When amino acids are "released" by enzymes during fermentation they become free amino acids. Some authors have proposed that the large amount of free amino acids in tempeh contributes to its nutritional value.

"This report gives an actual overview about the results of a number of tempe fermentations with different strains of *Rhizopus oryzae, R. stolonifer*, and *R. microsporus var. oligosporus* isolated from Indonesian tempe samples in our lab, regarding the amino acid pattern and release. Some data about the acidification of soaking water by bacteria, which is the first step of traditional tempe fermentation, are also presented."

There is no significant change in the amino acid pattern between soybeans and tempeh. It is likely that there is now de novo [new] synthesis of amino acids but only a degradation and consumption of soy protein by the fermenting fungus.

Contains 20 bar charts and two graphs (the 1st of the latter showing the pH of the soaking water of soybeans inoculated with one strain of *Rhizopus*). Address: Institut für Mikrobiologie, Corrensstr. 3, D–4400 Muenster, Federal Republic of Germany.

2444. Down to Earth Natural Products Ltd. 1990. Some companies start out really small and then... they grow! (Leaflet). Penrose, Auckland, New Zealand. 2 p.
• ***Summary:*** "Which is why we've changed our name from Bean Supreme to Down to Earth–to make room for things to come.

Bean Supreme will remain as the brand name for our existing and expanding range of traditional soy products–Tofu and Tempeh.

"Our new company name Down to Earth Natural Products Ltd reflects our intended diversification into new areas of product development and marketing. We believe the name will speak directly to our core group of consumers, those with increasingly convergent interests in health and the environment.

"Our first product launch [soymilk] under our new name is imminent. In fact we'll send you some in the post! Until then–goodbye from Bean Supreme. More to follow from Down to Earth.

"From the directors–Paul and Trevor Johnston and all of the team, best wishes for 1990."

Brands: Bean Supreme, Nice 'n' Healthy, Lite Licks, Bio Farm, Spiral Foods. Address: Box 12082, 140 Hugo Johnson Dr., Penrose, Auckland, New Zealand. Phone: (09) 590 592.

2445. Fardiaz, Srikandi; Pangestu, W.; Suliantari, -. 1990. A study of the bacterial flora of overfermented soybean tempe. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 14-19. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [6 ref. Eng]

• ***Summary:*** "In some areas of Indonesia, particularly in Central Java, fermentation tempe is prolonged" to produce a particular flavor and texture, "and the overfermented tempe is used as a flavor ingredient in some foods such as mixed vegetable soup / curry (sayur lodeh), hot sauce (sambal tumpang) and other foods."

"Samples of tempe were collected from different area in Bogor, and divided into two parts, on part was put into polyethylene bags and the other part was wrapped in banana leaves. All tempe samples were stored at room temperature and analyzed every two days for chemical and microbiological characteristics."

"There was no significant difference in the gram positive bacterial counts (about 10 million to 10 million CFU {Colony Forming Units} per gram), but significant increases in gram negative bacterial counts and *Staphylococcus* counts were detected–though they were far below the counts that usually cause food poisoning. For each graph or table, one data set is for tempe in polyethylene bags and another for tempe in banana leaves.

Figures show: (1) Graph–"Changes in pH, moisture and total volatile nitrogen of tempe during prolonged incubation at room temperature [in Indonesia] for four days." (2) Bar chart–"Changes in gram negative bacterial counts of tempe during prolonged incubation at room temperature for four days." (3) (2) Bar chart–"Changes in *Staphylococcus* counts of tempe during prolonged incubation at room temperature for four days."

Tables show: (1) Number of isolates identified as gram negative bacteria after 0, 2, and 4 days. (2) Identified bacteria isolated from overfermented tempe: *Escherichia coli. E. freundii. Enterobacter aerogenes. Staphylococcus. Vibrio cholerae. Proteus morganii. P. vulgaris.*

Note: Most pathogenic bacteria in humans are gram-positive organisms. Classically, six gram-positive genera are typically pathogenic in humans. Two of these, Streptococcus and Staphylococcus, are cocci (sphere-shaped bacteria). The remaining organisms are bacilli (rod-shaped bacteria) and can be subdivided based on their ability to form spores. The non-spore formers are Corynebacterium and Listeria (a coccobacillus), while Bacillus and Clostridium produce spores. The main gram-negative bacterium that is a pathogen for humans is Escherichia coli (Source: Wikipedia May 2010). Address: Dep. of Food Technology and Human Nutrition, Bogor Agricultural Univ., Bogor, Indonesia.

2446. Hering, L.; Bisping, B.; Rehm, H.J. 1990. Fatty acid composition during tempe fermentation. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 63-70. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [Eng]
• ***Summary:*** Determines the fatty acid composition of tempe produced using different strains of *Rhizopus* species molds isolated from Indonesian tempe, with special attention to the positional isomers of linolenic acid, primarily gamma-linolenic acid, which is a prostaglandin and leucotrien precursor. Contains nine figures, mostly bar charts showing fatty acid composition, plus several graphs showing changing fatty acid levels during 70 hours of fermentation. Address: Institut für Mikrobiologie, Corrensstr. 3, D–4400 Muenster, Federal Republic of Germany.

2447. Hermana, -; Mahmud, Mien K.M.S.; Karyadi, Darwin. eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [89 ref. Eng]
• ***Summary:*** The chairman of this symposium is Prof. Darwin Karyadi, M.D., PhD. His Foreword notes that this is actually the third such symposium; the first was the Symposium on Tempe, held on 14-16 April 1985 in Jakarta. These proceedings consist of 15 papers, each cited separately, plus one page of Acknowledgements at the end. Address: Nutrition Research and Development Centre, Jalan Dr. Sumeru 63, Bogor 16111, Indonesia.

2448. Jha, H.C.; Bockemühl, S.; Egge, H. 1990. Adriamycin-induced mitochondrial lipidperoxidation and its inhibition by tempe isoflavonoids and their derivatives. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 4-13. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [Eng]
• ***Summary:*** A very technical article. Contains 6 tables and 8 figures. Address: Inst. of Physiological Chemistry, Univ. of Bonn, Federal Republic of Germany.

2449. Karta, Susani K. 1990. The market prospective for tempe in the year 2000. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 94-104. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [11 ref. Eng]
• ***Summary:*** A very interesting paper. Contents: Introduction. Market situation for tempe in Indonesia. Health and nutritional significance of tempe. Tempe for weaning food. Constraints and trends in the market development of tempe. Recommended guidelines and strategies. Ideas for the diversification of tempe utilization (Tempe as a food ingredient, new tempe food opportunities).

Tempe "is a key protein source in the rice-diet of the people of Indonesia. It is consumed by millions of people of various ages and socio-economic status. It has gained popularity in the Netherlands, Japan, Malaysia, Singapore

and other areas where Indonesians have settled. It has also slowly been making its way into the American diet, particularly, in the vegetarian, cholesterol-free and low-fat food product markets."

"Indonesia with a population of 177 million people (in 1988) and an annual population growth rate of 2%, is the largest tempe producer in the world and has the largest soyfood market in the region. In 1983, Indonesians consumed about 0.9 million MT [metric tons] of soybeans as food, which increased to about 1.5 million MT in 1988 (Table 1). About 50 percent of the total soybeans consumed was in the form of tempe, 40% as tofu and the remaining 10% was used for making soy sauce and tauco (a fermented whole soybean condiment). In 1988, the estimated soybean consumption for tempe was around 764,000 MT which amounted to an average per capita consumption of 6.45 kg of tempe (equivalent to 4.3 kg soybeans). In the past five years the consumption of soyfood has increased by an average of 10% annually."

"Acute diarrheal disease is one of the leading causes of childhood mortality and morbidity in developing countries and is a major contributor of malnutrition. Approximately 25% of the growth differential between children in selected developing countries can be explained by diarrhea. The mortality and morbidity data from a total of 193 surveys carried out in 49 countries since 1981 by WHO (1986) indicate that, on average, a child under 5 years of age suffer 3.5 episodes of diarrhea per year and that about one-third of deaths in this age group are diarrhea associated.

"Investigations worldwide have found diarrhea incidence peaking between the ages of 6 months to 3 years."

Tables: (1) Indonesian soybean production, imports, and consumption as food, 1983-1988. Soybean production increased from 536,000 tonnes (metric tons) in 1983 to 1,179,000 tonnes in 1988–more than double. Soybean imports, which were 391,000 tonnes in 1983, rose to a peak of 400,000 tonnes in 1984, then decreased to 350,000 tonnes in 1988. Consumption of soybeans as food increased from 927,000 tonnes in 1983 to 1,528,000 tonnes in 1988. Per-capita consumption figures are not given. Source: ASA estimates and BULOG statistics. (2) Nutritional composition of tempe (100 gm edible portion). (3) The essential amino-acid composition of tempe compared with the FAO/WHO reference pattern (expressed in milligrams per gram of nitrogen). (4) Fatty acids in soy tempe. (5) Global and regional population in 1980 and estimated number (millions) and distribution of diarrheal diseases. (6) Household Health Survey illness data by different age groups in Indonesia. (7) Potential demand for tempe flour in weaning food in the year 2000, Indonesia. (8) Demographic estimates for Asian developing countries. (9) Estimated number (millions) of children under age 5 in Asian developing countries. (10) Projected potential use of tempe flour in weaning food in Asian developing countries in the year 2010. Address: American Soybean Assoc., Singapore.

2450. Kodyat, Benny A.; Sukaton, A.; Latief, D. 1990. Traditional fermented soybean (tempe) for increasing nutritional status of children in Indonesia. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 110-15. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [Eng]

• ***Summary:*** Contents: Primary health care strategy. Nutrition problems in Indonesia (for main types). Food and nutrition policy. The objectives of food and nutrition strategy. Magnitude of the PEM (Protein Energy Malnutrition). problem. Programme strategy on PEM control. Tempe for increasing nutritional status of children (a pilot project).

A map shows Protein Energy Malnutrition areas in Indonesia. It is divided into three types of areas based on prevalence: (1) Less than 7%. (2) 7-11%. (3) Greater than 11%. On Java, only west Java is greater than 11%. But most of the other islands have greater than 11%. Address: Directorate of Community Nutrition, Ministry of Health, Republic of Indonesia.

2451. Matsuo, Masako. 1990. Development of a high-fiber foodstuff by fermentation with *Rhizopus oligosporus.* In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 48-56. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [8 ref. Eng]

• ***Summary:*** This article is about the preparation and evaluation of okara tempeh. Figures show: (1) Photograph of okara tempeh, sliced diagonally to show inner surface. (2) Scanning electron micrographs of okara and okara tempeh. (3) Comparison in composition between okara and okara tempeh. (4) Sensory evaluation of okara tempeh powder by a panel of 20 female students, ages 21-22 (four pie charts); it was neither liked nor disliked. (5) Water holding, oil retention and emulsifying capacity of several powders. (6) Antioxidant action of soybean foods. (7) Volume of biscuits containing okara tempeh (OT). (8) Rheolometric parameters and water absorption rate of biscuit containing OT. (9) Antioxidant action of OT in biscuit fat.

A table shows ingredients of the high-fiber biscuit. Address: Gifu Women's Univ., Gifu, Japan.

2452. Mead, Nathaniel. 1990. Where's the B-12? *Solstice* No. 39. p. 10-15. Feb. [2 ref]

• ***Summary:*** Sylvia Ruth Gray, a macrobiotic mother in Salt Lake City, Utah, is trying to discover why the vitamin B-12 content of our foods is decreasing. She has commissioned independent studies by a California laboratory which show zero B-12 in Swiss cheese, chicken breast, beef heart. But

100 gm of tempeh (made by Turtle Island Soy Dairy) was found to contain 4.6 mcg of B-12; the test was conducted using the protozoan *Ochramonas malhamensis.* She feels that many of the key issues in this debate are not being discussed.

2453. Murata, Kiku; Asano, Machiko; Fukakura, Noriko. 1990. Activities of Tempe Study Group and popularity of tempe in Japan. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 1-3. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [13 ref. Eng]
• ***Summary:*** In 1985 the First Asian Symposium on Non-Salted Soybean Fermentation was held in Tsukuba, Japan. In 1988 the Tempe Study Group was started in Japan by various people interested in tempe. "Seventy seven people became regular members (for a membership one has to pay ¥2,000/fiscal year) and 12 supporting members. In 1989 fiscal year there are 85 regular and 10 supporting members (who have to pay at least ¥10,000/fiscal year).

"The Tempe Study Group had the first Tempe Study Meeting at a lecture hall of Yukijirushi Milk Co. Ltd. in Tokyo, Feb. '89. The second Meeting was held at Kenkyu Koryu Center of Osaka City University in Osaka, in June 1989. The third Meeting was held at Teikoku Gakuen, together with the regular meeting of Kansai Cereal Science Study Group in September 1989, having party serving various tempe dishes. Each time there were 70-100 participants from all over Japan who were very active in discussions. The subjects and speakers were as follows:

"For the first meeting, 1. Y. Torii; About her visit to Natural Foods Expo at Los Angeles, California, in April 1988. 2. K. Okada; Studies on Isolation of Specific Gene from Tempe. 3. T. Maeda; Works on Tempe in our Village.

"For the second Meeting, 1. M. Terashima; The Status quo on Soyprotein and its Foods in Japan. 2. E. Katoh; On Frying Tempe in Reduced pressure. 3. S. Kawabata; Tempe made of Tofu Residue [Okara] and Its Utilization. 4. M. Matsuo; High Fiber Biscuit Adding Tempe made of Tofu Residue.

"For the third Meeting, 1. T. Watanabe; Science of Tempe. 2. K. Murata; Chemistry of Tempe and Its Edible Value. 3. M. Iwatsuki; Problem on Production and Selling Tempe on the Market.

"However, according to our survey of 3,000 people in 27 groups only 10% knew tempe. Among them, in 7 groups, 20-25% of the people liked tempe, as shown in Table 1. Therefore, I feel that we need more efforts to let people know tempe and how to handle or eat tempe." A table shows the results of the survey of 3,000 people as described above. In the 7 groups, 50% knew about tempeh, but only 20-25% of the total said they liked it. Address: 1. Research Inst. for Education, Teikoku Gakuen; 2. Teikoku Women's Univ., Moriguchi City. All: Osaka, Japan.

2454. Onghokham, -. 1990. Historical and social roots of tempe. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 71-76. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [12 ref. Eng]
• ***Summary:*** He begins by admitting that this is a field that he knows almost nothing about. Originally tempe, like eggs, was a low-class food in Indonesia. The late President Sukarno denounced tempe by appealing to Indonesians not to be a tempe nation (*bangsa tempe*)–meaning servile, weak, and inefficient. Yet Sukarno loved to eat tempe, as does the current President Suharto. And his remark had no effect on tempe consumption in Java.

Indeed things have changed since Sukarno's time, and tempe has nowadays become such a part of the Javanese diet that even the middle and upper classes eat it. And every market eating stall (*warung*) as well as every big restaurant (such as Handayani) that serves Javanese food must serve at least one tempe dish–if not more. Address: Univ. of Indonesia.

2455. Pawiroharsono, Suyanto; Siregar, E.; Matondang, T.H. 1990. Investigation of isoflavone and microorganisms in tempe. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 77-82. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [8 ref. Eng]
• ***Summary:*** The aim of this investigation is to determine the interrelationship between the microorganisms present in tempe and its content of biologically active substances, mainly of the isoflavonoid compound, Factor-2.

Tempe samples were taken from 14 towns and cities throughout Java and Sumatra. Tables show: (1) Isoflavone analysis of tempe by TLC (thin layer chromatography). Based on 26 samples from many places, values are given for daidzein, Faktor-2, genistein, and glycitein. (2) Microorganisms isolated from 20 tempe samples. For each gives the number of strains of bacteria, yeasts, fungi, and total. (3) Data recapitulation of 20 tempe samples. Tempe with the highest content of Factor-2 as made with inoculum from LIPI (National Chemistry Institution).

"2. Most of the tempe samples inoculated with inoculum from LIPI contain relatively more strains of yeast and fewer strains of bacteria and mold. This may relate to the raw materials used in the production of LIPI inoculum, which is steamed rice.

"3. The other types of inoculum, particularly those from Tegal and Pekalongan, contain fewer strains of yeasts and more strains of bacteria." Address: Indonesia.

2456. Slamet, Dewi Sabita; Enliza, A.; Komari, -. 1990. Tempe spread. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 91-93. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [6 ref. Eng]
• ***Summary:*** Describes how to make a tempe spread supplemented with grated carrots. The carrots (in the proportion of 4 tempe to 2 carrots) add an attractive color plus the nutritional value of carotene. Citric acid and sugar are also added.

Tables: (1) Results of organoleptic test of tempe spread (percentage). (2) Moisture, protein, carotene and pH of tempe spread (in 100 g wet basis). (3) Mineral content of tempe spread (4:2). Address: 1. Nutrition Research and Development Center, Bogor; 2. Academy of Nutrition, Jakarta, Indonesia.

2457. **Product Name:** [Tofu, and Tempeh].
Foreign Name: Tofu, Tempeh.
Manufacturer's Name: Soy & Rice.
Manufacturer's Address: Via A. Canale 8/c, 10078 Venaria Reale (TO), Italy. Phone: 011-402-0380.
Date of Introduction: 1990. February.
Ingredients: Tempeh: Soya, water, Rhizopus oligosporus.
How Stored: Refrigerated.
New Product–Documentation: Letter and Label for Tempeh sent by Bosco Franca and Garafola Carmelo of Soy & Rice. 1992. Feb. 2.75 by 4 inches. Black on white. Self adhesive. The logo is that developed by Mitoku which states in Japanese characters *"I Shoku Dô Gen"* (Medicine and food come from the same source, or Your food is your best medicine). Store at 4ºC [39.2ºF]. The company began to make these products in about Feb. 1990. They now make 40 kg/week of tempeh.

2458. Sudigbia, I.; Sumantri, Ag.; Karyadi, D. 1990. The use of tempe in medical practice. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 105-09. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [7 ref. Eng]
• ***Summary:*** Contents: Introduction. Tempe in oral rehydration treatment. Tempe in nutritional therapy (use of a tempe formulated food in nutritional management of chronic diarrhea). Discussion.

Tables: (1) Composition of tempe formulated food and its nutritive value. (2) Effect of tempe formulated food on acute diarrheal cases. (3) The mean values of body weight gain and nutritional status in 3 months evaluation. (4) Nutritional impact of food mixtures.

Figure 1 shows the growth velocity of children fed with four different foods every 3 months after diarrhea. Address: 1. Child Health Dep., Medical Faculty, Diponegoro Univ.; Nutrition Research and Development Centre, Ministry of Health.

2459. Timotius, K.H.; Farley, Peter. 1990. Extracellular enzymes of *Rhizopus oligosporus,* a review. In: Hermana, Mien K.M.S. Mahmud, and Darwin Karyadi, eds. 1990. Second Asian Symposium on Non-Salted Soybean Fermentation. Bogor, Indonesia: Nutrition Research and Development Centre. vii + 116 p. See p. 57-62. Held 13-15 Feb. 1990 in Jakarta, Indonesia. 23 cm. [9 ref. Eng]
• ***Summary:*** Contents: Introduction. Amylase. Protease. Lipase. Contains 7 graphs and one bar chart. *Rhizopus oligosporus* "produces extracellular enzymes such as amylase, protease, and lipase. These enzymes are also very important, because they make the substrate into a more digestible food. Soluble substances increase during tempe fermentation." Address: Faculty of Biology, Satya Wacana Christian Univ., Salatiga 50711, Indonesia.

2460. **Product Name:** [Soy Tempeh].
Foreign Name: Soja Tempeh.
Manufacturer's Name: Yap Bwee Hwa Tempeh Co.
Manufacturer's Address: Am Muehlenwaeldchen 1a, W-6670 St. Ingbert-Rohrbach, Germany. Phone: 06894 / 53609.
Date of Introduction: 1990. February.
Ingredients: Soybeans*, vinegar, Edelpilz (Rhizopus oligosporus). * = Organically grown (Kontrollierter biol. Anbau).
Wt/Vol., Packaging, Price: 200 gm.
How Stored: Refrigerated.
New Product–Documentation: Letter and Label sent by Bwee Hwa "Flora" Yap, founder. 1992. March 16. She is now a member of the "Kneipp Verein" and is introducing tempeh to their cooking courses. "In order to give the people a chance to continue cooking with tempeh, I started selling fresh tempeh on a small scale. A health food shop in Saarbruecken sells it for me (monopoly). In Germany people are very strict. So, I have things officially registered including applying for a health certificate. Since 18 Sept. 1990 I have owned a 'tempeh firm'... To my knowledge, right now there are only 4 places where fresh tempeh is made in Germany. Two of them make it solely for their own use in a café-restaurant." Label. 2.75 by 3.75 inches. Black on white. Self adhesive. "According to the literature: Contains vitamin B-12. No cholesterol. Low in saturated fatty acids. High in polyunsaturated fatty acids. Contains trace elements and high-quality protein. Low in calories. Refrigerate at 6-8ºC." Letter from Flora Yap. 1992. April 5. On 11 Feb. 1990 she first officially sold tempeh to "Mutter Erde" a natural food shop in Saarbruecken. The tempeh sold

for DM3.20 per 200 gm and she sold 7 pieces per week, increasing to 10 pieces per week. But since March 1989 she had sold tempeh unofficially to friends and given it away free at festivals.

2461. Kempff, Klaus. 1990. Brief history of Life Food GmbH–Taifun Tofurei (Interview). *SoyaScan Notes.* March 14. Conducted by Anthony Marrese in Germany.
• ***Summary:*** Klaus, known as Dhanya, lived in Miami, Florida, for 5 years and has an American wife, although they are separated. His interest in soyfoods began in America. After returning to Germany, in 1985, Klaus bought a little sprout business in a basement/cellar at Wallstrasse 3 in Freiburg. When he bought it, it had no name and was run by a commune of Bhagwan Rajneesh devotees as a Sannyas business.

Since April 1985 the commune had been making various sprouts (not including soy sprouts). Klaus named the business Life Food, and in July 1985 he and several others started producing tofu. In the spring of 1986, in Germany, he got a copy of *The Book of Tofu* by Shurtleff and Aoyagi which helped his work. He sold the tofu along with various sprouts (mung, alfalfa, radish, chick peas, wheat) at the market place. Looking for a way to use his okara, Klaus developed a Soy Burger and started selling it in about Nov. 1985.

Then health officials told them to move or be shut down. While struggling with the decision, a new place (a little grocery store at Stuehlinger Strasse 9, D-7800 Freiburg) became available and an order for one hundred 400 gm packs/week of tofu came along, so in Dec. 1985 they decided to go for it and start making tofu on a larger scale. The business grew steadily and in May 1989 they moved into their present location, a larger, new and modern facility that was previously occupied by a catering service. They purchased a new pressure cooker for making the soymilk for their tofu.

Klaus had a friend named Wolfgang Heck (not a follower of Rajneesh), who was an organizer (*Veranstalter*) of international events. The two began to work together in late 1986. In May 1987 Wolfgang started a business named Taifun that cooked Life Food's tofu for the people in the nearby Market Hall for gourmet foods. Taifun had a small walk-up tofu lunch bar at an indoor market. Here they sold their products and tried out new second generation products.

Klaus and Wolfgang decided to merge their two companies. So on 1 Jan. 1990 Life Food GmbH was formed, with 5 shareholders, including Klaus and Wolfgang. Life Food GmbH bought Taifun (the brand name and equipment) and discontinued operation of the Taifun in the market hall. Taifun became the brand name for many of Life Food's products. But some confusion between Life Food and Taifun still remains. For example, today outside the tofu plant there is a big sign that says "Taifun Tofurei" in big letters and under it in small letters the name of the company, Life Food GmbH.

Life Food GmbH now employs 15 people. Present products they make are tofu burgers (3 types, each 90 gm, 1,250/week), tofu (500 kg/week, started Dec. 1985), tempeh (10-20 kg/week, started July 1987), Tofu Terrine Sausage (just starting; they are terrific). They made samples of white miso is March 1989 and are in the process of bringing it into production. Although most of their okara goes to farmers, some is used in their tofu burgers and the Hop Sing Bratlinge (burger dough for restaurants). Life Food is the only tofu producer in Freiburg, where they control the whole market. They have a 60 kg/hour Takai pressure cooker, a Takai hand okara press, and a meat-type grinder for the soybeans. They make tofu in 10-12 kg batches. They also import and sell a little miso and shoyu.

Follow-up interview by William Shurtleff. 1990. May 9. The company presently makes 800-1,000 kg/week of tofu and 10-15 kg/week of tempeh. They are hoping for a big standing order of 500 kg/week from the student dining hall at Freiburg Univ. The dining hall has already been buying tofu and tofu products for a long time. Their best selling product is tofu, followed by Smoked Tofu, then the Tofu Terrine (made by pressing tofu, mixing it with vegetables, and baking it in a baking pan; it resembles a goose liver pâté).

Update. 1990. May. Bernd Drosihn says Klaus Kempff is no longer in charge; Guenter Klein and Wolfgang Heck have taken over. Address: Founder, owner and manager, Life Food GmbH, Robert-Bunsen Strasse 6, D-7800 Freiburg, West Germany. Phone: (0761) 50 61 55.

2462. Urban, Gyandeva. 1990. Recent developments at Svadesha–Vegetarische Feinkost (Interview). *SoyaScan Notes.* March 14. Conducted by Anthony Marrese in Germany.
• ***Summary:*** Svadesha (Ruediger Urban) is manager/owner of the company, and Gyandeva (his son) is manager of soya products (secondary). Svadesha is presently in the hospital. He rarely comes to the plant any more. Svadesha and Gyandeva are both followers of Rajneesh. Svadesha began making tofu in 1979. Then he took a 6-month trip to India, entrusting the company to another person while he was gone. The company fell apart during this time, but it was re-started in 1980 and has grown since then. The company moved to Munich in 1984. Recently the name was changed to Feinkost from Svadesha Tofurei, and now sells as Vegetarische Feinkost using a logo of a sun behind a breaking wave.

They presently have 7 full-time and 5 part-time employees who produce 10 batches (each 250 kg) per day, or 1,250 kg per week–more in winter, less in summer. They are closed in August. Their second generation products include tofu burgers in mushroom or seaweed flavors, and a wine and herb spread. They also make tempeh burgers, buying the tempeh from Byodo in Munich. Address: Ostpreussen 22,

D-8000 Munich 81, West Germany. Phone: 089-939005.

2463. Steyer, Bernd. 1990. History of Byodo Naturkost (Interview). *SoyaScan Notes.* March 21. Conducted by Anthony Marrese in Germany.
• ***Summary:*** The company was founded in about 1983-85 by Harry Whitford (an American) with Herman Conran [Hermann Konrad], and Michael Mossbacher. Whitford left to go to Soyastern (he later left Soyastern also). Mossbacher is now in charge of the company's wholesale distribution. The company's first products were burgers made from purchased tofu and tempeh. In 1984 they started to make their own tempeh. Steyer, now tempeh production manager, built the company's first tempeh incubator. In 1984 they began to make their own tempeh. Production is now 50 kg/week plus 500 burgers/week.

Bernd is very much working for world food transformation and has invited Marrese for a visit. He will send a set of labels.

Interview with Bernd Drosihn. 1990. April 7. Byodo was founded by Lukas Kelterborn. Harry Whitford came a little after it was founded.

Talk with Klaus Gaiser of Yamato. 1990. May 8. Byodo was bought by a butcher, Rottmueller Naturkost, several weeks ago. The butcher, which now owns 55% of the company, runs a "Naturland" company–a grower's association like Demeter, Bioland, etc.

See also Harry Whitford's 1990 early history of Byodo. It is probably the most accurate on the early history.

Note: On 9 Aug. 1990 Soyfoods Center received an enquiry from Tofurei Rotmueller at Hirschbergstr. 9, D-8000 Munich 19, West Germany. Address: Hirschbergstr. 9, 8000 Munich 19, West Germany. Phone: (089) 168570.

2464. Westra, Marianne. 1990. Early history and current work of Vanka-Kawat B.V. (Interview). *SoyaScan Notes.* March 29. Conducted by William Shurtleff of Soyfoods Center. Followed by letters on 1 June and 2 July 1990.
• ***Summary:*** This company was founded in 1958, and has been in business for 33 years. They began as both an importer and a manufacturer. The original products they made were tofu (tahoe) and soy sauce (both sweet and salty varieties). In 1958 they began to make the following types of soy sauce: Ketchap Kaki Tiga, Ketjap A, Ketjap Benteng Manis, Ketjap Benteng Asin, Yellow Label Soy, and Tiger Brand Soy. They were still making all of these varieties in 1990.

At the time they started the business, they think there were other manufacturers of soy products in the Netherlands, but they don't remember the names of any companies of individuals. There were small, local Chinese companies that made tofu before they did, and at least one company that made soy sauce before they did. Their mailing address and head office address have not changed since 1958. The mailing address is: Dr. Augustijnlaan 40, 2283 CH Rijswijk, Netherlands (near The Hague). In 1984 Vanka-Kawat was thought to be the second largest tofu maker in Europe and in the Netherlands (after Heuschen-Schrouff), producing 10,500 kg/week. They discontinued tofu production in March 1985 after coming to an agreement with Heuschen-Schrouff, because it was more economical for Vanka-Kawat to let Heuschen-Schrouff (which had all the equipment and knowledge) produce the tofu which Vanka-Kawat sold. They now buy their tofu from Heuschen-Schrouff. They also make sambals, and other foods. They have never made taotjo or miso, but they do import it. And they have never made tempe/tempeh, but they do buy it from the "first Dutch Tempeh factory" and then sell it.

They are not related to Linn Oriental Products (also called Soy-Lin or Lin Tahoe) in Westbroek, but they think that company started in about 1970. The company still exists; the owner is Chinese, but they do not know if it is Mr. Lin. Mr. G.L. Van Kasteren is the best man to talk to about soyfoods. He speaks good English.

This company, which is run by Indonesian-Dutch, imports foods from throughout Asia, though they started with Indonesia, and exports to West Germany, Belgium, France, England, and the USA.

Note: Anneke de Weerd says (April 1991) that the two most popular types of soy sauce in the Netherlands are ketjap manis and ketjap benteng; ketjap asin is not well known. Address: Head Office: 3e van de Kunstraat 18, 2521 BB Den Haag (The Hague), Netherlands. Phone: 70-388-8804.

2465. Welters, Sjon. 1990. Heuschen-Schrouff, the largest tofu and tempeh company in Europe and the Netherlands (Interview). *SoyaScan Notes.* March 30. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** The largest tofu manufacturer in Europe and the Netherlands is Heuschen-Schrouff (pronounced HEW-shun Shroof; "HEW" rhymes with "who" and "Schrouff" rhymes with "roof"). They make an estimated 35,000 to 40,000 kg/week (75-90,000 lb/week) of tofu. The company's production manager or director of operations, Han van der Hayden, visited Sjon in 1989 (Sjon took him through Nasoya's plant in Massachusetts and spent quite some time with him) and told him these figures. At the time, Heuschen-Schrouff wanted to upgrade their tofu production line from one they built themselves to a Takai or a Sato system. Sjon recommended Sato. They have not yet bought the new system.

Mr. Schrouff is the company's owner. In the early 1960s, Mr. Heuschen had a tofu company and Mr. Schrouff had a tempeh company (or perhaps vice versa). Sjon thinks they merged, then split up, then Mr. Schrouff bought Mr. Heuschen's business. Mr. Heuschen is no longer an owner, but he became the tofu production manager. Later Han became his supervisor.

Prior to the mid-1980s, Heuschen-Schrouff concentrated almost solely on the Indonesian market. After that time they started to make tofu for natural foods companies. They make tofu for Natufood, which is one of the largest distributors of natural foods in Holland. Natufood then created a separate division named Vetara which makes and sells a line of vegetarian protein products, such as TVP, Soy Schnitzels, mixes containing TVP used to make meat analogs–plus their Vetara Tofu. Natufood has a little newsletter, which they are expanding into a magazine for natural foods retailers in Holland. It is a good source of information on soyfoods.

In late 1989 Heuschen-Schrouff hired a new president and also bought another large tempeh company, perhaps Van Dappern's Tempeh Production Inc. So now Heuschen-Schrouff is Europe's largest manufacturer of both tofu and tempeh. Heuschen-Schrouff does a lot of private labeling for other companies; their tofu is sold under ten different brand names. They also export a lot of tofu from the Netherlands. Their biggest market is West Germany, followed by Belgium. Heuschen-Schrouff does not yet make second-generation tofu products; they may make some in the future or they may focus on making basic tofu. The next time Sjon goes to the Netherlands, he will probably be able to see the inside of the company. Address: Craft International Consultants, 21 Wetherbee St., Acton, Massachusetts 01720. Phone: 508-264-9511.

2466. Areekul, S.; Pattanamatum, S.; Cheeramakara, C.; Churdchue, K.; Nitayapabskoon, S.; Chongsanguan, M. 1990. The source and content of vitamin B-12 in the tempehs. *J. Med Assoc Thai* 73(3):152-56. March. * Address: Dep. of Tropical Radioisotopes, Faculty of Tropical Medicine, Mahidol Univ., Bangkok, Thailand.

2467. Carantino, Sabine. 1990. Le soja perd son amertume [Soya loses his bitterness]. *Management et Technologies Alimentaires* No. 2. March. p. 65-66. [Fre]

• ***Summary:*** Last Oct. 7 companies that process soybeans joined to create AFISA (Association Francaise des Industriel du Soja), the French soyfoods association (5 Blvd. de la Mediterranée, 31400, Toulouse, France). This article uses the term "soyfoods" and discusses soymilk, tofu, tofu products (desserts, prepared foods). ONIDOL is involved, as is GEPV (*Groupement d'Études sur les Protéines Végétales,* 10-A rue de la Paix, 75002, Paris, France; founded in 1975). It has been decided to finance a market study (which will be completed this year) of 4 European countries: Belgium, France, Great Britain, and West Germany. They may develop a "French Soya" logo. At the same time, ONIDOL is organizing an Interprofessional Committee for Soy Proteins Destined for Human Consumption. It will coordinate scientific studies, communication, and information on vegetable proteins and "soyfoods."

In Europe, the degree of advancement of use of soy protein in human foods differs considerably from one country to the next. The UK and Germany started earlier than France. In Germany, soyfoods are positioned on the "battlements of the dietetic market" whereas in France they are more oriented toward the mass market. In France, the high consumption of dairy products has not favored soymilk. 3-5 million liters of soymilk were produced in 1988, and the amount had roughly doubled by 1989. The new technologies allow production of soymilk with almost no bitter (beany) flavor, and it can be used to make good yogurts and desserts.

The first soy beverages and flavored desserts were launched only 5 years ago by Alpro (a division of Vandemoortele). The movement was then expanded with the creation of new brands, Celia (Laiterie Saint-Hubert-de-l'Hôtel) and Cacoja (Coopérative agricole de Colmar). Triballat created Soja Sun, a line of soy desserts. In 1988 the cooperative of Valence launched the Innoval line. Others include [Société] Soy, Sojadoc (Richemont) and Sojal. Many of the leaders are dairy companies, but they position their products very differently from dairy milk. Also in the French market are Lima from Belgium (with tempeh and tamari). Tonidoc makes soynuts sold as an aperitif. The French company Bunge, a third party, and Sofiproteol (Sofiprotéol) have created Sogip, which produces soy protein concentrates for use as both calf milk replacers and in human foods.

Concerning regulations, the definitions and uses of soy protein are set forth in a circular of 27 Aug. 1975, which related to another document of 12 Oct. 1972 for terminology. Finally a new circular of 1986 replaced the earlier ones. The Codex Alimentarius will finish its work on these areas in 1991.

A sidebar describes Innoval and its goals. Address: France.

2468. Gray, Sylvia Ruth; Rogers, Sherry A.; Cohen, Gary Martin. 1990. Here's the B-12!. *Solstice* No. 40. p. 10-13. March.

• ***Summary:*** "In a follow-up to last issue's cover story, three macrobiotic researchers offer their perspectives on diet and the elusive vitamin B-12." S.R. Gray believes that B-12 deficiencies may be linked to "cobalt-deficient soils and habitual use of various soy products... Recent tests on the tempeh from Turtle Island Soy Dairy were a breakthrough: comparative testing (between L. leichmannii and O. malhamensis) suggested the absence of analogues and B-12 findings of 5.5 micrograms/120 gm (4 oz.), which is excellent–a far cry from Specker's mean of 0.05 micrograms/100 gm on six tests of tempeh!

"My barometer for good quality miso is that it promotes a substantial rise in bread. Ohsawa America, South River and Yamazaki all produce dark misos which make our 50 percent whole grain bread rise beautifully... One good miso was tested and was found to have B-12 levels four times higher than that found by the Dutch researchers last year. Future

tests may prove even this figure to be falsely low; miso testing is tricky, since high salinity affects B-12 extraction processes...

Will the addition of B-12-making bacterial cultures be helpful in the process of making tempeh? "Actually, since the B-12 content of foods such as tempeh mirrors the cobalt content of the substrate, I suspect no amount of *Rhizopus oligosporus* or *Klebsiella pneumoniae* can make B-12 in the absence of cobalt. In fact, the addition of *K. pneumoniae* to a tempeh culture may actually *decrease* final B-12 content because of competition for resources."

G.M. Cohen notes that B-12 deficiency may be caused by chronic mercury poisoning from dental amalgam fillings. Address: Strictly Macrobiotic, 315 First Ave., Salt Lake City, Utah 84103. Phone: 801-521-7936.

2469. Ontario Soybean Growers' Marketing Board. 1990. A profile of the Canadian soyfoods market–Characteristics and potential. Box 1199, Chatham, ONT N7M 5L8, Canada. vi + 40 p. March. 28 cm. Spiral bound.

• ***Summary:*** Contents: 1. Introduction: Background, study objectives. 2. Research procedures: Data limitations, data collection (data sources). 3. The soyfood market: Soyfood production and utilization, domestic production, imports and exports (introduction, whole soybeans, soy flours and meals, soy oil, soy sauce, protein substances, cream and other substances, bran & soy hulls, soy meal oil cake), balance, conclusions regarding opportunities.

4. Soybeans for food purposes: Natto beans (background, market characteristics, market potential), whole bean soyfoods (introduction, soynuts, full fatted soy flours, soymilk, tofu, soy sprouts, tempeh, miso, natto, soy sauce), foods from soy ingredients (introduction, defatted soy flakes, soy protein concentrate, soy protein isolates, textured soy protein, consumption and imports). 5. Organic soyfoods: Introduction, organizations (major players, labelling requirements, certification), organic soybeans, organic soyfoods, market opportunities, recommendations.

6. Market estimates: Introduction, conversion rates, market characteristics (introduction, ethnic characteristics, immigration trends, implications), soyfood consumption (production). 7. Soyfood products: Introduction, new products (whole bean products, products from soy components), existing products (products with potential for growth). 8. Marketing strategy: Introduction, respondent requests (background), market opportunities (traditional soyfoods, new products), systems development (system information needs, human resources, production research), institutional needs.

This study was commissioned by the Ontario Soybean Growers' Marketing Board to provide a description of the Ontario soyfood industry. "Production and utilization: In the 1988 crop year, approximately 1.12 million tonnes of soybeans were produced on 1.28 million acres in Ontario. Approximately 86% of the soybeans were sold through the Board, with the remainder being fed or retained on the farms where they were grown. In 1988, 860 thousand tonnes of soybeans were crushed in Canada to produce soybean meal and soy oil, and 272 thousand tonnes were exported.

"Imports and Exports: Canada had a negative balance, a deficit, of almost $190 million in the value of soybeans and soy products traded. This is just over half a million dollars per day. Our largest single area of exports is whole soybeans for human foods. The percentage of these beans going to the major markets in 1988 were: USA, 37%; Pacific Rim Countries, 34%; and Europe and other 29%. Our greatest imbalance in exports and imports is in soybean meal or oil cake. Canadian crushers are unable to maximize their sales of oil cake because of difficulties in selling surplus soybean oil in the US. Soy oil being sold into the US presently faces a tariff of 18% which is decreasing at the rate of 2.25% per year as per the Canada United States Trade Agreement...

"Institutional development: We suggest the Board initiate the establishment of a Soyfood Development Association similar in structure and function to the Canola Council of Canada... There is a need to begin to bring all industry stakeholders together to systematically identify problems, information and research needs; develop data bases; and cooperatively promote the soyfood industry."

Soybeans for food purposes: The total volume of soybeans consumed as soyfoods in Vancouver (BC), Toronto (Ontario), and Montreal (Quebec) was estimated at about 6,000 tonnes, and imports were estimated to be equivalent to 8,000 tonnes of soyfoods.

Miso: One large Vancouver producer and one Toronto producer estimated that the volume of soybeans used to make miso in Canada is only about 35 tonnes/year.

Modern Soy Protein Products: Soy flour, concentrates, isolates, and textured soy protein products. Roughly 2,400 tonnes of soybeans are used in Canada for the production of these products, and 5,600 tonnes of soybeans are used to make the imported products (only bakery flour and extruded flour are made in Canada). Almost 1,000 tonnes of soy protein concentrates and isolates, and 400 texture soy proteins were imported, 83% from the USA. Total exports were 800 tonnes, of which 578 tonnes went to the USA. Soy flour (full-fat): The term "flour" generally signifies that the material has been ground finely enough to pass through a 100-mesh screen. Only relatively small volumes of full-fat soy flours are used directly as human foods. Some are used in bread, crackers, and pastry products. 5 companies in Canada make 1,538 tonnes of soy flour worth $495,000.

Natto: Canadians sells roughly 8 to 10 thousand tonnes of natto beans in Japan each year. Natto-type beans are "created by screening out the small beans from among regular food grade soybeans which have white hilums" (p. 15). In Japan about 100,000 tons/year of soybeans are used to make natto. Recently, Canada (via 3 companies–First Line

Seeds, W.G. Thompson, and King Grain) has supplied about 10% of this market. Ontario produces about 8,000 to 10,000 tonnes of natto beans. Competition is expected to increase from U.S. seed breeders.

Soymilk: There are presently no large Canadian soymilk manufacturers. A plant is being built by an international trading company near Vancouver (YHS Pacific Fruit Concentrates Ltd., owned by Yeo Hiap Seng). It will supply both the local market and the Western U.S. market when it goes on stream later this year. A high proportion of imported soymilk is organic. Two brands account for 3/4 of all imports: Edensoy and Vitasoy. A high proportion of all soymilk imports are certified organic. This emphasis makes it difficult for Canadian producers to compete because of the shortage of organic soybeans in Canada. Consumption of soymilk is increasing at about 10% a year. Prices range from $1.50 to $2.75 per liter, with the organic product commanding the higher prices. Just under 100 tonnes of soybeans are used to produce soymilk in Canada: Vancouver 42 tonnes, Toronto 30 tonnes, Montreal 25 tonnes, plus imports 240 tonnes. 1 kg of soybeans produces 16.5 kg of soymilk.

Soynuts: The volume of soynuts made in Canada is quite small. One Toronto company [Grove Country Foods Canada, Inc.; they were in business 1-2 years, but were out of business by Jan. 1991], which began operation in Nov. 1988, sells a line of roasted nuts, which are roasted in the USA and chocolate-dipped in Ontario. Production was only a few tonnes in 1989 and is estimated to be about 10 tonnes in 1990.

Soy sauce: In 1986, according to Statistics Canada data, 2,503 tonnes of soy sauce were produced by 6 firms. The value was $2,161 per tonne for a total of $5,411,000. In 1988 Canada imported 5,680 tonnes of soy sauce valued at $4 million, primarily from China, the United States, Hong Kong, and Japan. Exports were 58 tonnes valued at $65,000. The major Canadian producers are China Lily and Sun Fresh in Toronto, Wong Wing and VH in Montreal, and Golden Dragon in Vancouver. The value of Toronto production is currently estimated to be about $5 million.

Soy sprouts: One Toronto manufacturer uses 20-25 tonnes of soybeans per year.

Tofu: About 3,300 tonnes of soybeans are used to produce tofu in Canada, more than any other soyfood. The volume of soybeans used is estimated at 1,400 tonnes in Toronto, 1,200 tonnes in Quebec (when a relatively large operation in Hull [La Soyarie, Inc.], near Ottawa, which exports to Ontario is included), 625-700 tonnes in Vancouver, and 125 tonnes for imported tofu. 1 kg of soybeans produces 2.4 kg of tofu.

Tempeh: Only about 33 tonnes of soybeans are used to make tempeh in Canada, and an estimated 15-20 tonnes in Ontario. Imports are relatively small. 1 kg of soybeans produces 1.6 kg of tempeh. Very few firms produce tempeh in Canada. One producer claims to have over half the Ontario market. A major distributor suggested they sold 4-5 times as much tofu as tempeh.

Soybean crushing: Since 1986 the number of firms crushing soybeans and producing soy oil has decreased from 3 to 2 [Central Soya owns two plants; in 1990 they bought the Canadian Vegetable Oil Processing (CVOP) plant in Hamilton, Ontario, formerly owned by Canada Packers Inc. They purchased Victory Soya Mills in Toronto in early 1985. So now 2 firms own 3 plants]. In 1986 the three plants made 95,108 tonnes of crude soy oil worth $57,271,000. Two firms made deodorized soy oil, but the volume and value were confidential. Less than $2 million of any type of soy oil is imported.

Consumption of soyfoods in Canada is strongly linked to Asian-Canadians. A table (p. 32) shows that according to the 1986 census, there were about 444,000 people of East- and Southeast Asian origin living in three major Canadian cities: Vancouver (155,105 people comprised 11.2% of the city's population), Toronto (234,325 people comprised 6.8%), and Montreal (55,585 people comprised 2.4%). Thus Toronto was by far the largest market, but Vancouver had the highest density of Asian-Canadians. A similar table (p. 33) updates the previous table to 1988. Immigration has increased sharply since then.

Note: This is the earliest document seen (Feb. 2002) that uses the term "food grade" (or "food-grade") in connection with Canadian soybeans (see p. 15). Address: Chatham, ONT, Canada.

2470. Vaidehi, M.P.; Rathnamani, A. 1990. The shelf-life of soy-sunflower tempeh and its acceptability to Indian children. *Food and Nutrition Bulletin* (*United Nations Univ.*) 12(1):53-56. March. [8 ref]

• ***Summary:*** One hundred school children ages 5-7 years from a rural school were given tempeh products in small quantities to test their acceptability. The products were ranked from best liked to least liked.

"Acceptability: All the blended [soy + sunflower] tempeh products showed a high percentage (90%) of acceptability. The toffee scored the highest (100%). Only 6% of the children disliked the sweet chips, 4% the salted chips, and 2% the stew."

Soy-sunflower tempeh costs 60% less than lamb and 35% less than chicken. Its energy content is much higher than that of either meat. It has high protein and fat content and no cholesterol. "Unlike most meats, there is no wastage in tempeh in the form of bones or undesirable fat."

Conclusion: India needs a tempeh industry. Small-scale tempeh makers, as in Indonesia, can improve the economic status of the rural population while improving the diets of both children and adults. Agricultural extension services should make intensified efforts to promote and make this popular product. Address: Dep. of Rural Home Science of

the Univ. of Agricultural Sciences, Bangalore, India.

2471. Krohn, Joni. 1990. Standard Industrial Classification (SIC) Codes: SIC classification ended in about 1984; SITC (Standard International Trade Classification) is now in use (Interview). *SoyaScan Notes*. April 5. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** *The Standard Industrial Classification Manual* is published by the Office of Management and Budget (OMB), which also publishes the SIC codes. Another related publication is *The Numerical List of Manufactured and Mineral Products,* and its *Alphabetic Index,* both published by the Census Bureau (within the Department of Commerce); these documents expand the basic 4-digit SIC codes to 7-digits to give more detail: Our industry is most aptly characterized by 2075A = Soybean products.

0116 = Soybean farms. Any industry that starts with zero is agricultural.

2024-071 = Mellorine and similar frozen desserts, incl. those made with tofu.

2026-717 = Products which substitute for fluid milk products [probably includes soymilk].

2026-718 = Other perishable dairy product substitutes [probably includes soy yogurts & cheeses].

2035 = Pickled fruits and vegetables.

2035-234 = Other finished pickles and pickled products [incl. mixes, relishes, peppers, onions, and mushrooms; probably includes miso].

2035-351 = Other sauces, incl. Worcestershire, soy sauce, horseradish, meat, vegetable, etc.

2075 = Soybean flour, grits, meal, cake, and soy oil (unrefined).

2079 = Soybean cooking and salad oil.

2084 = Soybean fibers.

2099-955 = Tofu (Bean curd).

2099-998 = Other perishable prepared foods, sold in bulk or packages, not frozen [probably includes tempeh].

Note: in May 1984 the "Primary SIC" code assigned to tofu manufacturers by Dun & Bradstreet was either 2075 (Soybean Oil Mills), or 2099 (Food Preparation Nec.).

Examples of SITC numbers: Soya bean flour and other protein substances, textured 098.09. Soya bean flour, defatted (excl. protein concentrates) 081.31. Soya bean flour, non-defatted 223.9. Bean curd 098.09... Soya sauce 098.04. Soybean–see soya bean 098.04. Address: Dep. of Commerce, Bureau of the Census, Economic Surveys Div., Industry & Commodity Classification Branch, FOB-3, Room 2744, Washington, DC 20233;. Phone: 301-763-1935.

2472. Drosihn, Bernd. 1990. The founding and history of Viana Naturkost GmbH in Cologne (Interview). *SoyaScan Notes.* April 7. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Bernd started to make tempeh in Cologne in about Aug. 1989 after leaving Soyastern. He moved the company to his present address in Huerth, and started making soyfoods there in Jan. 1990. He makes 3 types of tempeh, 2 tempeh burgers, and 2 tempeh spreads (introduced in 1990). The burgers and spreads are selling well, but the basic tempeh is going more slowly since it is a little unknown to the German consumer–not as well known as tofu. The only other tempeh company in Germany is Byodo in Munich–they also make tofu. Both Bernd's company and Byodo make about 200 kg/week of tempeh. They each make their own tempeh starter. Recently Bernd wrote a little tempeh cookbook titled *Tempeh: A traditional food with a future* (1989, Viana).

The founder of Byodo was Lukas Kelterborn. Harry Whitford came a little after it was founded. Whitford left Soyastern about 6 months ago and since then has been unemployed, living in Dorsten (100 km away; Alleestr. 13a, D-4270 Dorsten 1, West Germany. Phone: 02362-43493), where he runs a Zen Center.

Bernd feels that the future looks bright for his company, in part because he is also making second generation tofu products, including 2 tofu spreads, and 1 tofu sweet cream dessert, all launched in 1990. He buys the tofu from Tofuhaus Tiefenthal because the quality is excellent, better than from Soyastern although the price is higher than that from Soyastern.

He is now also making two short-term misos (a rice miso and chick-pea miso), fermented for 3-4 months, plus a miso spread. He started to sell these 6 weeks ago and they are selling well. His company address used to be Neusserstrasse 199, D-5000 Cologne 60, but he has recently moved. Address: Founder and president, Viana Naturkost GmbH, Schmittenstr. 106, D-5030 Huerth 6 (Fischenich), West Germany. Phone: (02233) 41323.

2473. Toronto Star. 1990. Next week in the Star: The future of food–Wednesday (Ad). *Toronto Star* (*Ontario, Canada*). April 28. p. E37.
• ***Summary:*** "Set your cooking appliances to the 21st century as Marion Kane presents a futuristic look at some new-age recipes. From tempting tempeh to fabulous fajitas, you'll discover how to be environmentally friendly and health conscious without giving up any good, old-fashioned flavor. The food section lands Wednesday."

2474. Bates, Jonathan. 1990. West Coast tofu industry: Soybean market outlook for Malheur County, Oregon. Oregon State University, Corvallis, Oregon. 33 p. [12 ref]
• ***Summary:*** Contents: Introduction. Soybean market: World and domestic. The low technology soyfoods industry. Processor requirements. Assessment of producing soybeans in Malheur County. Conclusion. West Coast tofu and soyfood processors: California, Oregon, Washington. Bean warehouses and cleaners. Selected soybean brokerages and

growers. Other information. Literature.

"There is interest in Malheur County, Oregon in introducing soybeans as an alternative rotation crop in place of wheat." Research is being done at the Malheur Experiment Station. These would be food grade soybeans destined for the West Coast soyfood processing industry. "The purpose of this report is to investigate the west coast food grade soybean market. Particular emphasis is placed on the tofu market in Portland and western Oregon, Seattle (Washington), and San Francisco (California). The main objectives of the study are: 1. To determine the requirements and/or preferences of soyfoods processors in regards to soybean quality, bean variety, growing regimes (organic or regular), packaging and delivery, and method of purchase. 2. To determine the economic feasibility of using soybeans as a rotational crop in the county in place of wheat. 3. To consider the competitive advantages, if any, of growing soybeans in Malheur county as opposed to the more traditional growing areas of the Midwestern and Southeastern United States.

Information on soybean consumption is given for the following tofu and soyfoods manufacturers, ranked here in descending order of soybean usage. All produce tofu and/or soymilk unless otherwise noted.:

Pacific Foods Inc., Tualatin, Oregon (57,700–77,000 lb/week [expressed as 3-4 million lb/year] of nonorganic and organic soybeans from midwest brokers, bulk and bagged, for soymilk. "Growth is expected to slow unless soymilk can be marketed to the general public").

Azumaya Inc., San Francisco, CA (48,000–60,000 lb/week of Vinton and Corsoy purchased from broker. Market growing at 3-4% annually).

House Foods & Yamauchi, Los Angeles, CA (54,000 lb/week of nonorganic Corsoy and Vinton purchased from broker-grower association. Steady growth. Expanded capacity in 1987).

Mighty Soy, Los Angeles, CA (11,000–12,400 lb/week of mainly Corsoy and Vinton, half organic and half not, purchased from brokers or growers associations).

Wy Ky, Los Angeles, CA (7,800–9,000 lb/week of nonorganic Corsoy, purchased from growers. 5% annual growth).

Island Spring and Soy Resources Inc., Vashon, WA (5,400–6,000 lb/week of organic Corsoy, purchased broker. 3-5% annual growth).

Surata Soyfoods, Eugene, Oregon (3,000–4,200 lb/week of organic Vinton and Corsoy purchased from broker-grower).

Silver Sprout, San Francisco, CA (3,000–3,600 lb/week of nonorganic Corsoy and Vinton purchased from broker, bagged or bulk).

Dae Han & Co., Portland, Oregon (2,400–3,000 lb/week of organic Vinton purchased from Midwest grower association. Steady growth).

Turtle Island Soy Dairy, Husum, WA (2,100–2,400 lb/week of organic Corsoy and Vinton purchased from Iowa broker for tempeh. 5% annual growth).

Arcata Soyfoods, Arcata, CA (1,200 lb/week of organic Corsoy purchased from grower).

Fuji Tofu Co., San Jose, CA (1,200 lb/week of organic varieties purchased from broker).

Ashland Soy Works, Ashland, Oregon (1,800 lb/week of organic Vinton and Corsoy, purchased from growers. Steady growth).

Hoven Foods Co., Seattle, WA (1,655 lb/week of Lee 74 purchased from Jacob Hartz Seed Co. 5% annual growth).

Tacoma Soyfoods, Tacoma, WA (1,200 lb/week of Vinton, Corsoy, Davis, Lee, and Holland, organic and inorganic, purchased from Midwest Soy International [grower assoc.]. 5% growth last year).

Kobayashi's Soybean Products, Ontario, Oregon (420–540 lb/week of Corsoy purchased from Midwest growers). Address: Graduate research asst., Oregon State Univ., Corvallis, Oregon.

2475. Leigh, Roberta. 1990. Soyfoods: Why their popularity is growing. Special advertising section. *New Age Journal* (*Boston, Massachusetts*) 7(2):100-. March/April.

• ***Summary:*** Since the 1920s, Americans have been taught that they need at least two servings of meat and two glasses of milk each day to get enough protein. Many people switching to vegetarian diets or reducing their meat consumption feel most comfortable if they continue to plan at least some of their meals around a high-protein food.

"Consequently, the popularity of soyfoods has boomed during the past two decades... They can also be prepared in a number of ways, such as tofu and tempeh, that mimic 'meatiness' in terms of eating satisfaction.

"Shoyu and tamari, both fermented soy sauces, and miso, a fermented soy paste, are often used as bases for soups, gravies, and sauces; many people feel they impart a rich flavor to meat stock. Soy milk and soy cheese are popular with people who want to minimize or eliminate dairy products from their diets. There are even smokey-flavored imitation bacon products made from soy.

"Tofu is a cheese-like product containing the protein, oil, and soluble carbohydrates from whole soybeans that have been crushed and cooked...–Roberta Leigh."

2476. Moran, Victoria. 1990. Weight training for vegetarians: Pumping iron on plant power. *Vegetarian Times.* April. p. 34-39. [3 ref]

• ***Summary:*** About vegetarian body builders. Spice Williams is a vegan who likes tofu and tempeh. She played a female Klingon in *Star Trek V.* Two photos show Williams, one as a Klingon. Also features Bill Pearl, Andreas Cahling (each with a photo), and Ron Weston.

2477. **Product Name:** Multi-Grain Tempeh Italiano.

Manufacturer's Name: Surata Soyfoods.
Manufacturer's Address: 302 Blair Blvd., Eugene, OR 97402. Phone: 503-343-8434.
Date of Introduction: 1990. April.
Ingredients: Sprouted organically grown soybeans, rice, millet, water, apple cider vinegar, tempeh culture (Rhizopus oligosporus). Plus: Organic oregano, garlic, basil, and other Italian herbs and spices.
Wt/Vol., Packaging, Price: 10 oz in poly bag.
How Stored: Refrigerated or frozen.
New Product–Documentation: Form filled out by Shevah Lambert. 1990. July 2. Surata now makes about 625 lb/month of this product. Production started in April 1990. It is the multi-grain tempeh with 6 different herbs and seasonings incl. oregano, basil, garlic, onion powder.

Label sent by Shevah Lambert. 1991. Jan. 16. Same as the Multi-Grain Tempeh label with a 2 inch diameter round stick-on label, red and green on white, that says: "New! Italiano. Richly seasoned with organic oregano, garlic, basil, and other Italian herbs and spices." On the back are recipes for Tempeh stroganoff, Tempeh burgers, and Tempeh spaghetti balls.

2478. **Product Name:** Tempeh [Soy, Wild Rice Rhapsody, Indonesian Style, or Five Grain].
Manufacturer's Name: Turtle Island Soy Dairy.
Manufacturer's Address: P.O. Box 218, Husum, WA 98623. Phone: 509-493-2004.
Date of Introduction: 1990. April.
Ingredients: Soy Tempeh: Organic soybeans, well water, apple cider vinegar, rhizopus oliogosporus.
Wt/Vol., Packaging, Price: Soy Tempeh: 8 oz package. Retails for $1.29. Wild Rice Rhapsody: 8 oz package. Retails for $1.59. Indonesian Style: 10.5 oz package. Retails for $1.89. Five Grain: 8 oz package. Retails for $1.49.
How Stored: Frozen or refrigerated.
New Product–Documentation: Soya International. 1990. April/June. p. 24. Contact: Seth Tibbott. Wild Rice Rhapsody ingredients: Same as Soy Tempeh plus long grain rice, short sweet brown rice, wehani rice, black japonica rice, wild rice. Indonesian Style ingredients: Same as Soy Tempeh but with a firmer texture. Five Grain ingredients: Same as Soy Tempeh plus rice, millet, sunflower, sesame seeds. Products listed in Fowler Brothers catalog. 1991. Jan.

New Packages/Labels for all four products sent by Turtle Island. 1991.

Leaflet. 1992. "Discover Turtle Island." "Indonesian Style Tempeh. A special recipe using traditional methods! It's thicker, whiter tempeh, which can be cut very thin without falling apart."

New Package/Label for Indonesian Style Tempeh sent by Dave Wampler, business manager of Turtle Island. 1993. May 20. 5.5 by 8.5 inches. Yellow, black, green and white. At the bottom of the front panel are two windows. One is transparent so the user can see the tempeh. The other contains an illustration of a Javanese shadow puppet by Akiko Aoyagi from *The Book of Tempeh.* Front panel: "Reusable / Recyclable bag. Since 1980. The superior taste. A good source of vegetarian protein. Certified organic soy beans. Versatile meat substitute. Recipe and recycling offer on back. Keep frozen." Back panel: "Made in the Cascade Mountains." There is a recipe for Sambal Goreng Tempeh and a recycling offer for a Wham-O Frisbee. The company's address is now P.O. Box 176, 601 Industrial Drive, Hood River, Oregon 97031. Phone: (503) 386-7766.

2479. **Product Name:** Wild Rice Rhapsody Tempeh.
Manufacturer's Name: Turtle Island Soy Dairy.
Manufacturer's Address: P.O. Box 218, Husum, WA 98623. Phone: 509-493-2004.
Date of Introduction: 1990. April.
Ingredients: Organically grown soybeans, long grain brown rice, sweet brown rice, wehani rice, black japonica rice, wild rice, cascadian well water, vinegar, rhizopus oliogosporus (Tempeh starter).
Wt/Vol., Packaging, Price: 8 oz package. Retails for $1.59.
How Stored: Frozen or refrigerated.
Nutrition: Per 4 oz.: Calories 193, protein 14 gm, carbohydrate 19 gm, fat 8 gm, cholesterol 0 mg, sodium 2 mg.
New Product–Documentation: Soya International. 1990. April/June. p. 24. Contact: Seth Tibbott. Label sent by Seth Tibbott. 1990. July. 4 by 5 inches. Yellow and red on black. Illustration shows turtle logo. "Made in the Cascade Mountains. Keep refrigerated. May be frozen."

2480. **Product Name:** [Tempeh Pasta Pockets].
Foreign Name: Tempeh Teig Taschen.
Manufacturer's Name: Viana Naturkost GmbH.
Manufacturer's Address: Schmittenstr. 106, D-5030 Huerth 6, West Germany. Phone: (02233) 41323.
Date of Introduction: 1990. April.
New Product–Documentation: Letter from Bernd Drosihn, founder of Viana. 1990. May 10. This fresh product, which has no label, was introduced in April 1990.

2481. Whitford, Harry M., III. 1990. Re: Early history of Byodo Naturkost GmbH. Letters (faxes) to William Shurtleff at Soyfoods Center, May 11 and June 8. 2 p.
• ***Summary:*** "Byodo Naturkost was founded in the summer of 1984 by Lukas Kelterborn (whose idea it was), Hermann Konrad, and myself. I contributed the name–Byodo is the Japanese Buddhist term meaning "eternity," or with extended vowels (Byôdô) "equality" as implied in the perfection of indifference. The full original name was "Byodo Naturkost, Lukas Kelterborn, Hermann Konrad & Harry Whitford." It's legal status was a "GbR" ("Gesselschaft buergerlichen Rechts"–a "Personen Gesellschaft"), that is, a company

made up of individuals who carry full personal responsibility for the debts and assets of the company. In Germany, such a company must include the names of all owners in the company name. Hermann and I were both cooking at Keyno Vegetarian Restaurant, where I was in charge of soyfoods production and quality. We made our own tofu and tempeh at the restaurant.

"Byodo started as a tempeh company. The first product was Frisches Tempeh (Fresh Tempeh, in English). Production started in about Sept. 1984. Originally we were in the Thalkirchenerstr. in Munich in a former bakery together with the Italian Aikido-teacher and Tofu maker Georgio Sapia. I don't remember the exact address. Lukas left a few months after we started in about Oct. 1984 to take over a health food store (Reformhaus). We started making a Tempeh Burger (Tempehburger) later that fall after we realized we couldn't keep the company going only on tempeh.

"A Tofu Burger (Tofuburger) followed shortly afterwards that fall and Lukas' last service to the company was to establish the tie to Soyastern, which was unable to fry burgers due to complaints by the neighbors. We started buying tofu from Soyastern in Cologne to make burgers for them–at a distance of 400 miles!

"On 2 July 1985 Byodo Naturkost was transformed into a new company with a new structure, Byodo Naturkost GmbH. GmbH stands for "Gesellschaft mit beschraenkter Haftung" ("Company with limited liability"), which is comparable to a "Co. Ltd." in the USA. Michael Mossbacher entered the company at that time, and the base capital was used to move to Hirschbergstr. 9.

"In the fall of 1985 we started making tofu after a scandal: We had been buying tofu from Sapia to make our burgers for the Munich market. But he bought conventionally grown beans and sold the tofu as bio [organic]!

"In early 1986 (winter) we made tofu spreads (Tofu Brotaufstrich). There were 3 kinds: Paprika, horseradish & green pepper (Paprika, Meerrettich & Gruenerpfeffer). We also started making Vegetable Tofu (Gemuese-Tofu), which is tofu with chopped veggies pressed into it–ready to fry. Somewhere along the way we started to make tofu to sell also. I don't know when.

"I left Byodo in September 1986 after unsolvable differences became ridiculous and intolerable. Another reason I left was that none of the others at Byodo had ever had anything to do with spiritual practice.

"I worked part time at Svadesha making tofu until I could clear up my debts enough to be able to accept Soyastern's offer and make the move to Cologne. I started advising Soyastern 'unofficially' in Jan. 1987. The move and work permit finally came together on July 15, 1987.

"Soyastern is now basically bankrupt, with debts of DM300,000 (US$150,000), whereas the German legal limit is DM50,000." Address: Eurosoy consulting, Alleestr. 13a, D-4270 Dorsten 1, West Germany. Phone: 02362/43493.

2482. Demos, Steve. 1990. Pasteurization, packaging, and freezing of tempeh (Interview). *SoyaScan Notes.* May 20. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** White Wave, America's largest tempeh manufacturer, pasteurizes all of their tempeh using a steam blanch. The details of the process are a trade secret, however it is not at all difficult for any company to figure out a good method, which extends the refrigerated shelf life to 16 days from less than 5 days, and which results in only a very slight lowering (almost negligible, except for connoisseurs) of the product's quality.

The basic idea is to take the tempeh as soon as it comes out of the incubator (at White Wave it is in individual perforated plastic bags) and put it on racks in a sealed chamber. This might be a large metal box that fits down over the rolling rack or an oven-like box. Live steam is run into the chamber for a certain typical of time (say 15 minutes) and temperature for pasteurization until the core of the tempeh is pasteurized. Steam quickly transmits its heat to the tempeh core.

Steve feels strongly that tempeh should not be vacuum packed, a process which he feels compacts the tempeh into a mush, greatly lowering its quality and appearance. However Lightlife Foods run by Michael Cohen, America's second largest tempeh maker, vacuum packs it, as does Northern Soy. Pacific Tempeh also vacuum packed. Vacuum packing a clean, pasteurized tempeh will probably give a shelf life of least 30-45 days. And if the tempeh is blanched in a vacuum package, the shelf life would be much more than 45 days. The potential from botulism under these conditions is extremely small due to competing organisms in the tempeh. White Wave is experimenting with a number of other ways other than blanching to extend shelf life under refrigeration.

All White Wave tempeh is shipped frozen from the factory. Some White Wave tempeh is now sent to the East Coast and exported to Europe. Freezing does decrease quality a little but it also greatly extends shelf life if the tempeh is shipped over a long distance. Steve feels that the main determinants of tempeh quality precede pasteurization–sanitation, starter, cooking, incubation, etc. White Wave recommends that retailers sell their tempeh out of the refrigerator, where it sell much faster and at lower cost than it does out of the freezer. In each case is a "merchandising slip" that tells the retailer to place the tempeh in his refrigerated case next to the yogurt in between the tofu, and to expect it to last at least 16 days. Address: President, White Wave Inc., 1990 North 57th Court, Boulder, Colorado 80301. Phone: 303-443-3485.

2483. Andersen, Thomas. 1990. History of pioneering work with tempeh and tofu in Denmark (Interview). *SoyaScan Notes.* May 24. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** Thomas, a native of Denmark who speaks flawless British English (in part because of his extensive travels), got interested in macrobiotics in about 1982-83 and, looking for work, traveled to London to study at the Community Health Foundation (founded in 1976 to teach macrobiotics). There from Simon Brown (the expert on soyfoods, who taught classes on how to make tofu and tempeh), Jon Sandifer, Roger Green (presently in Australia), and Andrew Leech, he learned how to make tempeh. There was a small commercial tempeh shop in the kitchen of the Community Health Centre; it started after the kitchen's closing time. He returned to Denmark and in 1985 he started the country's first tempeh shop, named Thomas Tempeh, located on Tagens Vej in Copenhagen. He had two problems. First, since many of his customers were interested in macrobiotics, they did not want the tempeh frozen, and it had a shelf life of only 8 days fresh. Second, the market was very small. So Thomas realized that if he wanted to survive working with soyfoods, he would have to make tofu as well as tempeh.

The two earliest tofu companies in Denmark were Dansk Tofu (owned by Ted Goldberg and some other guys) and Soy Joy in the Valby district of Copenhagen. [Note: Tofu Denmark in Valby was started in March 1982 by Per Fruergaard from Christiania]. The owners of Soy Joy were very idealistic. They never got a packaging machine for their tofu; they just delivered it in bulk in water, which the Danish health authorities, who are very strict, did not like. They were only in business for about 3-6 months. In late 1985 Thomas bought most of the tofu equipment owned by Dansk Tofu, which had been in business for about 1 year. The company was owned by Ted Goldberg, and they had stopped making tofu about 6 months earlier. At this time, Dansk Tofu simply disappeared. And now Thomas started making tofu and marinated tofu, still at Tagens Vej. On 1 Jan. 1986 he moved the business to Soendergade in the city of Toelloese, Denmark. The business was still named Thomas Tempeh. He quickly expanded his product line to include Tofu Pâtés and Smoked Tofu. All of his products were always made with organically grown soybeans. Then he ran into problems with the health inspectors. They did not like the fact that he was making tofu and tempeh in the same place, that he was smoking the tofu himself, and that there were problems with the tofu pasteurization. Moreover, Thomas was overworked (18 hours a day) and undercapitalized. He and one employee were making 500 kg/week of soy products. So in September or October 1986 he sold his business to Urtekraemmeren (pronounced ur-te-KRAH-mer-en), which had previously imported soyfoods from Japan but had never manufactured any.

Then Thomas went to Switzerland to help out with a tofu factory named Berner Tofurei, located in Bern and owned by Infinity, a macrobiotic group. In about Dec. 1986 Urtekraemmeren moved their newly acquired tempeh and tofu company to its present location in Soeborg, Denmark, and renamed it Urten's Tofu, and stopped making tempeh since the health inspectors didn't want tofu and tempeh to be made in the same room. Tempeh was selling, but not enough to justify buying a separate room and equipment for it. In April 1988 Thomas returned to Denmark and began to work as a tofu maker for Urtekraemmeren at Urten's Tofu, the company he had founded. The company was in bad shape: there were constant problems with the health inspectors, the equipment was old and bad, a long pressing time led to bacterial contamination, etc. In late 1988 or early 1989 Urten's Tofu started selling their tofu to Nutana, a large manufacturer of vegetarian foods owned by the Seventh-day Adventist church. This was a turning point in the history of the business. In about May 1989 Thomas told Urtekraemmeren that if they invested in new equipment he could make the company successful. They liked the idea so Thomas went to the SIAL food fair in Paris, met Takai, and bought their largest pressure cooker (220 liters), new pressing tables, a pasteurizing tank, etc. The next big development came in Sept. 1989 when Urten's Tofu got their tofu into the Irma supermarket chain in Denmark. Then tofu began to sell better on the health foods market as well. Thomas, Tom Kristoffersen, and one other man now make the tofu at Urten's. But it is hard work and wages are low. There are no tofu books in Danish.

Today Urten's Tofu is the only tofu company in Denmark. They make, on average, 750 kg/week of tofu (range: 500 to 1,500 kg/week). Their three products are tofu, marinated tofu, and tofu pâté. Production is growing nicely but varies widely from week to week.

A new tofu company named Oy Soya Ab is now being starting in Ekenäs, Finland, by people there who import macrobiotic foods from Japan. One of the people is named Elizabeth. Thomas will work as a consultant for this new company. Address: Urten's Tofu, Hoeje Gladsaxe Torv 2, DK-2860 Soeborg, Denmark. Phone: 31 67 41 90.

2484. Macfarlane, Bruce J.; Riet, W.B. van der; Bothwell, T.H.; et al. 1990. Effect of traditional oriental soy products on iron absorption. *American J. of Clinical Nutrition* 51(5):873-80. May. [28 ref]

• ***Summary:*** Various soy products (silken tofu, tofu, tempeh, natto, different types of miso, sufu, and soy flour) were fed to 242 women. Blood levels of iron were then compared. Silken tofu, tempeh, natto, and the misos showed better iron absorption than tofu and sufu. The authors speculated that because tofu is higher in calcium, it might be this calcium that is inhibiting iron absorption. Silken tofu, coagulated with GDL, has a much lower calcium content than silken tofu. Address: MRC Iron and Red Cell Metabolism Unit, Dep. of Medicine, Univ. of Witatersrand, Johannesburg; Div. of Food Science and Technology, CSIR, Pretoria; and the Dep. of Medicine, Univ. of Natal, Durban, South Africa.

2485. **Product Name:** Tempeh Burgers.
Manufacturer's Name: Soy Feliz.
Manufacturer's Address: 17802 N.E. 21st St., Gainesville, FL 32609. Phone: 904-485-1527.
Date of Introduction: 1990. May.
New Product–Documentation: Talk with Jose Caraballo. 1990. July 27. He started making and selling tempeh burgers at his home in May 1990. In Spanish "Soy Feliz" means "I am happy."

2486. Vanka-Kawat B.V. 1990. Topmerken in de Aziatische levensmiddelen: Prijslist [The top brands in Asiatic foods: Price list]. 3e v.d. Kunstraat 18, 2521 BB Den Haag, Netherlands. 22 p. [Dut]
• ***Summary:*** The subtitle is "Import-Export Asian Food Specialties." Imported items are listed by country of origin. Non-imported are listed by product type: China: Pearl River mushroom soy, soy superior, and superior soy. Philippines: Silver Swan soy sauce. Hong Kong: Best black soy, Best light soy, Best soy light, Best soy sauce, Black soy, Black soy yellow label, Hoi sin sauce Meechung, Taotjo bean sauce. Japan: Akamiso, Kikkoman menmi, Kikkoman shoyu, Kikkoman steak sauce, Kikkoman teriyaki sauce, Marukin soy sauce, Morinaga silken tofu, Nagatani-en aka-miso, shiro-miso, Teriyaki sauce. Ketjap: Ketjap kaki tiga, Ketjap A, Ketjap 'A' manis, Ketjap benteng asin, Ketjap benteng manis, Ketjap vital, Superior soy, Tiger brand soy, Yellow label. Singapore: Salted soy beans sin sin, Taotjo bean sauce, Taotjo flower brand, Taotjo taksan. Taiwan: Black beans fermented [soy nuggets], Soy sauce ve wong, Tahoe amigo, Tauge [sprouts]. Fresh products: Vacuum packet fresh tofu. Fresh tempeh. Address: The Hague, Netherlands. Phone: 070-388- 88 04.

2487. **Product Name:** Azuki Brown Rice Tempeh.
Manufacturer's Name: White Wave, Inc.
Manufacturer's Address: 1990 North 57th Court, Boulder, CO 80301.
Date of Introduction: 1990. May.
Ingredients: Soybeans, rice, azuki beans.
New Product–Documentation: Talk with Alex Press. 1990. Feb. 28. He calls to ask how to spell azuki/adzuki/aduki on the product label. The product should be out by mid-April. Talk with Steve Demos, president of White Wave. 1990. May 20. This product was launched 1-2 weeks ago.

Ad in Natural Foods Merchandiser. 1991. Jan. p. 61. "Tempting tempeh sale." 15% off Azuki Brown Rice Tempeh.

2488. Urban, Svadesha Ruediger. 1990. The history of Tofurei Svadesha, West Germany's first tofu manufacturer (Interview). *SoyaScan Notes.* June 13. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Ruediger Urban was born in about 1940. After 3-4 years of studying photography, in about 1969, he began working in a restaurant named Hotel Brauneberg that had been started by his brother in the city of Traben-Trarbach on Mosel (Moselle) River. At the restaurant he came across a large, high quality cookbook (covered in white silk) by Werner Fischer [or perhaps Alfred Walterspiel] titled *Meine Kuenst in Kueche und Restaurant* (My Art, Kitchen, and Restaurant) that contained 2-3 pages of information in German about how to make tofu. He started to buy the ingredients, but he was so overworked that he had no time to really start experimenting with tofu.

Then he went to work in a "Macro-Shop" in Deggendorf, in the Bavarian Forest, but he did not do anything with tofu there. Meanwhile he sold arts and crafts at marketplaces for several years to support himself and his two sons.

Then, in about 1979, he started on the side to make tofu in a little farmhouse at Winterlehen 1½, Einweging, in the Bavarian Forest (Bayerischer Wald). He ordered a copy of *The Farm Vegetarian Cookbook,* from which he learned more about tofu. He made only one product, tofu, using organically grown soybeans and nigari coagulant. Initially he tried making the tofu without removing the okara, but he soon filtered the milk to removed the okara. He made the tofu using a gas stove, which he sometimes used in the kitchen and sometimes moved out into the garden. The tofu was sold under his name Svadesha (he was a disciple of Bhagavan Sri Rajneesh) but he had no officially registered business. On weekends his two sons, Premdeva (the elder) and Gyandeva, helped with the tofu business. Twice a week he produced about 30-40 kg of tofu, which he packed in small plastic tubs, loaded into his car? and drove more than 200 km (120 miles) into Munich. There he personally delivered it to a handful of the new generation of natural food stores (*Biolaeden*) that sold all of his tofu. These pioneer natural foods shops included Erdgarten (the first), and Macro-Shop on Amalienstrasse. While still in Einweging he introduced his second product, Kraeuter Tofu (Herb Tofu), made by mixing and mashing herbs into finished pressed tofu to make a sort of seasoned tofu cottage cheese.

After about a year making tofu at this location, he decided to go to India for 6 months, so he entrusted his small business to another person while he was gone. The company fell apart during this time. Upon his return from India, Svadesha moved the business to Aeussere Koetzingerstr. 52a, D-8492 Fuerth im Wald, very near the Czechoslovakian border, and farther away (about 200 km or 120 miles) from Munich. He knew a woman friend there where he could work and stay. This new tofu shop began operation on 1 March 1981 and, because of pressure from retailers who needed official invoices, he registered the company under the name Svadesha Pflanzen-Feinkost. By mid-1982 was using 20 lb of soybeans each time to make tofu 3 times a week. In

Furth im Wald he introduced a new product, Tofu Pflanzarl, a special kind of Bavarian meatless meatballs or "Bolleten." Soon he was getting more and more orders.

So in 1983 Svadesha moved his company into Munich, his main market, and set up shop in Das Werkhaus at Leonrodstr. 19. Alexander Nabben's tofu shop was in the same building, but Alexander kindly offered to stop making tofu at that time. Svadesha changed his company's name to Tofurei Svadesha Naturkost Produkte. During this period, at meetings of Germany's various German tofu makers, the question arose as to which company had started first. It was clearly decided and agreed that Svadesha had been the first. Other early companies were Alexander's Tofu Shop (an underground business founded by Alexander Nabben at the Werkhaus on Leonrodstr. in Munich; started tofu production by Jan. 1981), and Auenland Tofu und Soja Produkte (founded by Peter Wiegand at Prien-Chiemsee; started tofu production in March 1982). Svadesha thinks (but is not sure) that Biogarten sold tofu made by other companies (including Svadesha's) but never made their own. Note that all of West Germany's early tofu companies started in southeastern Germany in the area around Munich.

In Munich, Svadesha kept making improved versions of his regular tofu, herb tofu, and tofu meatless meatballs. He also launched a new Tofu Pastete (Tofu Spread), and Raeucher Tofu (Smoked Tofu, in 3 flavors).

In 1985 Svadesha moved again, this time to a suburb east of Munich near Denning, into a former butcher shop (at Ospreussenstr. 22, D-8000 Munich 81), the company's present location. There the company really started to earn money. They introduced a new type of Tofu Pflanzarl, new Tofu Pastete (one with herbs, and one with tempeh), Tofu Burgers, Spice Tofu, Tofu Spring Rolls, and Tofu Schnitten (Tofu Slices) marinated in shoyu then fried, and Sauerkraut Schnitten (Tofu slices filled with sauerkraut). He also started selling tempeh, which was made by Byodo Naturkost.

On 1 June 1990 Svadesha sold his company for a good price to Robert Mayer and Erhardt Schwartz. He had learned 1 year before that he had cancer of the cheeks. At that time the company acquired a new structure and the name became Tofurei Svadesha Naturkost Produkte GmbH. The new owners agree with Svadesha's philosophy and have solid business experience, so the future looks promising. The company's best selling products are now, in descending order of popularity: Plain Tofu, Tofu Pflanzarl, Smoked Tofu, Tofu Schnitten (marinated, deep-fried slices), and Tofu Spring Rolls.

Aside from being the first tofu company in Germany, Svadesha feels that his other major innovations were being the first to make smoked tofu, Tofu Pflanzarl (tofu meatless meat balls), Herb Tofu, Tofu Schnitten, and Sauerkraut Schnitten. Address: Home: Waldstr. 4, D-8015 Ottenhofen, West Germany.

2489. McKelvey, Richard. 1990. New developments at Lightlife Foods in Greenfield, Massachusetts (Interview). *SoyaScan Notes.* June 20. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Richard was the sales manager at Tomsun Foods while the company was growing rapidly and at the time it went bankrupt. New products at Lightlife Foods include Foney Baloney (Aug. 1989), Lemon Grill (Tempeh Burgers) (Nov. 1989), and Lean Links (April 1990). Lightlife now buys its tofu from Nasoya. About half the company's sales come from tempeh and tempeh products, and about half from tofu products. The best-selling products are (1) Tofu Pups, (2) Lightlife Tempehworks Soy Tempeh, and (3) Fakin' Bacon. The company is trying to get away from the pure Tempehworks products and to include Lightlife on every label. The new soy tempeh labels will read as shown above. He feels the Grills and the Lean Links have the greatest potential. The Lean Links are very close in concept to their meat counterparts. Address: Sales Manager, Lightlife Foods Inc., 74 Fairview St., Greenfield, MA 01301. Phone: 413-774-6001.

2490. Cardenas, Danilo C. 1990. Status of the Philippine soyfood industry. Paper presented at the International Conference on Soybean Processing and Utilization. Held 25-29 June 1990 at the Jilin Academy of Agricultural Sciences, Gongzhuling, China. *
Address: Supervising Science Research Specialist, Philippine Council for Agriculture, Forestry, and Natural Resources Research and Development (PCARRD), Los Baños, Laguna 3720, Philippines.

2491. **Product Name:** [Tempeh].
Manufacturer's Name: Fonte della Vita S.r.L. (La).
Manufacturer's Address: Via Monviso 18, 12049 Trinita (Cuneo), Italy. Phone: (0172) 66 397.
Date of Introduction: 1990. June.
New Product–Documentation: Talk with Michael Brenger, production manager at Fonte della Vita. 1990. July 18. This product was introduced 1 month ago.

2492. Tenpe Kenkyushu-kai. 1990. Tenpe Kenkyûshû-kai: Koen yoshi [Tempeh Research Society: Highlights of the year's first meeting]. Kobe Park City 2-1110, 6-2-1 Minatojima, Chuo-ku, Kobe 650, Japan. 18 p. [Jap]
• ***Summary:*** The forth or fifth meeting of this group, and the first in 1990, was held at Meiji University in Tokyo. An insert announces that Mr. Goro Kanasugi, a tempeh pioneer in Japan, died on 5 June 1990. Address: Kobe, Japan. Phone: 078-302-7065.

2493. Michael, Brenger. 1990. History of La Fonte della Vita S.r.L., Italy's largest manufacturer of tofu and seitan (Interview). *SoyaScan Notes.* July 18. Conducted by William

Shurtleff of Soyfoods Center.
• ***Summary:*** This company was founded in Feb. 1985 by Mr. Demontis and his wife, Ms. Borello, on Via Matteotti?, in Fossano, about 35 miles south of Torino (Turin). He joined the company in the fall of 1985 and became a partial owner. He learned to make tofu from *The Book of Tofu* by Shurtleff & Aoyagi. Today the company is owned by 5 people, with the DeMontis owning the largest share; Mr. Mario Cozio joined later. Originally the company made only nigari tofu, but by autumn they had introduced 4 tofu spreads (tofu pâté), and soymilk. In April 1986 the company moved about 15 miles further south to Via Circonvallazione 87, 12049 Trinita (Cuneo), Italy. They are still at the same location but the street was renamed in about 1987? so that their present address is Via Monviso 18, 12049 Trinita (Cuneo). After the move, they introduced two types of seitan (plain and fried), fried tofu, tofu with herbs, then two tofu burgers (one with sea vegetables, and one with seitan). They used to make soymilk but after it grew to a certain level they stopped making it and began buying it from a company in Belgium [probably Alpro], so that they could focus on expanding tofu production. In June 1990 they began making tempeh.

Today they are the largest among 5 tofu manufacturer in Italy. They make about 2,500 kg/week of tofu and have 23 employees. The company's best-selling product is fried seitan, followed by natural seitan and regular tofu (about equal), tofu burgers, and tofu spreads. During the last year sales have grown about 30%, due in part to an aggressive program to introduce 2-3 new products a year. New products are tempeh and seitan burgers. Address: Via Monviso 18, 12049 Trinita (Cuneo), Italy. Phone: (0172) 66 397.

2494. Cohen, Michael. 1990. Re: Enclosing new labels. Letter to William Shurtleff at Soyfoods Center, July 20. 1 p. Handwritten, with signature on letterhead.
• ***Summary:*** "Dear Bill–Attached please find our labels for the newest products available at Lightlife.

"As for the Tomsun dates, I am going on vacation..." Address: Lightlife Foods, Inc., P.O. Box 870, Greenfield, Massachusetts 01302. Phone: 413-774-6001.

2495. Gerner, Bob. 1990. Best-selling soyfoods at Berkeley Natural Grocery Co. in Berkeley, California (Interview). *SoyaScan Notes.* July 28. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** By far the best selling soyfood product type at Bob's store is soymilk, accounting for 50-65% of total soyfoods sales. The best selling brands, in descending order of sales volume, are Vitasoy (about 40% of soymilk sales, and rising; his store promotes it more in part because he sees sales reps longer and in part because the Vanilla Vitasoy is his favorite soymilk product), Edensoy (30-35% and falling; it used to be the best seller), Westsoy and Westbrae Malteds (20% and rising), Pacific Soy (from Tree of Life), and Other (Wildwood Yosoy, Quong Hop, Soy Moo, AhSoy, 5%).

The next best selling soyfood type is tofu (accounting for about 20% of total soyfoods sales, and rising), followed by soy sauce & tamari (10%, stable), soy cheeses (4%, rising), tempeh (2%, falling), soy ice cream (1%, stable or falling), and miso (1%, falling).

Total per capita purchases of soyfoods have risen steadily since the mid-1970s. There have been no plateaus or declines.

Bob dislikes (but understands) the way soymilk manufacturers discount their products, basically forcing him to buy very large quantities–typically 60 cases at a time. This policy favors large retailers, ties up a lot of his capital up-front, and takes up a lot of space in his warehouse. So 95% of the time he buys Vitasoy and Edensoy soymilk when they are on sale at discount prices, then he sells these at discount/sale prices–a practice that he does not like since it seems to contradict the idea of a "sale." Customers won't buy soymilk any more at "regular" prices. Bob would rather buy what he needs from week to week, then sell all products at a regular price most of the time, then have promotions once in a while. Vitasoy has played a lot of games with distributors to try to get them to buy more at one time, and Bob has heard that this is hurting the distributors and that they don't like it. They can't make money selling at an 8% margin, which they often must do. Edensoy's discount is constant whereas Vitasoy has on and off discounts–which makes buying harder for Bob. Westbrae/Vestro has a more typical discount policy and Bob sells Westbrae products at a regular price most of the time. Address: Owner, Berkeley Natural Grocery Co., 1336 Gilman St., Berkeley, California 94706. Phone: 415-526-2456.

2496. Best, Daniel. 1990. Fermentation opportunities ripen. *Prepared Foods* 159(7):86-88. July.
Address: Senior Editor/Technology Analyst.

2497. Karta, Susani K. 1990. The market prospective for tempeh in the year 2000. In: Ontario Ministry of Agriculture and Food, ed. 1990. Soybean Buyers Mission from New Markets, July 1-7, 1990. Tokyo, Japan: Ontario Ministry of Agriculture and Food. 61 p. July. See p. 19-33.
• ***Summary:*** Contents: Introduction. Market situation for tempeh in Indonesia. Health and nutritional significance of tempeh. Tempeh for weaning food. Constraints and trends in the market development of tempeh. Recommended guidelines and strategies. Ideas for the diversification of tempeh utilization: Tempeh as a food ingredient, new tempeh food opportunities.

Tempeh flour (dried, ground tempeh) used in weaning foods could dramatically reduce the diarrheal diseases among children in Indonesia and other countries. The author estimates the potential demand for tempeh flour in weaning foods used for this purpose in the year 2000 to be

27,720 tonnes in Indonesia and 470,880 tonnes in all Asian developing countries. This assumes average tempeh flour consumption of 10 gm/day per child or 3.6 kg/year per child.

In 1983 Indonesians consumed about 927,000 tonnes of soybean as food, increasing to 1,528,000 tonnes in 1958. About 50% of these soybeans were used to make tempeh, and 40% to make tofu; the remaining 10% were used to make soy sauce and "tauco" (a fermented whole soybean condiment [Indonesian miso]). In 1988 the average Indonesian consumed 6.45 kg/year of tempeh (equivalent to 4.3 kg of soybeans). In the past 5 years, consumption of soyfoods in Indonesia has increased by an average of 10% annually.

According to a 1988 report from the Indonesian Ministry of Agriculture, the average daily per capita consumption of calories is still below the recommended Indonesian guidelines. In 1988, calorie consumption was only 1,794 calories/capita/day, or about 28% below the recommended 2,500 calories. Protein intake was about 43.3 grams/capita/day, or about 21% below the recommended 55 gm. "Consumption levels of traditional soyfood such as tempeh will continue to grow as the population attempts to meet its protein needs. Moreover, in view of the purchasing power of the average Indonesian consumer, we can expect a continuing increase in the demand for tempeh as it is widely available at a much more affordable price than animal protein... For tempeh manufacturing, imported soybeans are preferred because they are larger and cleaner." Address: MSc, RD, Manager, P.T. Indofood Interna Corp., Jl. Ancol No. 4-5, Ancol Barat Jakarta Utara 14430 Indonesia. Phone: 690-1365.

2498. Loh, Michael. 1990. An overview of export opportunities in the new markets. In: Ontario Ministry of Agriculture and Food, ed. 1990. Soybean Buyers Mission from New Markets, July 1-7, 1990. Tokyo, Japan: Ontario Ministry of Agriculture and Food. 61 p. July. See p. 10-12. [Eng]

• ***Summary:*** It has been almost 20 years since the first container load of soybeans grown in Ontario was shipped to Japan. By the end of 1989, Ontario was exporting more than $25 million worth of soybeans to Japan, Hong Kong, Malaysia, and Singapore. Now the new markets for Ontario soybeans are Korea, Taiwan, the Philippines, and Indonesia.

In Korea, trade restrictions have eased on soybeans and other agricultural products. With hefty trade surpluses, Korea is under pressure to balance trade. Korea soybean imports jumped from only 428,000 tons in 1979 to 1,100,000 tons in 1989. About 120,000 tons of the imported soybeans are for food use, as follows: Tofu 100,000 tons (83% of the total), soymilk 17,000 tons, and soy sprouts 2,000 tons. Nearly all of Korea's soybean imports come from the USA.

Taiwan ranks second, after Japan, in terms of best prospects for agricultural exports. The strong Taiwanese currency has made exports less expensive. Burgeoning trade surpluses have led to increasing pressures from trading partners, like the USA, to balance trade. So Taiwan has liberalized imports by lowering tariffs and eliminating non-tariff barriers. "U.S. soybean exporters took advantage of their dominant market position in Taiwan to expand sales. Backed by aggressive trade negotiators, the American soybean industry has enhanced its competitive position by securing a 5-year supply agreement contract with the Government of Taiwan. The agreement calls for the purchase of 5.7 million tons of U.S. soybeans over a five-year period from July 1, 1986 to June 30, 1991. As a result the United States has over 75% of the market share. Taiwan's annual requirements of food soybeans are estimated at 250,000–300,000 tons. With recent market opening measures announced by the Taiwanese government, direct sales of food soybeans to end-users are now permitted."

Philippines: In Feb. 1987 Michael led a mission to the Philippines, and contacted a buyer. Ontario soybeans were first shipped to that country later in 1987. The Philippines import about 10,000 to 15,000 tons/year of soybeans for food use, and this is expected to increase in the near future. Filipro, Inc., which is the Philippines' licensee for Nestle S.A., reported increasing market acceptance of its re-launched powdered soya milk product Vita (chocolate flavor), and a soy-based baby cereal named Ceresoy.

Indonesia: Ontario soybeans (worth $4.2 million) were first sold to Indonesia in 1980 after Canada's first mission there that year. 90% of the 1.7 to 2.0 million tons of soybeans required by Indonesia are used for food. Tempeh is a delicious Indonesian food and Indonesia requires over 750,000 tons/year of soybeans to make tempeh. Address: Senior Representative, Asia/Pacific Region, Ontario Ministry of Agriculture and Food (OMAF), Tokyo, Japan.

2499. Matsumoto, Isao; Imai, Seiichi. 1990. Tenpe seizô n okeru daizu shori [Processing of soybeans for manufacture of *tempe*]. *Nippon Shokuhin Kogyo Gakkaishi* (*J. of the Japanese Society of Food Science and Technology*) 37(7):497-504. July. 4 fig. 6 tables. [16 ref. Jap; eng]

• ***Summary:*** To obtain the best quality tempeh: Dehull the soybeans, then soak in a 0.2% solution of acetic acid for 3-4 hours to reduce their load of microflora. Drain, then allow to stand and dry (*étuver*) for 3-7 minutes. Address: Food Research Inst., Niigata prefecture, Kamo-shi, Niigata, Japan.

2500. Matsuo, Masako. 1990. Okara tenpe no seishitsu ni oyobosu komenuka no eikyô [Effects of rice bran on properties of "okara tempe"]. *Nihon Nogei Kagakkai Shi* (*J. of the Agricultural Chemical Society of Japan*) 64(7):1237-39. July. [6 ref. Jap; eng]

• ***Summary:*** The addition of 10% rice bran to okara which is then fermented by *Rhizopus oligosporus* modifies the enzymatic activity, the vitamin content, and the

physicochemical properties of the resulting product. The emulsifying capacity and the taste of the fermented product are improved. The addition of rice bran also improves the nutritive value of okara tempeh.

Okara tempeh has a texture that is harder and less elastic than that of white bread. The capacity for water retention and the absorbability of oil, and the emulsifying properties are greater than those of wheat flour. The antioxidant activity is equivalent to that of soybean miso. Address: Lab. of Chemistry, Faculty of General Education, Gifu Women's Univ., Taromaru, Gifu 501-25, Japan.

2501. Matsuo, Masako. 1990. Okara tenpe [Suitability of "okara tempe" as a foodstuff]. *Nihon Nogei Kagakkai Shi* (*J. of the Agricultural Chemical Society of Japan*) 64(7):1235-36. July. [2 ref. Jap; eng]
Address: Lab. of Chemistry, Faculty of General Education, Gifu Women's Univ., Taromaru, Gifu 501-25, Japan.

2502. MT Plate. 1990. July. New soyfoods restaurant or deli. 641 N. Palm Dr. (P.O. Box 3243), Palm Springs, CA 92263-3243.
• ***Summary:*** Letter from Tanya Malch. 1990. Sept. 11. This restaurant opened on 17 July 1990 with completely vegetarian (except rennetless cheeses) lunch and dinner menus consisting of Pasta, Pizza, and Pacific Rim foods. The dinner menu represents 8 countries. They have a young, full-time French chef who adds style and presentation and is doing great things with the tempeh. They make their own tempeh, presently for use at the restaurant only, and lite-soy-millet. For lunch they serve tempeh burgers, tacos, Tempehting Garden Salad, and a wonderful tempeh paté on a bed of greens with basmati rice. For dinner, appetizers include (from Thailand) Thai Stix, which are skewers of tempeh to dip in a south seas peanut sauce, and (from Japan) aged tofu. Entrees include Tempeh Scallopini with Shallot and Shiitake-Sake Sauce. Everyone loves the tempeh. "We have tempeh addicts who never knew the word before we opened." Her partner is Mona.

Menu. 1990. 8.5 by 11 inches. 1 page, two sided. Black on yellow.

Talk with Tanya. 1991. March 7. She tells how tennis star Martina Navratilova came repeatedly to her restaurant before and during the local Virginia Slims tennis tournament and loved the tempeh, then after winning the tournament, Martina stopped her press conference to talk about what a great food tempeh is! (see separate record). Tanya uses about 48 cups of soybeans a week to make tempeh. She mixes 3 parts of soybeans with 1 part millet and makes only soy & millet tempeh–her favorite. She feels that fresh tempeh is far superior to its refrigerated or frozen counterpart. She also teaches a cooking class on tempeh.

M.T. Plate then moved to 43 North Pacific Coast Hwy #201, Redondo Beach, California 90277. This restaurant was on the second floor of a building. Then the rent tripled and investors balked. So Tanya closed it in mid-1993. Now she wants to make tempeh. Address: Palm Springs, California. Phone: 619-323-9686.

2503. Ontario Ministry of Agriculture and Food. 1990. Soybean buyers mission from new markets, July 1-7, 1990. Tokyo, Japan: Ontario Ministry of Agriculture and Food. 61 p. 30 cm. Saddle stitched. [Eng]
• ***Summary:*** This conference took place in Ontario, Canada. On the mission were two buyers each from Indonesia (P.T. Indofood Interna Corp., BULOG), Philippines (Universal Robina Corp., Paritas Trading Corp.), and Taiwan (Sun Ford Mfg. Corp, Great Wall Enterprise Co.). Michael Loh of OMAF/Tokyo was the mission leader. Contents: Background and purpose. Mission members. Itinerary. Seminar agenda. Canada's soybean industry, by Fred Brandenburg of OSGMB. An overview of export opportunities in the new markets (Korea, Taiwan, Philippines, Indonesia), by Michael Loh of OMAF, Tokyo. Role of Taiwan Soybean Importers, by Laurence Hsiao of Sun Ford Conglomerate Corp. Soybean market in Indonesia, by A. Saifullah of BULOG, Indonesia. The market prospective for tempeh in the year 2000, by Ms. Susani K. Karta, manager, P.T. Indofood Interna Corp. (Indonesia). Appendix: 1. Ontario soybean suppliers (directory of 15 exporters). 2. Useful contacts. 3. Ontario soybean oil crushers (ADM, Victory Soya Mills, Central Soya of Canada). 4. Role of the Ontario Soybean Growers' Marketing Board. 5. Development of soybean varieties (incl. Harovinton for tofu, Canatto, Nattawa, and Nattosan for natto). 6. Market trends in the development of traditional soyfood, by Susani K. Karta (ASA, Singapore; Originally presented at the ASEAN Food Conference, Oct. 1988, Bangkok, Thailand). 7. Reference materials for doing business in Asia/Pacific. Address: Tokyo, Japan.

2504. Saifullah, Agus. 1990. Soybean market in Indonesia. In: Ontario Ministry of Agriculture and Food, ed. 1990. Soybean Buyers Mission from New Markets, July 1-7, 1990. Tokyo, Japan: Ontario Ministry of Agriculture and Food. 61 p. July. See p. 16-18. [Eng]
• ***Summary:*** Contents: Market size. Major soybean products. Sources of imports. Domestic prices. Addendum: BULOG's objective and functions.

The size of the Indonesian soybean market is about 1.7 to 2.0 million tonnes. From 1985 to 1989 soybean production in Indonesia grew from 870,000 tonnes to 1,275,000 tonnes (about 11.6% per year), imports grew from 330,000 tonnes to 384,000 tonnes (with a peak of 475,000 tonnes in 1988), and soybean consumption grew by 7.8% per year. About 90% of total soybean consumption is used for food, and the remaining 10% is crushed for oil or used for feed. Of the soybeans used for food, about 90% are used for tempeh and tofu.

Since 1986 China has been the major source of soybeans imported to Indonesia, followed by the USA and Vietnam. Soybeans can only be imported by BULOG (the National Logistics Agency) to protect Indonesian soybean producers from low world market prices. Imports are used only to make up for shortfalls in domestic production–not to lower prices.

In 1986 and 1987 the price of soybeans imported from China was lower than the price of soybeans imported from the USA; but from 1988 to 1990 the price from the USA was lower than that from China. In 1990/91 the average import price of soybeans (in US dollars per metric ton, C&F) from various countries was: China $277.70, USA $253.00, and Vietnam $294.20.

To stimulate domestic soybean production, the Indonesian Government sets floor prices for soybeans. In 1990 the price is Rp.400 per kg or about $220 per ton. However the producer price has been well above the floor price for many years. In the central producing area in East Java, the producer prices is presently about Rp.800 per kg (US$440 per tonne), while the wholesale price in the Jakarta market was Rp.950,000 per tonne (US$527.8 per tonne) in early June, 1990.

BULOG's main objectives are to reduce price instability and to stimulate domestic production of rice, sugar, wheat, and secondary crops including soybeans. The Agency maintains a national reserve or buffer stock. Address: Market & Price Analysis Bureau, BULOG, Badan Urusan Logistik, Jl. Jend, Gatot Subroto 49, Jakarta, Indonesia. Phone: 489-5499.

2505. Sullivan, Nardia. 1990. Don't lose your tempeh–eat it! *Midland Express* (*Victoria, Australia*). Aug. 28. p. 7, 40.
• ***Summary:*** Tells the story of Mike Manser (who is shown holding up 2 packages of his tempeh in a large photo) and his tempeh company named Nectar Soy products in Daylesford, Victoria, Australia. "The Daylesford resident was the first in Australia to manufacture tempeh." The company distributes its Nectar tempeh from Melbourne to Darwin.

"An engineer by profession, Mike first became interested in tempeh after he gave up his job in Ford's engine development laboratory in Geelong. 'At around the same time I stopped working as an engineer, I became a vegetarian,' Mike said. 'I soon discovered there was nothing on the market equal to meat for the vegetarian...'

"There are now four outlets manufacturing tempeh in Australia. 'There is one company in Sydney operating on a larger scale,' he said. 'But I get by on quality and flavor.'" Address: Australia.

2506. GEM Cultures. 1990. Catalog [Mail order]. 30301 Sherwood Rd., Fort Bragg, CA 95437. 9 p. Aug. [4 ref]
• ***Summary:*** This catalog celebrates the company's tenth anniversary. Contents: 1. Powdered cultures for soycrafters: Powdered tempeh starter, PTS (11 gm [$2.25, makes 5+ lb of tempeh], 35 gm, 500 gm, 1000 gm). Starter cultures for miso, amazake, shoyu, and tamari. Introductory koji kits. Commercial spore packets for miso or shoyu. Powdered natto starter. Rice koji (cultured rice) for light misos, amazake, pickles. Most in home or commercial sizes. 2. Cookbooks with culture (lists 4 books). 3. Natural salts for curding tofu: Natural nigari or Terra Alba calcium sulfate in 1 lb or 5 lb bags. 3. Self renewing cultures: Fresh viili culture, fresh kefir curds, fresh sourdough culture, seed miso. 4. Sea vegetables from the Mendocino Sea Vegetable Co. 5. Handy reusable items: Super sealers (lids for canning), cheesecloth (grade 60), gauze drawstring bags (for spices in mulled cider, whole herbs, etc.). Address: Fort Bragg, California. Phone: 707-964-2922.

2507. Torii, Yasuko. 1990. [Re: New developments with tempeh and natto in Japan]. Letters to William Shurtleff at Soyfoods Center, Sept. 2 and 23. 2 p. Handwritten and typed, with signature. [Jap; eng+]
• ***Summary:*** In Japan, tempeh has not become popular. Marusan-Ai has stopped making tempeh. What a shame that Mr. Kanasugi, who was so enthusiastic about tempeh, has just passed away. The Tempeh Study Group (Kenkyukai) is still meeting 2-3 times a year and trying to popularize tempeh.

On the other hand, natto is becoming very popular and production is increasing rapidly. Natto groups are sponsoring various events to help popularize natto outside Japan.

Mrs. Torii traveled to Budapest, Hungary in early September to attend an IFOAM Conference on organic farming, which is spreading in Eastern Europe. There she enjoyed tasty chilled tofu (*Hiya-yakko*) and met a person who knows a lot about tofu. At an international agricultural fair, she found that soyfoods were becoming popular. The booths offering roasted soybean snacks and soya burgers were crowded. She saw an attractive soy cookbook containing color photos, and met a man who is translating *The Book of Tofu* into Hungarian. The Kombinat was doing a lot to develop and popularize soyfoods.

In Feb. she went to Indonesia with other members of the Tempeh Study Group to attend a symposium on soybean fermentation. It was very interesting. Address: Kamitsuchidana 324, Ayase-shi, Kanagawa-ken 252, Japan. Phone: 0467-76-0811.

2508. Sand, Avraham. 1990. Pioneering soyfoods and natural foods in Israel (Interview). *SoyaScan Notes.* Sept. 9. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Avraham first went to Israel in 1975 and stayed for about a year. During this time he and Avraham Leider and one other person founded Israel's first natural foods company, named Amud Ha Shachar (Pillar of Dawn) and located in Jerusalem. The first product they made was granola, followed by whole wheat flour, bulgur wheat,

brown rice (which they packaged), and date bars. With this company established, a number of Americans and other westerners who had recently immigrated to Israel and were connected with the company approached the Sachnut, the Jewish government agency which helps finance Jewish cooperative settlements. They asked to be given a moshav. A moshav is like a kibbutz (a cooperative agrarian, rural settlement) except that the families have their own homes and land, and the children live at home. In 1976 the Sachnut gave the group a piece of land, infested with scorpions, upon which nine other groups had tried and failed since 1948 to establish a successful community. The Sachnut also financed a small natural foods factory and bakery on the moshav, complete with an oven and a packaging machine. The moshav was named Moshav Me'or Modi'im, located at Doar Na Hamercaz, in the Judean Hills between Jerusalem an Tel Aviv, Israel.

Avraham returned to North America for several years. While living in a community of 5-6 people in Nova Scotia, Canada, he was introduced to tofu by people who made tofu for the community, but he did not make tofu there himself.

Between 1975 and 1990 Avraham has spent a total of 8 years in Israel. The rest of the time he was in the USA or Canada or travelling. Avraham returned to the moshav in 1978 and that year he established Israel's earliest known tofu shop as part of Pillar of Dawn. The tofu was made in the same bakery room as the granola, especially in the evenings when the granola wasn't being made. Originally the community scale shop was established solely to make tofu for the 25 or so families living on the Moshav. Tofu production was small, averaging 50 lb/day of tofu one day a week, using a Corona mill grinder powered by a washing machine motor. The tofu was curded using bittern (nigari) from a salt factory on the Dead Sea. The Moshav owned the tofu company collectively and financed it. Avraham was the motivating force that got the operation started with temporary help initially from Yaacov Sack and Moshe Reuben. About 3-6 months after tofu production began, they started to make tempeh. Then Ben Zion Solomon joined Avraham 6-12 months after the company started and they worked together like equal partners for several years as the tofu and tempeh makers. Solomon was also making quite a bit of miso on the moshav (with a little help from Sand). They also introduced soymilk. At some point, they began to sell their tofu and miso at a few health food stores in Jerusalem. As far as Avraham knows, his was the first company to make tofu, tempeh, miso, or soymilk in Israel. They developed a 1-page informational pamphlet, written in Hebrew on one side and English on the other, explaining what tofu was and how it was made, plus some recipes. At that time Israelis, other than recent immigrants from America, didn't know what tofu was.

They reached the point where they decided to buy large scale equipment (from Takai) and set up a real commercial shop on the moshav that could produce 500 to 1,000 lb/day of tofu. The Sachnut indicated that they would be willing to help set up this new business. So in about 1979 or 1980 Avraham traveled to the USA and did a lot of study to learn about tofu equipment, products, and processes in small to medium sized shops. He visited about 20 tofu shops nationwide (most were very open and helpful) and collected information in a notebook. He worked at the Soy Plant in Ann Arbor, Michigan, for approximately a year in about 1980. From time to time he shared information with his father, Ralph Sand, who was doing research on non-dairy cheese and tofu at Anderson Clayton at the time. At the last minute the Sachnut pulled out and decided not to finance the project, so the expansion never took place. They continued to make tofu on a small scale. But the moshav was suffering economically so in about 1981 Avraham and his wife, unable to make a living there, left and returned to the USA. The little soyfoods plant dissolved but shortly thereafter a commercial operation (probably Golden Jerusalem Tofu) started in Jerusalem and the people on the moshav bought their tofu from Jerusalem.

During the time that Avraham made soyfoods in Israel (1978-81) there was a lot happening with soya. There was a man called the "Soya King" ("Hamelech Soya," probably Eliahu Navot) who was famous in Israel as the country's soybean pioneer. Avraham thinks he lived in Herzlia/Herzliyya, just north of Tel Aviv, but he died in about 1979 or 1980 several months before Avraham was able to meet him. Avraham went to his home town and met his widow, who told him a little about her husband's work with soya.

The most popular food use of soybeans in the late 1970s was in textured soy flour (like TVP). These products were made in Israel by 1 or 2 big companies and sold in supermarkets in very stylish packages indicating that the manufacturers were well established. There were several flavors and large amounts were sold. He does not know the name or address of the manufacturer, but he got the feeling that Eliahu Navot had at least helped inspire these products; he may have helped to develop them.

In America, Avraham set up a soy deli named Sand-Munches in Madison, Wisconsin. They bought tofu from Bountiful Bean in Madison and made and sold tofu sandwiches, nori rolls, tofu salad, tempeh salad, various tofu spreads. They sold to health food stores and had a sandwich cart on the campus.

Avraham was in on the soyfoods wave at the very beginning, but after it became more established and mainstream he felt that his work had been done in that area, so he moved into the field of aroma therapy, inhaling aromatic essential oils from herbs, where he has been working for the last 8-9 years. It is a very powerful form of herbal medicine. He has developed several product lines under the Tiferet brand (a term taken from the Tree of Life in the Cabala) which he markets in health food stores in the

USA and overseas. Address: 210 Crest Dr., Eugene, Oregon 97405. Phone: 503-344-7019.

2509. Hamilton, Ross; Manser, Mike. 1990. Re: History of Nectar Soy Products in Australia. Letter (fax) to William Shurtleff at Soyfoods Center, Sept. 13. 2 p.
• ***Summary:*** Nectar Soy Products is located at 57 Vincent Street, Daylesford, Victoria 3460, Australia. Phone: 053-48-2051. The present owner and founder, Mike Manser, provided this information. The company was founded in March 1981 to provide a full meat equivalent vegetarian food source. The company began commercial production of soyfoods in June 1981 at 4/13 Glamis St. (P.O. Box 969), Geelong, VIC, 3220, Australia. The company's first two products were Tempeh-"Nectar (March 1981) and Garlic Tempeh (March 1985). In May 1985 the company moved from Geelong to its present address in Daylesford. Main reasons for the move were to get pure water (no chlorine or fluoride) and a cleaner environment, to reduce overhead on product transportation, and to have room for a walk-in cooler. It then introduced Curry Tempeh Pies (June 1986) and Lupin Tempeh (Sept. 1990). Manser has always been the sole owner, and is one of the two production workers. Manser believes "I was the first in Australia to manufacture and market tempeh." According to Soyfoods Center records, this is the oldest existing tempeh manufacturer in Australia, but it was the third commercial tempeh company in Australia, after Dharma (c/o Earth Foods, Waverley, NSW; started 1980) and Bodhi Farm Tempeh Co. (Channon, NSW; 1980). It was the first Australian company to produce lupin tempeh commercially and to assist the Food Research Lab at Melbourne University (Weribee, Victoria). The owner feels that the main reason for the company's success is high product quality and painstaking customer contact. Indonesian-Australians confirm this.

Today the company makes about 1,500 lb/week of tempeh. The three best-selling products, in descending order of sales, are soy tempeh, curry tempeh pies, and garlic tempeh. The company employs 2 people in a 1,500 square foot building. The company growth rate has been about 30% a year over the past 2-3 years. Last year's sales were $160,000. The net worth of the business is not known. Address: R.W. Hamilton & Associates Pty. Ltd., Marketing Consultants, 36 Castlemain Rd., Maldon, VIC, 3463, Australia. Phone: 054 75 2884.

2510. **Product Name:** Lupin Tempeh.
Manufacturer's Name: Nectar Soy Products.
Manufacturer's Address: 57 Vincent St., Daylesford, VIC, 3460, Australia. Phone: 053-48-2051.
Date of Introduction: 1990. September.
New Product–Documentation: Letter (fax) from Ross Hamilton and Mike Manser. 1990. Sept. 13. This was the company's fourth product, introduced in Sept. 1990.

2511. Ornish, Dean. 1990. Dr. Dean Ornish's program for reversing heart disease: The only system scientifically proven to reverse heart disease without drugs or surgery. New York, NY: Random House. xxxi + 638 p. Sept. Index and recipe index. 17 cm. [288* ref]
• ***Summary:*** This is a landmark, pioneering book–indeed a classic. In addition to carefully documented information on how to reverse heart disease, it offers 100 pages of vegan recipes, including a 21-day menu. It focuses on a low-fat, low-cholesterol diet, regular moderate exercise, stopping smoking, stress management through meditation and yoga, and (ideally) a support group.

Contents: Author's note. Foreword. Introduction–Heart and soul. Part one: Opening your heart. Part two: The opening your heart program. Part three: Opening your heart recipes. Introduction to the recipes by Shirley Elizabeth Brown, M.D., and Martha Rose Shulman. Twenty-one days of menus. The recipes. Epilogue. Appendix: Nutrient analysis of common foods. Selected references.

In the chapter titled "Introduction to the recipes" a long section on "Soybean products" gives basic information about the following: Whole soybeans, soy flour, soy milk ("It is much higher in fat, lower in vitamin B-12, and lower in calcium than nonfat cow's milk."), soy sauce, tamari, miso, soy cheeses, tempeh, textured vegetable protein (TVP), isolated soy protein, and tofu ("Tofu is a miracle food; it is very easy to digest, very high in protein, low in calories and fat, economical, and extremely versatile").

In the chapter titled "Recipes" is a long section on "Tofu Dishes," which begins with a good introduction: "Tofu is one of the most versatile foods." "Tofu is very high in protein and the perfect substitute for cheese and eggs." Eleven recipes follow: Tofu cheese with fresh herbs. Marinated tofu. Scrambled tofu and vegetables. Lydia's Mexican casserole. Tofu stew with miso. Sweet and sour wok-cooked vegetables with tofu. Chinese eggplant and tofu. Steamed fresh vegetables and tofu with soba noodles (and Misoyaki sauce). Stuffed manicotti (with Marinara sauce).

At the start of each chapter are great quotations. The 288 selected references, listed chapter by chapter at the back, are a valuable addition. As early as 1972 Dr. Ornish was learning meditation and yoga techniques from Swami Satchidananda; these evolved into the stress management program described in chapters 7-9. In 1975 he first became interested in conducting research on heart disease, when he was a medical student at Baylor College of Medicine in Houston, Texas. In 1977 he had the privilege of studying with Dr. Michael DeBakey, assisting in the operating room when he performed bypass surgery. Though his surgical skill was amazing, Ornish began to see the "limitations of technological approaches that literally and figuratively *bypassed* the underlying causes of the problem. It was the difference between temporizing and healing." Most bypass

patients "would go home and continue to do the same things that led to the problem in the first place. They would smoke, eat a high-fat, high-cholesterol diet, manage stress poorly, and lead sedentary lives."

For details on this book and its significance, see MacNeil/Lehrer Newshour. 1990. Dec. Address: M.D., Preventive Medicine Research Inst., Sausalito, California 33658. Phone: 415-332-2525.

2512. Scotton, Ken. 1990. Virginia Soyworks. Route 1, Box 193, Faber, VA 22938. 4 p. Sept. Unpublished manuscript.
• ***Summary:*** This business is now for sale (for $8,000) and this document describes the history and financial status of the company, including assets, rent, etc. Just over half the sales are in tofu which is sold mostly in bulk. Sales for the last 10 months of 1989 were $39,435, and for the first 6 months of 1990 they were $22,800. "I bought the business in March of 1989. Both the tofu and tempeh business had been shut down for 3 months. I chose not to invest in starting up the tempeh part of the business... About half of my sales are to the Integral Yoga Natural Foods store in Charlottesville... I bought the business for $10,600, and have spent almost $1,000 since in additional equipment." There are 5 photos of the inside of the shop and equipment. Address: Faber, Virginia. Phone: 804-361-1543.

2513. Wildwood Natural Foods. 1990. Re: Labels of all current Wildwood products. Letter to William Shurtleff at Soyfoods Center, Oct. 11. 6 p. On letterhead.
• ***Summary:*** On 11 Oct. 1990 someone at Wildwood in Fairfax sent Soyfoods Center all of Wildwood's current labels affixed to 6 pages of Wildwood letterhead. There is no cover letter but the postmark on the envelope shows the date and origin. Most of the colorful labels are for Wildwood's ready-to-eat tofu products. There are also labels for Yo Soy! [organic soymilk] in Rich, Cocoa, Maple, and Honey Vanilla flavors, Rice Pudding (dairyless, with organic soymilk), Curried rice salad with tempeh, Wildwood seitan (made the "Say-Tahn" Ron way). Address: Wildwood Natural Foods, 135 Bolinas Rd., Fairfax, California 94930. Phone: 415-459-3919.

2514. Starr, Sara M. 1990. Soyfoods: Are they a hit at last? More meat eaters switching to soy sometimes, says study. *Food Business.* Oct. 22. p. 37.
• ***Summary:*** "According to data from a new nationwide study by HealthFocus, a consulting firm specializing in the healthful foods market, about one in 10 food shoppers said they eat soyfoods once every two weeks or more... Twice as many people eat soyfoods regularly as are vegetarians... Sales of aseptically packed soymilk are expected to reach $75 million in 1991, up from $46 million in 1989, according to Soyatech Inc., publisher of a soy industry source book."

A photo shows 6 tempeh products made by Lightlife Foods. The company's sales are growing at a rate of about 30% annually. Address: Vice president, HealthFocus Inc., Emmaus, Pennsylvania. Phone: (215) 967-2233.

2515. Bosisio, Matthew J. 1990. The Northern Regional Research Center: From penicillin to oatrim, the impact of the NRRC in Peoria, Illinois, has been significant, far-reaching, and enlightened. *World & I* (*The*). Oct. p. 308-15.
• ***Summary:*** A good history of the NRRC, which opened in Peoria in 1940. Discusses penicillin, xanthan gum (a thickener discovered by NRRC, and made by fermenting corn sugar), superslurper (a cornstarch-based water-collecting polymer), dextran (blood volume extender), cornstalks and wheat straw treated with hydrogen peroxide, oatrim (made from oat bran and oat flour), vitamin B-12, Corn-Soy Milk and other Food for Peace products containing soy protein, tofu and tempeh, the USDA's Agricultural Research Service (ARS) Culture Collection (with its 80,000 strains of yeasts, bacteria, and molds is the world's largest microbial culture collection of agricultural significance), kenaf, soybean ink, the 1986 Federal Technology Transfer Act designed to encourage cooperation between the private sector and government. In 1990 the NRRC had an annual budget of $18.5 million. The center's new director is Richard Dunkle. Later this year work will begin on a 10-year renovation program at NRRC. Address: Publisher, *New Mexico Senior Digest,* Albuquerque; Formerly an information officer with the USDA in Peoria, Illinois.

2516. Raley, Wade. 1990. This Elphin business is full of beans! *Lanark Era* (*The*). Nov. 12. p. 9, 20.
• ***Summary:*** About the Noble Bean, a tempeh manufacturing company owned and run by Allan and Susan Brown near Elfin, in Ontario, Canada. They make the tempeh in a trailer next to their home.

"'We turn 10 to 12 tons of dry soybeans into 50,000 eight and 10-ounce packages of tempeh annually," said Allan. "We've been getting busier every year since we started the business 11 years ago.'

"A Toronto native, Allan met Susan, who was from Tennessee, in 1969 while he was living in the United States.

"The couple were introduced to tempeh shortly after they became vegetarians in 1970.

"We learned how to make it from other vegetarians, but didn't consider mass producing tempeh until 1979,' said Allan, who moved to this area in 1976. 'Susan and I started very small; our first shop was a two-bedroom apartment we were renting in McDonald's Corners.'

"A year later, Allan and Susan moved their fledgling business to the famous Kensington market area in Toronto because 'that's where the market for tempeh was.'"

The Browns bought their first equipment from a 60-year-old man [Robert Walker] for $200. They are still using it today. Allan spent the first 5 years distributing his tempeh

himself. They started producing 48 pounds a day, but that amount has steadily increased. By 1985 they were making 120 pounds/day. An outside distributor had also begun to introduce Noble Bean products to eastern Canada.

"Today, The Noble Bean is a thriving company. It generated over $50,000 in sales last year and employs two part-time staff, Susan Barrett and Debbi Bova, in addition to Allan and Susan."

"The couple have introduced a secondary product to the market called Casey's Maple Pecan and Honey Walnut Cookies. The all-natural cookies are named after their 11-year-old son. The couple have a second son, Marty, age two."

Allan and Susan made Casey's Cookies in two flavors (Maple Pecan and Honey Walnut) for 1½ years in 1990 and 1991. Ingredients in Maple Pecan: Organic whole wheat flour, pecans, maple syrup, canola oil. Address: Lanark, ONT, Canada.

2517. Jack, Alex. 1990. Soviets embrace macrobiotics: Special report from Moscow and Leningrad. *One Peaceful World* (*Becket, Massachusetts*) No. 6. p. 1, 7-10. Autumn/Winter.
• ***Summary:*** Physicians in the USSR are using miso to try to cure radiation sickness from the Chernobyl nuclear disaster which took place on 26 April 1986 in the Ukranian SSR.

A sidebar on page 7 titled "Miso protects against nuclear radiation" states: "Scientists in Hiroshima reported this summer that in laboratory tests mice fed miso every day were five times more resistant to radiation than those not eating miso. The research, carried out by Prof. Watanabe at Hiroshima University, is the latest data showing that macrobiotic foods can bind and eliminate radioactive material from the body." A photo shows Cary Wolf offering miso soup to people in Moscow. Address: Box 10, Becket, Massachusetts 01223. Phone: (413) 623-5742.

2518. **Product Name:** Moonbean Tempeh (Most Types Use Soybeans as the Main Ingredient) [Peanut-Soy, Okara-Soy, Sunflower-Soy, and Peanut Sesame [No Soy]].
Manufacturer's Name: Leo Risin' Foods.
Manufacturer's Address: c/o Pywacket's Cafe, 10 East 9th St., Lawrence, KS 66044.
Date of Introduction: 1990. November.
Ingredients: Hand-split black soybeans, hand-split organic yellow soybeans, a pure *Rhizopus oligosporus* culture, umeboshi vinegar.
How Stored: Refrigerated.
New Product–Documentation: Talk with Clayton McHenry, founder and owner of Leo Risin' Foods. 1994. Feb. 21. He started making tempeh in Nov. 1990. Letter and Labels sent by Clayton McHenry. 1994. Feb. 22. From Nov. 1990 until Dec. 1991 he used the kitchen at Pywacket's Cafe (10 East 9th St., Lawrence, Kansas 66044) at night to produce dozens of varieties of tempeh, which were sold as "Moonbean Tempeh" to the Cafe and to the Community Mercantile (a co-op grocery store in Lawrence). Four varieties of tempeh were introduced in November and December of 1990: The three soy-based varieties shown above plus a peanut-sesame tempeh which contained no soy.

Talk with Clayton McHenry. 1994. March 7. Followed by a letter. In 1988 Clayton was introduced to tempeh by a friend who used it in spaghetti sauce. Clayton was just becoming a vegetarian and was studying modern religious movements at the University of Kansas at the time; he learned of The Farm (in Summertown, Tennessee) and their connection with tempeh, ordered a tempeh kit from them, made it following instructions in the kit and in one of the Farm's books, ate it, and was hooked. He was intrigued by this beneficial culture, the low cost of making tempeh for himself and his friends, and the self-satisfaction he felt when making tempeh. Also in 1988 Clayton began reading and collecting books by Shurtleff and Aoyagi–he first came across them in the library of the student housing co-op in which he lived. Semi-macrobiotic friends and other research fueled the fire.

2519. Nout, M.J.R.; Rombouts, F.M. 1990. Recent developments in tempe research: A review. *J. of Applied Bacteriology* 69(5):609-33. Nov. [122 ref]
• ***Summary:*** Contents: Introduction and background. Manufacturing processes. Microbial ecology: Microbiological composition of tempe, traditional soaking, problems during 'modern' soaking, risks associated with use of unacidified beans, accelerated acidification, effect of boiling prior to inoculation, inoculation, fungal fermentation stage (properties of *Rhizopus oligosporus,* effect of initial bean pH, effect of lactic acid bacteria, effect of Enterobacteriaceae), heating prior to consumption. Starter development: Tempe fungi, starters (natural starters, pure culture starters, semi-pure culture starters, mixed-strain starters). Kinetics of fungal growth. Biochemical changes. Nutritional quality. Versatility. Challenges. Address: Dep. of Food Science, Agricultural Univ., Bomenweg 2, 6703 HD Wageningen, Netherlands.

2520. **Product Name:** [Tempeh, and Tofu].
Foreign Name: Tempeh, Tofu.
Manufacturer's Name: Cafe Restaurant Zollhaeusle.
Manufacturer's Address: 7730 VS-Zollhaus, Germany. Phone: 07721/21289.
Date of Introduction: 1990. December.
New Product–Documentation: Menu (Undated) sent by Flora Yap. 1992, April 5. It lists 5 tempeh dishes. The owner is Hartmut Rainer Hauser. Flora was told that he is now closed, but she is not sure if this refers to the restaurant or the food factory. Letter from Flora Yap. 1992. May 16. She received the menus mentioning seitan, tofu, and tempeh on

24 Dec. 1990 from a friend who had been to this place. In Jan. 1991 she phoned Hartmut Hauser. He had purchased the tempeh incubator from Byodo. It was a rebuilt old refrigerator. Hartmut makes his tempeh in perforated plastic bags; she suggested that he use plastic bags for better growth. In the autumn of 1991 she heard from the same friend that Hartmut had closed his restaurant, but the friend did not know whether Hartmut continued to make seitan, tofu, and/or tempeh. Hartmut likes to work on ecology projects, teaching people about protecting the environment. In May 1992 Flora tried to find Hartmut Hauser's phone number in the telephone directory. Zollhaus should be a suburb of Villingen-Schweningen, located in the Black Forest, not far from the Swiss border. "Life Food," which is located nearby in Freiburg, might have more information about Hartmut and Cafe Restaurant Zollhaeusle.

2521. Cederquist, Natalie; Levin, James. 1990. A vegetarians ecstasy: A healthy gourmet celebration of over 250 no cholesterol, no dairy, lowfat recipes devoted to long life and good taste. Glo, Inc., 2406 Fifth Ave., San Diego, CA 92101. 332 p. Dec. Illust. by Natalie Cederquist. Index. 28 cm. [13 ref]
• ***Summary:*** In this is innovative vegan cookbook, each recipe occupies 1 page and is accompanied by an illustration (line drawing). The glossary of ingredients mentions liquid aminos, miso, seitan, seaweeds, tamari, tempeh, and tofu. Page 28 is devoted to singing the praises of soy products. "Dairyless and eggless: With optimum health in mind, I have chosen to use soy products and egg replacer rather than dairy and eggs. Dairy is mucus forming, it contains cholesterol, fat and hormones, in addition to the pesticides and antibiotics used in the farming and dairy industry.

"Soy and seed cheeses, soy yogurts, soy cream cheese, soy sour cream, soy and rice based ice creams are delicious non-dairy products in the natural markets for you to try which are cholesterol free and low in fat."

The book contains 28 recipes for tofu, and 12 for tempeh. Other interesting recipes are: Sprouted soy salad (with 3 cups soy sprouts steamed for 3 minutes, p. 76). Orange miso dressing (p. 99). Miso soup (p. 162). Miso sesame rice (p. 206). Aduki bean and brown rice pot (p. 212). Féjoada (with soy sausages, p. 213). Mushroom seitan in wine sauce with wild rice (p. 241). Seitan sauté (p. 267). Amazake carob pudding (p. 290). Address: 2. M.D., San Diego, California. Phone: 1-800-854-2587.

2522. Ali, Salma Amina. 1990. An evaluation of the chemical and sensory characteristics of tempeh from pigeon pea and soybean. MSc thesis, University of the West Indies, St. Augustine, Trinidad and Tobago. xi + 147 leaves + 7 leaves of plates. Illust. (some color). 29 cm. *
• ***Summary:*** Supervisor: Mrs. Gail Baccus-Taylor. Address: Faculty of Engineering, Dep. of Chemical Engineering, Mona Campus.

2523. **Product Name:** [Tofu, and Tempeh].
Manufacturer's Name: Amirim Vegetarian Village.
Manufacturer's Address: Amirim 20015, Israel.
Date of Introduction: 1990.
New Product–Documentation: Letter from Arik Tal of Amirim. 1990. June 1. "We are living in Amirim, the only vegetarian village in Israel. We are running a small shop preparing tofu and tempeh. We have your 1979 book Book of tofu and Book of Tempeh."

2524. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Bilkis S.c.r.l.
Manufacturer's Address: S.S. 186 Ponte Catena, 90040 Pioppo (Palermo), Italy.
Date of Introduction: 1990.
New Product–Documentation: Talk with then letter from Mr. Suresh Nath (his spiritual name; His birth name is Giampiero Spadafora). 1990. June 18 and 19. They have been making tofu for their small restaurant near Palermo since 1982. Now they want to expand their operation.

"We are a community of 14 people, living together with the mutual interest on yoga and spiritual evolution. We live 20 km far from Palermo, on a hard, quiet mountain, and there we make tofu, bread, seitan, sprouts, cakes, tempeh, etc. on a small scale, and sell them in our Centre in town, the 'Centro di Cultura Rishi' which hosts the health food store of the co-operative, and a vegetarian restaurant as means to help all those who wish to improve their diet and don't know what or how to cook... the core of this Centre are the yoga lessons held by our master, Aruna Nath Giri."

2525. Engel, G. 1990. Vergleich von Quark mit Sojaprodukten: Herstellung, Mikroflora, Zusammensetzung, Sensork [Comparison of quark with soy products: Production, microflora, composition, and organoleptic properties]. *Deutsche Milchwirtschaft* 41(38):1272-75. 7 tables. Also published in Kieler Milchtage, 1990. [24 ref. Ger]*
• ***Summary:*** Compares the quality and nutritive value of cow's milk and soymilk, and discusses criteria for evaluating the chemical, microbiological, and organoleptic quality of tofu, okara, miso, tempeh, sufu, and other soyfoods. Address: Bundesanstalt Milchforschung, Inst. Mikrobiologie, Kiel, Germany.

2526. Mulyowidarso, Robert K.; Fleet, G.H.; Buckle, K.A. 1990. Association of bacteria with the fungal fermentation of soybean tempe. *J. of Applied Bacteriology* 68:43-47. * Address: Dep. of Food Science and Technology, The Univ. of New South Wales, Kensington, NSW, Australia.

2527. Sudigbia, I. 1990. Pengaruh suplementasi tempe terhadap kecepatan tumbuh pada penderita diare anak umur 6-24 bulan [Influence of tempeh supplementation on growth rate of 6-24 month old children suffering from diarrhea]. PhD thesis, Universitas Diponegoro. [Ind]*
Address: Child Health Dep., Medical Faculty, Diponegoro Univ..

2528. **Product Name:** [Viana Smoked Tempeh].
Foreign Name: Viana Raeucher-Tempeh.
Manufacturer's Name: Viana Naturkost GmbH.
Manufacturer's Address: Schmittenstr. 106, D-5030 Huerth 6, West Germany. Phone: (02233) 41323.
Date of Introduction: 1990.
Ingredients: Tempeh*, shoyu*, smoke, sea salt. * = Organically grown.
Wt/Vol., Packaging, Price: 200 gm.
New Product–Documentation: Label sent by Bernd Drosihn. 1990. April 8. 3.5 by 3 inches. Self adhesive. Reddish-purple, gold, and pea green. "Tasteful, well seasoned, and nourishing (herzhaft deftig). Ready to eat immediately."

2529. Viviani, Tj.; Arsyad, Herman. 1990. Penuntum pengolahan kedelai [Manual for soybean processing]. Indonesia: pd Mahkota. [Ind]*
Address: 1. Ir.; 3. Ir.

2530. Asrat, Mogessie Ashenafi. 1990. The microbiology of tempeh fermentation from indigenous legumes. Thesis, Munich Technical University, Germany. iv + 133 p. *
Address: Dep. of Basic Science, Awassa College of Agriculture, Addis Ababa Univ., Awassa, Ethiopia.

2531. Atlas, Nava. 1990. Vegetarian celebrations: Menus for holidays and other festive occasions. Boston, Massachusetts: Little, Brown and Co. [xii] + 276 p. Illust. (by Atlas). Index. 24 x 19 cm.
• ***Summary:*** The recipes are organized by holiday, and the main holidays are arranged chronologically: 1. The New Year. 2. Valentine's day. 3. Easter and St. Patrick's Day, etc.

Soy related: Silken tofu pudding (p. 15). Chinese cabbage with bean curd soup and mushrooms (with "½ pound tofu (bean curd), cut into ½-inch dice," p. 78). Tofu and potato kebabs (with "2 pounds firm tofu," p. 98). The vegetarian barbecue–Tofu, tempeh and seitan (with a description and discussion of each, p. 106-08). Sweet and savory grilled tofu. Grilled tofu teriyaki. Grilled tempeh teriyaki. Sweet and savory grilled tempeh. Curried grilled tempeh. Grilled seitan teriyaki. Seitan and grilled vegetables teriyaki. Sweet and savory grilled seitan. Teriyaki marinade (with "natural soy sauce," p. 113). Tofu in black bean sauce (with "1/3 cup fermented black beans, rinsed and chopped," p. 212-13. Note: They are made from soy beans). Soy and honey nuts (with natural soy sauce and 4 cups shelled nuts–a mixture of peanuts, cashews, and almonds is very good, p. 237-38). Tofu mayonnaise (p. 257).

2532. *CGPRT Working Paper.*1990. CGPRT crops in Indonesia: 1960-1990. A statistical profile. No. 4. xv + 63 p. 25 cm.
• ***Summary:*** Contains a wealth of statistical data indicating progress of maize, soybean, groundnut, mungbean, cassava, sweet potato, and rice is presented. It draws upon a newly established statistical database and provides unique data sets such as district level development in production over 20 years in selected provinces in Indonesia. Moreover, it presents wholesale and farmgate prices movements based on monthly averages of major crops. The report presents a fraction of the data available in the database of the Centre. Supplementary data can be made available on request.

Table 5 shows that soybean production in Indonesia has increased from 339,000 tonnes in calendar year 1957 to 1,151,000 tonnes in 1987. During this time, the yield has grown from 646 kg/ha to 1,056 kg/ha.

Table 15 shows that Indonesia's top soybean producing provinces in 1987 were East Java (413,394 tonnes), Central Java (135,907), Lampung (117,698), and Aceh (102,402). Within East Java in 1987, the top soybean producing districts were Jember (71,675), Banyuwangi (44,675), Pasuruan (35,686), and Lumajang (30,909).

Tables 36 and 37 shows the retail prices of tofu and tempeh each month in Rp/kg from 1981 to 1988 in Surabaya. The prices have more than doubled during this period. Retail prices for these foods in Bandar Lampung are shown in tables 40 and 41.

Table 43 shows Indonesian imports and exports of soybeans and soybean cake from 1963 to 1988. Soybean exports, which reached a peak of 36,000 tonnes in 1973, have been at or near zero since 1978. Soybean imports have climbed dramatically since 1971, reaching a record 465,839 tonnes in 1988. Thus imports that year were equal to about 40% of domestic production. Exports of soybean cake have always been negligible but imports have risen steadily since 1975, reaching a peak of 306,716 tonnes in 1986, then dropping to 72,323 tonnes in 1988.

Table 50 shows the total supply and domestic utilization of soybeans in Indonesia from 1968 to 1987. In 1987, of the 1,411,000 tonnes available, 3% was used for seed and the rest was used for food. None was used for feed or use in non-food industrial products. Per capita availability of soybeans increased from 3.28 kg/year in 1968 to 7.76 kg/year in 1987. In the peak year, 1986, it was 8.80 kg/year.

Table 56 shows consumption per capita of GCPRT crops in Indonesia from 1981 to 1987. Tofu consumption has increased from 74 gm/week in 1981 to 82 gm/week in 1987, while tempeh consumption has decreased from 95 gm/week in 1981 to 86 gm/week in 1987. Address: CGPRT Centre, Jl.

Merdeka 145, Bogor 16111, Indonesia.

2533. Darmosuwito, Suhadi. 1990. Hasil penelitian keragaman dalam proses fermentasi tempe [Results of research on diverse tempeh fermentation processes]. Yogyakarta, Indonesia: Laboratorium Mikrobiologi, Fakultas Pertanian, Universitas Gadjah Mada. iv + 31 leaves. 28 cm. [Ind]*

• ***Summary:*** This national government publication includes bibliographic references (leaves 17-18).

Note: Another translation of the title might be: "Result of diversity in tempeh fermentation process research." Address: Yogyakarta, Indonesia.

2534. Facciola, Stephen. 1990. Cornucopia: A source book of edible plants. Vista, California: Kampong Publications. ix + 678 p. Indexes (six!). 28 cm. [522* ref]

• ***Summary:*** "In your hands is one of the most remarkable efforts to come out of the struggle to preserve the genetic diversity of our planet... Steve Facciola has put together an easy-to-understand, easy-to-use compendium of the diversity of food plants available to consumer, gardener and scientist" (from the Preface). The largest and most comprehensive work of its kind, this book gives details on 3,000 edible plant species and 7,000 varieties.

Contents: Preface, by Noel Vietmeyer. Introduction. Acknowledgements. Botanical listings: Alphabetical listings of plant families (*Glycine max* and *Glycine tabacina* are listed in the family Fabaceae, pronounced fuh-BAY-see), fungi families, algae families, bacteria families. Cultivar listings (by common name for the most important and popular crops, e.g., shiitake, soybean, spinach, sprouting seeds). Sources (names, addresses and phone numbers of firms that sell seeds, plants, etc.: Domestic commercial, domestic non-commercial, overseas commercial, overseas non-commercial). Bibliography. Indices and appendixes: Index of principal vernacular names. Index of vernacular and other names occurring elsewhere in the text. Index of usage and edible parts. Index of species native to or naturalized in North America. Index of species not listed in Kunkel [Gunther Kunkel. 1984. Plants for human consumption. Koeltz Scientific Books, Germany]. Index of families and genera. Appendix A: Abbreviations used–For type of product offered, for annotated bibliographical citations, in descriptions for sources. Appendix B: Endnotes used in the cultivar listings.

As of Aug. 1994 an electronic version of this book is now available. It runs on Microsoft Windows and uses more than 25,000 hypertext links to cross reference information.

The main information on soybeans is found on pages 91 (Botanical listings for *Glycine max* and *Glycine tabacina*), p. 219 (*Aspergillus oryzae* culture), p. 221 (*Actinomucor elegans* culture for fermented tofu or sufu, and *Rhizopus* cultures for tempeh), p. 224 (*Bacillus subtilis* culture for natto), p. 482-83 (for "field soybeans," lists 5 black-skinned cultivars, and 7 yellow-skinned cultivars; plus 11 "vegetable soybeans"–Agate, Butterbeans, Envy, Extra Early, Fiskeby V, Hahto, Hakucho Early, Kanrich, Okuhara Early Green, Prize, and White Lion), p. 485-87 (sprouting seeds including soybean sprouts with directions for sprouting), and p. 500 (Soyfood cultures).

Additional information on food uses of soybeans is found throughout the book. Tofu: p. 9 (In Indonesia, a salt derived from the fruit of *Rhus javanica* (*Nurude, Mu-yen*) is used to coagulate tofu), p. 61 (In Japan the seeds of *Cannabis sativa,* called *asanomi,* are used in deep-fried tofu burgers (*ganmodoki*)), p. 76 (A vegetable curd similar to soybean tofu can be made from the seeds of the bottle gourd or calabash (*Lagenaria siceraria*)), p. 92 (The seeds of the Bonavista bean or hyacinth bean (*Lablab purpureus*) can be prepared as tofu), p. 127 (The seeds of okra, gumbo, or lady's finger (*Abelmoschus esculentus*) can be made into tofu or tempeh). Kecap (Indonesian soy sauce): p. 9 (In Indonesia, the plant tuberose (*Polianthes tuberosa*) is added to the substrate in making kecap), p. 191 (In Indonesia, fresh leaves of kaffir lime, also called ichang lime, makrut, or djeruk purut (*Citrus hystrx*) are used to flavor kecap). Miso: The following can be used as a substrate for miso–p. 88 (Peanuts), p. 94 (seeds of the velvet bean, also called cowitch, cowhage, benguk (*Mucuna pruriens*)), p. 155 (barley (*Hordeum vulgare*)), p. 156 (proso millet (*Panicum miliaceum*)). Address: 1870 Sunrise Dr., Vista, California 92084. Phone: (619) 726-0990.

2535. Heiser, Charles B., Jr. 1990. Seed to civilization: The story of food. New ed. Cambridge, Massachusetts: Harvard University Press. vi + 228 p. Illust. Index. 24 cm. [83* ref]

• ***Summary:*** An outstanding work, written for the general reader. "This is a classic book about the origins of agriculture and the influence of its discovery on the development of civilization"–Ghillean T. Prance, Director of the Royal Botanic Gardens [England; on rear cover].

The Preface notes that this is a book about the plants (and animals) that stand between humans and starvation. The main subjects are ethnobiology, the study of plants and animals in relation to humans, and ecology, the study of organisms in relation to their environment. We humans "get all of our carbohydrates and nearly three-fourths of our protein from plant sources. Moreover, nearly all of the food we get from animals is in turn derived from plants. After all, life depends on photosynthesis; chlorophyll has been referred to as the green blood of the earth."

Table 5-1, "Estimated production of world's 32 major food crops" (p. 63) lists the top ten as (* = member of grass family; units in million metric tons): Sugar cane* 932. Wheat* 536. Corn* 481. Rice* 476. Potato 309. Sugar beet 286. Barley* 180. Manioc 137. Sweet potato 110. Soybean 95. Source: *FAO Production Yearbook,* 1986.

Chapter 7, "Legumes: The meat of the poor," contains a section on "Soybeans" (p. 129-33). It notes that there are no archaeological records of the soybean to help us determine when it was first cultivated, but it was mentioned in Chinese literature before 1000 B.C. Unlike most legumes, the beans are seldom eaten directly, but are used to make many different foods including bean sprouts, miso, tofu, soymilk (such as Vitasoy), tempeh, and soy sauce.

"The widespread cultivation and utilization of soybeans in the United States in the space of a few decades must be one of the most spectacular success stories in the recent history of agriculture."

Photos show: (1) A field of soybeans in the USA planted in rows, free of weeds. (2) Soybean plants ready for harvesting. (3) Soybean seeds. (4) A John Deere combine harvesting soybeans.

Note: Previous editions of this book were copyrighted in 1973 and 1981. Also discusses: Peanuts (p. 126-29). Potatoes and their remarkable history (p. 134-39). Tomatoes and their unusual history (p. 181, 206). Address: Distinguished Prof. Emeritus of Botany, Indiana Univ.

2536. Moosewood Collective (The). 1990. Sundays at Moosewood Restaurant: Ethnic and regional recipes from the cooks at the legendary restaurant. New York, NY: Simon & Schuster. 734 p. Illust. Index. 24 cm. A Fireside Book. [55* ref]

• ***Summary:*** Since it opened in 1973 in Ithaca, New York, Moosewood Restaurant has become famous for its creative semi-vegetarian cuisine (fish are included on the menu and in this book) with a healthful emphasis. The restaurant is run by a group of 18 women and men, most of whom have worked together for nearly 10 years. Major decisions are made collectively. This is the Collective's second vegetarian cookbook. Each section, corresponding to the cuisine of 17 different geographical regions (e.g. Eastern Europe, Japan) and one ethnic group (Jewish) is written by a different member of the collective. The book contains many soy-related recipes: Tofu (20 recipes), tempeh (1), miso (1), soybeans (1), tamari roasted nuts (1), etc. The extensive "Guide to ingredients, techniques, and equipment" (p. 649-87) describes: Beans (incl. soy), chick pea flour (besan flour), dashi, Hoisin sauce, miso, seitan, soy sauce (see tamari soy sauce), light soy sauce, tempeh, tofu, vegetable oil (incl. soy oil), Worcestershire sauce ("The formula remains a well-guarded secret, but we do know that the Lea and Perrins product contains molasses, anchovies or sardines, sugar, garlic, tamarind, soy sauce, vinegar and spices"). Address: Ithaca, New York.

2537. Morningstar, Amadea; Desai, Urmila. 1990. The ayurvedic cookbook: A personalized guide to good nutrition and health. Santa Fe, New Mexico: Lotus Press. 351 p. Foreword by Yogi Amrit Desai. Introduction by Dr. David Frawley. Illust. by Amadea Morningstar. Index. 23 cm. [40 ref]

• ***Summary:*** This is a lacto-ovo vegetarian cookbook based on Ayurvedic principles. Contents: Part I: General Information. History of Ayurveda. Nutrition from an Ayurvedic perspective. Discovering your constitution. Attributes and nutritional needs of each constitution. How to imbalance your constitution. Understanding Ayurvedic nutrition: Taste. Digestion. Food combining and preparation. Balancing *Agni.* The digestive organs. The *chakras* and dietary change. Eating with the seasons. Getting ready to cook. Planning balanced meals easily. Menus: *Tridoshic, Vata, Pitta, Kapha.* Part II: Recipes. Part III: Appendices. 1. Most frequently asked questions and answers. 2. Enlarged food guidelines for basic constitutional types (many soyfoods are included). 3. Some basic information about nutrients. 4. Glossary of English and Sanskrit terms. 5. Food name equivalents in Latin, Sanskrit, Hindi. 6. Bibliography. About the authors (autobiographical).

The three Vatas (tridosha, three doshas, constitutional or body types) are Vata (pure air, head/wisdom), Pitta (pure fire, action), and Kapha (pure water, love/heart). Tridoshic foods or herbs are suited to all 3 constitutions; these include ghee, basmati rice, and asparagus. Concerning soya: "Many *Vatas* handle certain well-spiced soy products well, like tofu or liquid soy milk. Some do not. Let your gut be your guide. Dairy is very calming to Vata, especially when it is warm" (p. 14).

"Pittas are often attracted to high-protein foods, and do seem to need a little more protein than other constitutions. Goat milk, cow milk, egg white souffles, tofu, tempeh, and the aforementioned cottage cheese are all effective in balancing Pitta. Most beans–with the exception of heating lentils–are excellent" (p. 16).

Anything which stimulates elimination tends to relieve *Kapha* (barley and beans being classic examples). Aduki beans are especially good, as are black turtle beans, though the latter are more difficult to digest. Soy beans and soy products are recommended less frequently. Over half of tofu's calories come from fat, surprisingly, while only 4% of black beans' do. Still, soy products like soy milk tend to be less Kapha-enhancing than dairy products" (p. 19).

"Examples of oily food include ghee, vegetable oils, animal fats, soybeans, many vegetables and citrus. Dry foods include corn, buckwheat, rye, millet, most beans and dark leafy greens, to list a few. These latter foods will need moistening of some sort to be more easily digested by most people" (p. 28).

In the menu section, under each constitutional type (dosha, such as Vata), recommended menus are given by season for each meal. For example, soy-related foods included in Vata menus are: Summer: None. Fall: Dinner–Miso tofu, Amasake. Winter: None. Quick day: Breakfast–soymilk. Beverage–Amasake. Weekend day: Nothing. On the

road (when travelling): Dinner' Chinese vegetables and rice (with tofu, if well tolerated).

Each recipe in the recipe section tells which constitution type it suits, how long it takes to prepare, in what seasons it is most healing, and how many it serves. For example,–Vata means that it calms Vata, + Vata means that it aggravates or increases Vata, and 0 Vata means that it is neutral for Vata. For brevity, we will give only Vata examples in the following. Soy-related recipes: About tofu (p. 102): Tofu and liquid soy milk tend to be cool and heavy, yet oilier than most other bean products. This oily lubricating quality helps their digestion, as does the pre-processing they have undergone as legumes... Eaten in excess, they will increase *Kapha.* Warming preparation, in the form of heat or warming spices such as ginger, tamari, cumin, turmeric, cinnamon or mustard seeds, aid their healthy breakdown in the system. Beans can be idiosyncratic in effect though; if your experience doesn't match the descriptions given here, trust your direct experience first. Some people have a hard time digesting tofu in almost any form; an allergy to soy may be present. It was popular in the sixties and seventies to serve tofu cold, cubed and plain at health food-type salad bars. This is about the most difficult way to try to consume an already chilling food. Try tofu marinated, spiced and cooked, then make up your mind about its digestibility for you."

Miso tofu (p. 102,–Vata). Tofu mushrooms (p. 104,–Vata). Tofu pesto (p. 104,–Vata). Sauteed tofu and vegetables (p. 105,–Vata, but mildly + Vata with frozen tofu). East Indian lima beans (with tofu, p. 114). Spicy rice and yogurt (with soy milk, p. 131,–Vata; "Made with soy milk, which is lighter and cooler than yogurt, it is suitable for Pitta and Kapha as well"). Vegetable barley soup (with tofu, p. 188, 0 Vata).

About oils (p. 202-03): "Ghee is the highly preferred fat in Ayurveda, being light, easy to digest and potentiating to many of the foods with which it is served." Sunflower oil is the next best choice, being agreeable to all doshas. "Sesame oil is specifically recommended when a warming effect is needed. It grounds Vata... The vast majority of oils are warming and heavy in quality, including..." soy oil. "Margarine is cold and difficult to digest and not often recommended by Ayurvedic physicians."

About condiments: Salt, tamari, miso, and pickled ginger all heat up a meal and stimulate agni (fire). A detailed discussion is given of the medicinal function of sea vegetables in Ayurveda (p. 216-17).

About soy milk: Liquid soy milk can be a good alternative to cow's milk, if you are sensitive to the latter. It is also less *Kaphagenic* (imbalancing to *Kapha*) than cow's milk, when properly prepared. Lighter than cow's milk in its effect on the body, it cooks up easily in recipes. Like most high protein foods it promotes building, not cleansing. It is best used in restorative and maintenance programs. It can be warmed with cinnamon, cardamom, nutmeg or ginger and black pepper. Some *Vatas* do not tolerate it well. Dried soy milk powder and soy protein powder are much more difficult to digest than the whole liquid soy milks. Only the most stalwart *Pitta* is likely to be able to consume them without gas, as they are cold, heavy and dry. Whole soybeans and tempeh are often gas-producing as well. For adequate digestion they require much cooking and spicing, good *agni,* and a *Pitta* constitution. Hot soy milk (p. 264).

Scrambled tofu (p. 281,–Vata).

In appendix II (p. 293). The following legumes, in moderation, calm Vata: Aduki beans, soy cheese, soy milk (liquid), tofu, black lentils, mung beans, red lentils, and tepery beans. But these aggravate Vata: Soy beans, soy flour, soy powder, tempeh, garbanzos and most other beans. Among beverages, icy cold drinks and many others aggravate Vata. Beverages that calm Vata are soy milk (well spiced and hot), miso broth, many herb teas. Tofu is calming to Pitta and mildly aggravating to Kapha. Cool in action, some Vatas tolerate it well, others do not.

Aduki beans are mentioned on p. 19, 106, 109, 116, 124, 293, 306. Address: 1. Faculty member, The Ayurvedic Inst., Albuquerque, New Mexico; 2. Wife of Yogi Amrit Desai, member of Kirpalu Center for Yoga and Health, Lenox, Massachusetts.

2538. Nene, Y.L.; Hall, Susan D.; Sheila, V.K. eds. 1990. The pigeonpea. Oxon, England: CAB International for; Patancheru, AP, India: International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). x + 490 p. Illust. Index. 25 x 20 cm. [500+* ref]

• ***Summary:*** Contents (18 chapters, including): Foreword. Contributors. Acknowledgements. 1. Geography and importance. 2. Origin, history, evolution and taxonomy. 16. Nutrition and products. 17. Markets and outlook.

Pigeonpea (*Cajanus cajan* (L.) Millspaugh), a major grain legume, is widely grown as a backyard subsistence crop by small farmers in the semi-arid tropics. Worldwide, it ranks sixth in area and production compared with other grain legumes, All evidence indicates that the pigeonpea originated in Peninsular India. Today India produces more pigeonpeas than all other countries combined. The word "pigeonpea" probably originated in the Americas, where it arrived in the 15th century, because pigeons were fond of the seeds.

Chapter 16, "Pigeonpea: Nutrition and products," by D.G. Faris and U. Singh (both of ICRISAT; 126 refs = many tables and photos) includes the following contents: Introduction. Nutrition. Supplementation value of pigeonpea in cereal-based diets. Nutritional quality of vegetable pigeonpea. Cooking quality. Human food: Whole dry seed (the tough seed coat results in a long cooking time "but is free from the lipoxidase that causes off-flavours in soybean..."), dhal, other products from dry seed (freshly sprouted seed {sprouts}, tempeh {made with a combination of pigeonpea and soybean; see photo}, pigeonpea sauce

(ketchup) is a replacement for soysauce in Indonesia, canned whole dried seed, pigeonpea flour, extruded food, clear noodles). Vegetable (green seed {used as a green vegetable, often in place of green garden peas}, green pods). Animal feed. Medicinal uses ("There is a considerable folk medicine and ayurvedic listing of the curative effects of various parts of the pigeonpea plant"). Future. Address: 1. Deputy Director General, ICRIAT, Hyderabad, India.

2539. **Product Name:** Sandhill Tempeh.
Manufacturer's Name: Sandhill Farm.
Manufacturer's Address: Route 1, Box 155, Rutledge MO 63563. Phone: 660-883-5543.
Date of Introduction: 1990. January.
Wt/Vol., Packaging, Price: 8 oz perforated plastic bag.
How Stored: Refrigerated.
New Product–Documentation: Talk with Rebecca Bloom of Sandhill Farm. 2001. June 18. Sandhill Farm is a community, which has existed for 27 years, in the northeast corner of Missouri, near Iowa and Illinois. They grow organic soybeans on their farm. They make and sell about 400 x 8 oz. pieces of tempeh/month, some to a vegan restaurant, some to a grocery store and natural foods store in Columbia, Missouri. Their label is a paper insert with a recipe, slipped in between the perforated inner bag and the non-printed outer heat-sealed bag. Rebecca is not sure when they started to make tempeh. It could have been much earlier.

2540. Tahu tempe: Pembuatan, pengawetan dan pemanfaatan limbah [Tofu and tempeh: Production, preservation and waste usage]. 1990. Bogor, Indonesia: Pusat Penelitian dan Pengembangan Teknologi Pangan, IPB. 33 p. Illust. 23 cm. [Ind]*
Address: Bogor, Indonesia.

2541. Wagner, Lindsay; Spade, Ariane. 1990. The high road to health: A vegetarian cookbook. New York, NY: Simon & Schuster / Prentice Hall Press. xv + 288 p. Foreword by E. Lee Rice. Index. 24 cm. [54 ref]
• ***Summary:*** Lindsay Wagner, whose lovely color photo appears on the cover, first achieved widespread television in the early 1970s as "The Bionic Woman." Recently she starred in the Academy-Award winning film *The Paper Chase.* This vegan cookbook uses no meat, dairy products, or eggs. A section titled "Raising the Dairy Question" (p. 13) discusses problems with milk and concludes: "A terrific substitute for milk products comes from that little marvel, the soy bean. Soy milk has the look and consistency of milk, and some brands even taste like it. Try some on your breakfast cereal, top your pies with our creamless Whipped Cream, spread your sandwiches with eggless Mayo Spread and enjoy Huevos-less Rancheros for brunch. You'll never look at another carton of milk."

Chapter 4, "About the ingredients," includes discussions of Braggs Aminos, cold-pressed oil, kuzu, lecithin, miso, mochi, nori, soy milk, soy sauce, tempeh, tofu. Soy-related recipes include: Huevo-less rancheros (with tofu and soy milk, p. 65). Vegetarian "salami" (with firm tofu, p. 82-83). Mayo spread II (with soy milk, p. 88). Ginger tamari dressing (p. 131). Creamy oil substitute (with soy milk, p. 134). Tofu sour cream (p. 134). Eden cheesy sauce (with soy milk, p. 136).

Chapter 10 (p. 141-59) is titled "Entrées for the meat lover"; most of the recipes are based on soyfoods: Marinated tempeh (p. 141). Marinated tofu. Barbecued tofu or tempeh. Tempeh marinade. Teriyaki tofu. Polynesian tofu. Tofu piquant. Tofu ribs. Grilled tofu with summer vegetables. Japanese eggplant and tofu Romano. Pecan herb loaf (with tofu and soy flour). Easy tofu burgers. Easy easy burgers (with Marinated tempeh or tofu). New Age Italian sausage I (with Marinated tempeh and Marinated tofu). New Age Italian sausage II (with Marinated tofu). Spicy tempeh stir fry. Tofu cacciatore.

Lasagna with zucchini and mushrooms (in Light sauce with soy milk, p. 166). Manicotti stuffed with zucchini and tofu cheese (p. 175). Tacos (with Marinated tofu and tempeh, p. 187). Eggplant al forno (with tofu, p. 213). Banana-strawberry tofu pudding (p. 231). Italian cheesecake (with tofu, p. 243). Coconut-mocha cream frosting (with soy milk, p. 260). Tofu fruit sauce (p. 261). Mock whipped cream (with soy milk, p. 262).

An interesting last chapter titled "Afterword: Meat–We can live without it! Here's why" discusses the role of an "animal-based diet" on destruction of the environment. Address: 1. California; 2. Woodland Hills, California.

2542. Zeffertt, Wendy. 1990. Cultured foods. Gentian Services, P.O. Box 2140, Olympic Valley, CA 95730. 151 p. Illust. by Nanct Zeffertt. Index and recipe index. 28 cm. Spiral bound. [32 ref]
• ***Summary:*** This book is a good introduction to the many kinds and benefits of cultured or fermented foods. Many chapters (and all soyfoods chapters) contain recipes. Chapters related to soyfoods are 1. Why cultured foods? 2. Cultured dairy products. 3. Miso. 4. Tamari and shoyu (soy sauce). 5. Amazake, sake and mirin. 6. Tempeh. Where to order starter cultures. Glossary.

Note: This is not a vegetarian book; poultry and fish are used in some of the recipes. Address: Olympic Valley, California.

2543. Kneipp Verein. 1991. Vollwertkochkurs: Leitung und Rezeptstellung–J. Schwarz [Whole foods cooking course: Guidance and recipe collection by J. Schwarz]. 3 p. Jan. 30. Unpublished typescript. Fourth evening. [Ger]
• ***Summary:*** This collection of five recipes includes: Tempeh salad with green beans. Waldorf salad with tempeh pieces. Tempeh chips with brown rice.

2544. Agranoff, Jonathan. 1991. Tempe–The unique soyfood of Indonesia. *Garuda Indonesia* 11(1):31-32, 34, 36. [1 ref]
• ***Summary:*** This article is in the in-flight magazine of Indonesia's national airline. The author "has been researching indigenous fermented foods in Indonesia and London University since 1985. A graduate of Food Science, he has worked for the Green Indonesia Foundation in West Java, subsequent to beginning research on tempe at the Nutrition Research and Development Centre in Bogor." Contents: Introduction, High quality protein source. What is tempe? A well travelled food (history of tempeh). Village "biotechnology." Red onchom and other varieties. Contains 6 photos related to tempeh. Address: Overseas Development Natural Resources Inst., England.

2545. Ashenafi, M.; Busse, M. 1991. Production of *tempeh* from various indigenous Ethiopian beans. *World J. of Microbiology and Biotechnology* 7(1):72-79. Jan. [25 ref]
• ***Summary:*** Tempe was prepared from peas, chick peas, and soybeans (acidified and unacidified). Changes in pH, in temperature during the fermentation, in yield, in composition, and in organoleptic properties were studied. The quality of the tempeh was acceptable. Address: Dep. of Basic Science, Awassa College of Agriculture, Addis Ababa Univ., Awassa, Ethiopia.

2546. Fowler Brothers. 1991. Catalog: January 1991. P.O. Box 2324, San Rafael, CA 94912. 79 p. 28 cm.
• ***Summary:*** The company is a "distributor of natural foods." The following makers, distributors, and brands of soyfood products are listed: I. Bulk Products: Miso (American Miso, 8 products), Soy foods (Turtle Island tempeh and Soy Deli tofu burger). Soy Sauce & tamari (San-J domestic shoyu and tamari, Westbrae Johsen shoyu), Tofu (Quong Hop, 6 products).

II. Packaged products: Ah Soy (Westbrae, 7 soy drinks), Eden Foods (Edensoy, 6 soy drinks), Pacific Soyfoods (6 types of soysage), Pacific Tempeh (4 products), Quong Hop (11 soymilk and 4 tofu products), San-J (tamari crackers, 14 soy sauce & tamari products), Soy Deli (Quong Hop, 5 soy foods, 8 vacuum pack tofu), Sweet Earth (3 vegeburgers), Turtle Island (10 tempeh products), Vitasoy (7 soy drinks), Westbrae (2 instant miso soups, 14 soy drinks, 14 types of soy sauce and tamari). Address: San Rafael, California. Phone: 415-459-3406.

2547. **Product Name:** Moonbean Tempeh (Most Types Use Soybeans as the Main Ingredient) [Black Soybean, Okara, Almond and Sesame, Garbanzo and Toasted Sesame, Shiitake Mushroom, Hot and Spicy, Amaranth & Black Pepper].
Manufacturer's Name: Leo Risin' Foods.
Manufacturer's Address: c/o Pywacket's Cafe, 10 East 9th St., Lawrence, KS 66044.
Date of Introduction: 1991. January.
Ingredients: Black soybean (1991): Hand-split black soybeans, hand-split organic yellow soybeans, a pure *Rhizopus oligosporus* culture, umeboshi vinegar.
How Stored: Frozen.
New Product–Documentation: Talk with Clayton McHenry, founder and owner of Leo Risin' Foods. 1994. Feb. 21. He started making Tempeh in Nov. 1990. Letter and Labels sent by Clayton McHenry. 1994. Feb. 22. From Nov. 1990 until Dec. 1991 he used the kitchen at Pywacket's Cafe (10 East 9th St., Lawrence, Kansas 66044) at night to produce dozens of varieties of tempeh, which were sold as "Moonbean Tempeh" to the Cafe and to the Community Mercantile (a co-op grocery store in Lawrence). Substrates used: Black beans, black soybeans, black-eyed peas [cowpeas], chickpeas, peanuts, bulgur wheat, amaranth, teff, quinoa, rice, couscous, barley, sesame (white and black), wild peppergrass seed, buckwheat noodles, whole-wheat noodles, almonds, dried shiitake, sun-dried tomatoes, okara, sunflowerseed, hijiki, ground hempseed, millet, and many dried herbs and spices. In January 1992 Clayton named his business Leo Risin' Foods and set up a certified and inspected kitchen in his home at 1525 Rhode Island, Lawrence, Kansas 66044. From Jan. 1992 until May 1993 he produced tempehs for more restaurants, the Community Mercantile, and Clearly Nature's Own, a natural food store in Kansas City, Missouri. In 1988 Clayton began reading and collecting books by Shurtleff and Aoyagi.

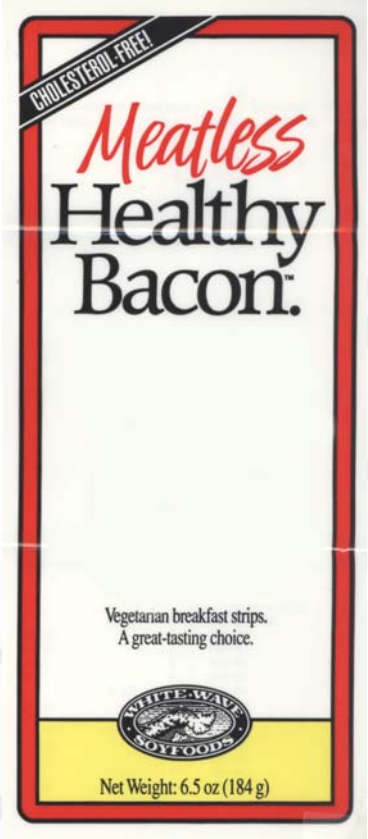
Clayton sent the following labels (ingredients are shown in parentheses after each): Hot & Spicy (Hand split organic black soybeans, black and cayenne pepper, a pure *Rhizopus oligosporus* culture, umeboshi vinegar); Garbanzo and Toasted Sesame (Hand split organic soybeans and garbanzo beans, toasted sesame seeds, a pure *Rhizopus oligosporus* culture, umeboshi vinegar); Shiitake Mushroom (Hand split organic soybeans, shiitake mushrooms, a pure *Rhizopus oligosporus* culture, umeboshi vinegar); Black Soybean (Hand split organic black soybeans, hand split organic yellow soybeans, a pure *Rhizopus oligosporus* culture, umeboshi vinegar); Almond and Sesame (Hand split organic soybeans, sliced almonds, sesame seeds, umeboshi vinegar, a pure *Rhizopus oligosporus* culture); Amaranth and Black Pepper (Organic soybeans, organic amaranth, fresh ground black pepper, *Rhizopus oligosporus* (tempeh culture), umeboshi vinegar). The following text appears on most labels: "Unlike most commercial tempehs, this tempeh is not pasteurized and must be cooked for at least 10 minutes before eating. Your tempeh will last for 3-4 days if refrigerated or 3-4 months if frozen. Grey or black spots on the surface of your tempeh are harmless and occur naturally in the making of this product. Moonbean tempehs are handmade in Lawrence and offer an alternative to the relatively small [number of] varieties currently available. This here tempeh was born on

[date it was made]. Live lightly in Lawrence. Clayton. Label is printed on 100% recycled paper. Outer bag is 100% plant cellulose–not plastic." Note: Clayton's work with tempeh and the graphics on his labels are extremely innovative and original. He purchased the outer tempeh bags (which he no longer uses) from Earth Care Paper Products. They are made of a transparent cellophane (wood pulp) material through which the consumer could see the tempeh. They were more attractive than plastic since they were glossier. They biodegrade well. One drawback of the bags is that they become brittle after 1-2 years.

2548. **Product Name:** Tofu with Tempeh.
Manufacturer's Name: Nutrisoy Pty. Ltd.
Manufacturer's Address: 255 Forest Road, Arncliffe 2205, NSW, Australia.
Date of Introduction: 1991. February.
Ingredients: Tofu and tempeh.
New Product–Documentation: Letter (e-mail) from Tony Wondal of Nutrisoy. 2005. April 26. He started making and selling Tofu Tempeh in Feb. 1991. Note: He invented this interesting product.

2549. **Product Name:** Meatless Healthy Bacon (Made with Tempeh).
Manufacturer's Name: White Wave, Inc.
Manufacturer's Address: 6123 E. Arapahoe Rd., Boulder, CO 80303. Phone: 303-443-3470.
Date of Introduction: 1991. February.
Ingredients: Soy tempeh (cultured organic soybeans, water), soy sauce (water, soybeans, whole wheat, salt), miso (soybeans, water, salt), dried yeast, beet powder for color, dehydrated onion, granulated garlic, natural liquid hickory smoke and spices.
Wt/Vol., Packaging, Price: 6.5 oz (184 gm) plastic pouch.
Nutrition: Per 1 oz.: Calories 27, protein 4 gm, carbohydrate 4 gm (incl. 3.3 g, dietary fiber), fat 1 gm, cholesterol 0 mg, sodium 310 mg.
New Product–Documentation: White Wave News. 1991. Vol. 4, No. 1. June. A photo shows the label. Like all White Wave products, Meatless Healthy Bacon is made with soybeans grown in accordance with Section 26569.11 of the California Healthy and Safety Code [i.e. organic soybeans]. A comparison of 1 oz. broiled/fried bacon (pork) with Meatless healthy Bacon shows: Fat: 14 gm vs. 1 gm. Saturated fat: 4.95 gm vs. 0.15 gm. Cholesterol: 24 mg vs. 0 mg.

Label sent by Lon Stromnes. 1991. July 30. 4.5 by 10.25 inches. Plastic pouch. Red, black, and yellow on white. "Cholesterol-free! Vegetarian breakfast strips. A great-tasting choice."



2550. Malch, Tanya. 1991. Martina Navratilova and tempeh (Interview). *SoyaScan Notes.* March 7. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Tennis star Martina Navratilova was recently in Palm Springs for a week to compete in the Virginia Slims tennis tournament. Martina is very careful about her diet, and she came repeatedly to the MT Plate restaurant before and during the tournament and loved the tempeh served in the "Vegetarian Plate" and the "Tempeh Paté." To make the Vegetarian Plate, Tanya sautees cubed tempeh in olive oil, adds seitan and seitan broth plus vegetables, garlic, ginger and a glaze, then simmers it. During the week, Martina brought in many friends for parties and had them try tempeh. At practice, she wore the MT Plate T-shirt. She gave Tanya box seats for the tournament on Sunday. After winning the tournament, Martina stopped her big press conference and said "You have to go to this local restaurant named the MT Plate and try their tempeh." She talked about what a great food tempeh is! Before she left Palm Springs to fly back home to Aspen, Colorado, she called Tanya from the airport, and asked if Tanya could send her fresh tempeh by Federal Express to Aspen. Her coach added: "She will!"

Follow-up talk with Tanya. 1991. June 28. Martina, who is not a vegetarian but who does not eat red meat, has never ordered any tempeh from Colorado. MT Plate restaurant will be closing in a few days and opening a larger facility in the Los Angeles area. Follow-up talk with Tanya. 1992. July 17. She makes seitan daily in her kitchen and serves it at

her restaurant. Address: Owner, MT Plate restaurant, 641 N. Palm Dr. (P.O. Box 3243), Palm Springs, California 92263-3243. Phone: 619-323-9686.

2551. Davey, C.L.; Peñaloza, W.; Kell, D.B.; Hedger, J.N. 1991. Real-time monitoring of the accretion of *Rhizopus oligosporus* biomass during the solid substrate tempe fermentation. *World J. of Microbiology and Biotechnology* 7(2):248-59. March. [61 ref]
• ***Summary:*** Tempeh was made from soybeans, lupins, and quinoa. The authors describe a new method for the real-time estimation of the accretion of biomass during the solid substrate fermentation based on measurements of the dielectric permittivity at radio frequencies. Address: Dep. of Biological Sciences, University College of Wales, Aberystwyth, Wales, UK.

2552. Krusong, Warawut; Yongsmith, Busaba; Sanchez, P.C. 1991. Note: Increased vitamin B-12 level in a modified tempeh process. *Philippine Agriculturist* (*The*) 74(1):89-94. Jan/March. [21 ref]
• ***Summary:*** The moisture content of soybeans should be 55-57% for best production of vitamin B-12 production. When *Rhizopus* oligosporus was used alone as an inoculum for making tempeh, either as powdered or spore suspension, the result was only a small quantity of vitamin B-12 (40 nanograms per 100 gm); this is not significantly different from the initial vitamin B-12 content of soybeans. "However, with bacterial co-fermentation using *Propionibacterium shermanii* 1250, the yield of vitamin B-12 was tremendously increased to 185.3 ng/100 gm." Address: Thailand.

2553. **Product Name:** Organic Tempeh.
Manufacturer's Name: Soya Dairy (The).
Manufacturer's Address: Unit 16, Chaucer Yard, Countess Road, Sheffield S1 4TE, England. Phone: (0472) 796586.
Date of Introduction: 1991. March.
Ingredients: Organic soya beans, Rhizopus oligosporus, organic brown rice flour, organic cider vinegar.
Wt/Vol., Packaging, Price: 8 oz (227 gm).
How Stored: Frozen.
New Product–Documentation: Letter from Andy McAuley of The Soya Dairy. 1992. Oct. 23. "I am writing to you on behalf of a small business making, and promoting the virtues of, tempeh. As part of our promotion, we are trying to persuade hospitals and schools to take on tempeh as part of their meals service." Note: Sheffield is in the north of England, directly east of Manchester, and the center of the British cutlery industry.

Letter and Label from Andy McAuley. 1992. June 11. Andy and Dave Carless founded this company. Andy was a member of the Sheffield Wholefood Cooperative, trading as Bean Beanie, from Feb. 1988 to Nov. 1990, and he came across tempeh while working there. Dave Joined the Co-op in June 1990, after working in a similar operation in Ipswich named Fruits of the Earth. While at Fruits, Dave had run a small-scale tempeh kitchen for about 3 years named Tempeh Foods. Andy was keen to promote tempeh and to do something other than simply buying and selling food. Dave taught Andy how to make tempeh, and they began commercial production in March 1991. They switched to using a new tempeh label in Jan. 1992. The present owners of the Soya Dairy are Andy and Gen Harrison. Gen became involved through her interest and experience in making tofu, which the company continues, though not on a commercial scale–simply as a source of fresh tofu, okara, and okara tempeh for friends and associates.

Label. First used in Jan. 1991. 5.75 by 8 inches. Paper. Black on tan. "A delectable Oriental food made from the fermentation of organic soya beans with the culture Rhizopus Oligosporus. Ideal for vegetarians, vegans and those who prefer a gluten free diet."

2554. *Voice of the Turtle* (*Husum, Washington*).1991. World's best tempeh now available in reusable, recyclable bag. 3:1. March.
• ***Summary:*** A photo shows four of the company's products. Since Nov. 1988, Turtle Island has had its own in-house recycling program based on the principles of "reduce, reuse, recycle, reorder." The new bag is made from only one type of plastic, low-density polyethylene, which is highly recyclable.

If you return 10 cleaned plastic bags from any products made by Turtle Island Foods, Inc. the company "will recycle the bags and send you a beautiful (and fun!) yo-yo made from 100% recycled plastic along with our plastics recycling guide." Address: #1 Turtle Lane, P.O. Box 218, Husum, Washington 98623. Phone: 509-493-2004.

2555. Wasserman, Debra; Mangels, Reed. 1991. Simply vegan: Quick vegetarian meals. Vegetarian Resource Group, P.O. Box 1463, Baltimore, MD 21203. 224 p. March. Illust. General index. Index of tables. 23 cm. [117 ref]
• ***Summary:*** A vegan cookbook. Contents: Foreword. Time-saving cooking suggestions: Microwave cooking. Sample menus: Menu analysis. Top recipes for calcium and vitamin C. Top recipes for iron. Recipes (one section is titled Soy Products: Tempeh Dishes, Tofu Dishes). Food definitions and origins. Herbs and spices. Vegan nutrition (written by Reed Mangels, PhD, RD. Each of the 18 topics is followed by a bibliography; includes a section on each major nutrient, pregnancy, lactation, feeding vegan kids, nutrition glossary, recommended reading list). Cruelty-free shopping by mail.

The Vegetarian Resource Group. The group also publishes a bimonthly magazine, *Vegetarian Journal,* and is considered by dietitians to be a good source of nutrition information for vegans.

This book contains more than 20 tofu recipes and 6 tempeh recipes. Address: VRG, Baltimore, Maryland. Phone:

301-366-8343.

2556. Ashenafi, B.; Busse, M. 1991. Growth of *Bacillus cereus* in fermenting tempeh made from various beans and its inhibition by *Lactobacillus plantarum. J. of Applied Bacteriology* 70(4):329-33. April. [12 ref]
• ***Summary:*** *Bacillus cereus* contaminates and in 40 hours totally degrades unacidified tempeh made from horse beans. The inoculation of *Lactobacillus plantarum* into this type of tempeh has no effect. The acidification of the horse beans during soaking and their inoculation with *L. plantarum* strongly reduces the growth of *B. cereus* during the fermentation. In associated cultures, *B. cereus* is completely inhibited by *L. plantarum* at pH 5.5. *Bacillus cereus* does not alter the tempeh made from peas, chick peas, or soybeans. Address: 1. Dep. of Basic Sciences, Awassa College of Agriculture, Addis Ababa Univ., Ethiopia; 2. Bakteriologisches Institut, Technische Univeritaet Muenchen, Germany.

2557. Ashenafi, M.; Busse, M. 1991. The microflora of soak water during tempeh production from various beans. *J. of Applied Bacteriology* 70(4):334-38. April. [17 ref]
• ***Summary:*** The microflora in the soak water was studied during the soaking of horsebeans (*féverole*), peas, chickpeas, and soybeans for tempeh production. Lactic streptococci dominated the flora in both unacidified and acidified soak water. Coliforms and yeasts were found only in unacidified soak water. The growth of microorganisms in acidified and unacidified soak water lowered the pH of the cooked legumes. Microbial acidification during soaking is considered to be important in tempeh production. Address: 1. Dep. of Basic Sciences, Awassa College of Agriculture, Addis Ababa Univ., Awassa, Ethiopia; 2. Bakteriologisches Institut, S.V.F.A., Weihenstephan, Technische Universitaet Muenchen, D-8050 Freising, Germany (FRG).

2558. Horowitz, Norman H. 1991. Fifty years ago: The Neurospora revolution. *Genetics* 127(4):631-35. April. [21 ref]
• ***Summary:*** "This year marks the fiftieth anniversary of the publication of one of the pivotal works of modern biology, the first Neurospora paper of Beadle and Tatum (1941). This brief paper, revolutionary in both its methods and its findings, changed the genetic landscape for all time. Where previously there existed only scattered observations (albeit with some acute insights) on the relation between genetics and biochemistry, this paper established biochemical genetics as an experimental science, one in which progress would no longer be limited by the rarity of mutants with biochemically knowable phenotypes, but where such mutants would be generated at will and where findings could be repeated and hypotheses explored, as in other experimental sciences. This paper was the first in a series of fundamental advances in chemical genetics that by 1953 had bridged the gap between genetics and biochemistry and ushered in the age of molecular biology." Address: Biology Div., California Inst. of Technology, Pasadena, California 91125.

2559. *Plenty Bulletin* (*Davis, California*).1991. A visit to the soy dairy in Guatemala. 7(1):3. Spring.
• ***Summary:*** "In 1979, at the peak of Plenty's integrated village development program in Guatemala, we bought 3,200 sq. meters of land (0.8 acre) in the village of San Bartolo in the central highlands. With the help of local Mayan volunteers a soy dairy was built on that land. In February of 1980, the dairy was open and running. Eleven years later it is still going and producing tempeh, tofu, soy flour, soy milk and soy ice-cream which are sold in nearby markets and in Guatemala City."

Alan Praskin, at the invitation of the village, returned to Guatemala and on 7 March 1991 signed title to the land over to the community and "Alimentos de San Bartolo," which is now the name of the soyfoods enterprise. The community of San Bartolo and the managers and staff of the soy dairy are Cakchiquel Mayas.

Three photos shown: Alan surrounded by San Bartolo elementary students, some of San Bartolo's soy-fed children, and a Guatemala highland family enjoying soy ice cream cones.

2560. Drosihn, Bernd. 1991. Re: New developments at Soyastern and Byodo Naturkost in Germany. Letter to William Shurtleff at Soyfoods Center, May 5. 1 p.
• ***Summary:*** "In Germany the market is on the move, but I'm sure you know that already through your worldwide Tofu-FBI. Soyastern stopped producing tofu and the brand has been taken over by Huegli, which now controls 60% of the tofu market in German natural food stores. Likewise, Byodo Naturkost in Munich is now owned by Svadesha.

Viana has started to produce tofu too, because our production of tempeh is still very small. We are planning to pasteurize tempeh in the future. Address: Founder and president, Viana Naturkost GmbH, Schmittenstr. 106, D-5030 Huerth 6 (Fischenich), West Germany. Phone: (02233) 41323.

2561. **Product Name:** Tempeh.
Manufacturer's Name: Genesis Wholefoods.
Manufacturer's Address: P.O. Box 19, Balgowan, Natal 3275, South Africa.
Date of Introduction: 1991. May.
New Product–Documentation: Letter from Paul Fleischack, owner. 1991. May 26. "I started producing tofu under the 'Genesis Wholefoods' label in Jan. 1991. Tempeh is now also made on a community scale and I hope to produce shoyu and miso during this year."

2562. Leneman, Leah. 1991. Travelling in the land of tempeh. *Vegan Views* (*Bournemouth, England*). Spring. p. 7. [1 ref]
• ***Summary:*** The author, a vegan, found Indonesia a fascinating place to visit but also found it difficult to obtain vegan dishes at Indonesian restaurants. "It was disappointing to find that the country that created tempeh is such a difficult place for a vegan to travel in." Address: 19 Leamington Terrace, Edinburgh EH10 4JP, Scotland.

2563. **Product Name:** Lightlife Barbecue Grill (Vegetarian Tempeh Burger).
Manufacturer's Name: Lightlife Foods, Inc.
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01302. Phone: 413-774-6001.
Date of Introduction: 1991. May.
New Product–Documentation: Talk with Michael Cohen. 1991. Sept. 17. This tempeh burger has a barbecued flavor. It is marinated and packed with marinade in the package.

2564. Starr, Sara. 1991. Soyfoods: Pleasing to the palate, easy on the planet. *Health Foods Business.* May. p. 34-39. [1 ref]
• ***Summary:*** "Based on data from the nation-wide study, 1990 HealthFocus on U.S. Consumers, about one in ten health active food shoppers say they eat soyfoods once every two weeks or more." Address: Vice President, Health Focus Inc., Emmaus, Pennsylvania.

2565. *Contact* (*Plenty Canada*).1991. The promise of soy foods: Sri Lanka. 1(3):1-3.
• ***Summary:*** A photo shows Muttiah Jeyabalan, a native Sri Lankan, who is Plenty Canada's Program Officer for Asia and the Caribbean. Since 1985 he has taken a major part in developing Plenty Canada's program that provides two benefits to Sri Lankans: nutrition and economic opportunity. Plenty Canada's project has recently received $4.7 million funding from CIDA, the Canadian International Development Agency, as it enters its second 5-year phase. In the first 4-year phase of the Soya promotion program, two soy centers were established, one in Kandy and one in Colombo. The emphasis was on training, including extension programs, that assisted women's groups in starting income-generating soy-related businesses. In Sri Lanka, food is traditionally a woman's business. Soya products needed to be popularized and marketed to the general public. The key soyfoods were soy nuts, tofu, ice cream, popsicles, cakes, fried beans, yogurt, curries and tempeh. "Thirty Sri Lankan enterprises, mostly women-run, were initiated and are now self-sufficient." Soyfoods were incorporated in traditional local dishes. Soy ice cream is very popular. Janine Dudding is a Plenty Canada advisor to the Sri Lanka project. Peter Dudding is project director. Address: R.R. #3, Lanark, ONT, K0G 9Z9, Canada. Phone: (613) 278-2215.

2566. Sumaratunga, P.A.; Dasanayake, D.M.W.T. 1991. Potentials and problems of income and employment generation through small-scale processing of coarse grains, pulses, roots and tubers in Sri Lanka. *Palawija News* (*Bogor, Indonesia*) 8(2):13. June.
• ***Summary:*** "Sri Lanka is an agricultural country with 52% of its labour force involved in agriculture and 31% of the total land area under agricultural crops. Total agricultural production constitutes 20% of the annual Gross Domestic Product, of which three fourth covers food crops and one fourth covers the export-oriented plantation sector.

Agricultural production in Sri Lanka is adapted to suit the annual bimodal rainfall pattern. In the wet (*Maha*) season, the whole island receives rain. In the dry (*Yala*) season, only the southwestern quarter of the island [around Colombo, the capital] experiences substantial rainfall.

Tables: (1) Labor productivity and land utilization of CGPRT crops in Sri Lanka. The five columns are: Crop type, GDP (million rupees), number of farm families, area cultivated. The 3 crop types are roots and tubers (incl. potato, manioc, sweet potato, other yams, which contribute the most to the GDP), pulses (including soybean, cowpea, greengram, blackgram, and groundnut, which have the largest cultivated area) and coarse grains (incl. maize and kurakkan).

(2) Area cultivated and production of CGPRT crops in Sri Lanka (1985-1989). For soybean in 1985: 2,780 metric tons were produced on 2,400 ha. In 1989: 2,910 metric tons were produced on 4,700 ha.

(3) Population and labour force statistics for Sri Lanka. The four columns are sector, population labour force, and unemployment. The population of Sri Lanka is presently 16.9 million of which 36% are economically active. 72.2% is rural, 25.5% is urban, and 6.3% is estate (lives on an estate).

(6) Labour requirements for cultivating and processing different crops (per acre). (7) Total labour cost for cultivating and processing different crops (per acre). (8) Total annual labor use and wage bill of CGPRT crop production.

A section titled "Producing soya-based products" states: "However the income and employment generation potential could be higher than that of pulses since soy products are higher priced and processing needs more labour. Nevertheless products such as tofu and tempe can fetch higher prices only when they are more widely accepted in Sri Lanka."

"Conclusion:... a clear potential exists for generating employment and income in the rural sector by promoting small-scale processing of GCPRT crops. To achieve this potential," for suggestions are given to planners.

Note: An editorial (p. 3) by Seiji Shindo, Director, CGPRT Centre, is largely about the Soybean Yield Gap Analysis Project (Phase II). Address: 1. Agricultural economist; 2. Provincial director (UVA province). Both: Dep. of Agriculture, Sri Lanka.

2567. *INTSOY Newsletter* (*Urbana, Illinois*).1991. Popularity of soyfoods receives major boost in Sri Lanka. No. 43. p. 1-2. July.
• ***Summary:*** "Efforts by Plenty Canada to popularize processed soybean foods for improved nutrition and as a new income source are showing widespread success in Sri Lanka." The Canadian International Development Agency (CIDA) has agreed to fund the project with $4.7 million (Canadian) for 5 years. The program in soybean utilization is carried out in collaboration with the Sri Lankan Ministry of Agricultural Development and Research, and the Ministry of Planning Implementation.

"Plenty Canada has now completed Phase I of the project, which links more than 150 producers and retail outlets into an integrated marketing network. Two processing and retail centers are operating–one in Kandy and the other in Colombo. Retail outlets operating in Kandy, Colombo, and 9 other districts currently sell more than 35 processed soybean products. Sales for 1991 are projected at more than $Canadian 100,000...

"Products that are available include: soy ice cream, soy yogurt, tempeh, soy meat, soy instant dhal, soy-cereal mix, soy cocktail mix, and soy flour... Because of the increased demand for these products, Plenty Canada is considering setting up its own processing facility by the end of the year."

Photos show: (1) People lined up at a Sri Lanka Soya Utilization Project mobile kitchen. (2) Many of the packaged soy products that are sold.

2568. Messina, Mark; Messina, Virginia. 1991. Increasing use of soyfoods and their potential role in cancer prevention. *J. of the American Dietetic Association* 91(7):836-40. July. [56 ref]
• ***Summary:*** Contents: Abstract. Introduction. Historical perspective. Soybeans and the US food supply: Soy protein products, retail soyfoods sales. Nutrient contribution of soyfoods. Soybeans and cancer risk: Experimental studies (isoflavones, protease inhibitors, epidemiology, breast cancer, colorectal cancer). Conclusions. Implications.

"Soybeans contain, in relatively high concentrations, several compounds with demonstrated anticarcinogenic activity. Two of these compounds–protease inhibitors and phytic acid–have traditionally been viewed as antinutrients... It may not be appropriate to evaluate soybeans on nutrient content alone; dietitians need to know about the nonnutritive dietary compounds, called phytochemicals, which may have anticarcinogenic effects... Overall, the epidemiologic data suggest that soy consumption may lower colorectal cancer risk, whereas there is only moderate support for the role of soy in reducing breast cancer..."

Table 1 (p. 838) gives the "Proximate composition and selected nutrient content of various soyfoods in common serving sizes and in 100-gm edible portions" (based on Haytowitz 1986). The soyfoods are: Miso, natto, okara, roasted soybeans (dry- or oil roasted), soy sauce (tamari), tempeh, firm tofu (raw), regular tofu (raw). Address: 1. Diet and Cancer Branch, Div. of Cancer Prevention and Control, National Cancer Inst., Bethesda, Maryland 20892; 2. Registered Dietitian, private practitioner, Washington, DC.

2569. Spaid, Elizabeth Levitan. 1991. Give me a burger–Hold the meat: A widening variety of dishes enliven the plant-based diets of today's vegetarians. *Christian Science Monitor*. Aug. 1. p. 14.
• ***Summary:*** Vegetarian diets are no longer bland or uninteresting (if they ever were). Today's vegetarians enjoy a rich variety of flavors, and sound nutrition. A new generation of vegetarian adults are raising their kids on healthy vegetarian or vegan diets. They also know more about nutrition. And a much wider variety of vegetarian foods and cookbooks are easily available. Almost every supermarket now carries tofu, frozen meat alternatives, all kinds of fruits and vegetables, breakfast cereals, etc. There are now alternatives to almost every meat, dairy, or egg product–from tofu dogs to soy cheese, from eggless mayonnaise to fake bacon made of tempeh–not to mention soy milk and soy ice cream. In short, there are a great many more things to eat in the plant kingdom than in the animal kingdom.

"Many people wince when they hear the word 'vegetarian,' thinking tofu (a cheese-like food made from soybeans) and salad are the staples of such a diet." But vegetarians know this is a myth.

For many people discovering the rich, varied, and delicious flavors is a big discovery, a real and happy surprise. When many people decide to "go green" they also decide to give up meat, which is so destructive to the environment. Others believe it is ethically wrong to kill and eat animals. Still others believe that a vegetarian diet is more healthful.

Tofu can be used in a remarkable number of ways, and made to blend in so one doesn't even know its tofu. Delicious sauces can be made out of "silken tofu and miso," and people think they are eating some type of rich cream sauce.

2570. Tara, Bill. 1991. Pioneering macrobiotics and soyfoods in London (Interview). *SoyaScan Notes*. Aug. 18. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Starting in the late 1960s, the pioneering work with soyfoods in London was done by Craig and Greg Sams. They and their parents were Americans, and they had gone to college in America. Their father was employed by the U.S. armed forces as an historian; they spent a lot of their time growing up between America and England. Greg fell out of a tree while going to college in Berkeley in the late 1960s and was paralyzed from the waist down, so he was confined to a wheelchair, but was still very active and innovative. In the late 1960s they set up a macrobiotic natural foods cafe/

restaurant on Portobello Road in London, then changed it into Ceres Grain Shop, a natural foods retail store. As volume increased, they began to distribute their products out of the back of their shop, and in about 1971 founded Harmony Foods Ltd. as a distribution company located in a warehouse on Ladbroke [sic, Latimer] Road. The model and evolution was similar to that of Erewhon in Boston. Harmony Foods was the first natural foods distributor in England, and probably the second in Europe after Lima Foods of Belgium. Soon they were importing macrobiotic foods from Japan, and distributing organically grown grains from England and from The Camargue (a marshy island in the delta of the Rhone River in the south of France), etc.

Among their early Japanese imports were bulk miso and "tamari" (actually shoyu), imported from Muso in wooden kegs. They repackaged the miso and shoyu in glass bottles under the Harmony Foods label in London. This was the first Japanese miso and shoyu sold in England. In about 1972, as soon as Erewhon started having miso and shoyu packed in Japan, the Sams had the same thing done with theirs, then they applied their own labels in London. But they continued to import in bulk as well. A Chinese company in London made tofu and [mung] bean sprouts, then sold the tofu to the Sams brothers; they sold it unpackaged in open trays in water. At that time, tofu was not emphasized much in macrobiotic circles so not much was sold; it was considered too yin. The Sams also sold deep-fried Rissoles filled with TVP instead of meat; as early as 1970 the Rissoles were being made by an Israeli guy (name?) who owned a shop (name?) by the Hempstead Heath. Marigold Foods also used TVP in the mid-1970s.

In 1970 Bill Tara, then a vice president at Erewhon in Boston, passed through London on his way to India. One purpose of his trip was to scout out the possibility of Erewhon setting up a distribution point or center in England. Paul Hawken was president of Erewhon at the time, and Erewhon was importing miso and tamari from both Muso and Mitoku in Japan. Bill and Paul had been roommates in a warehouse in San Francisco, then they took over the Erewhon food store from Evan Root, Paul starting 2-3 months before Bill. In London, the Sams brothers were just opening a new natural foods restaurant in the Notting Hill area so Bill and Paul Petrofsky spent 2 weeks fixing it up. Paul later started Baldwin Hill Bakery with Hy Lerner. Bill stayed in London 2-3 months during this first visit.

In about 1972 Bill returned to London with Russel Demerais, on the Erewhon payroll, again to start an Erewhon distribution center. But Erewhon went through a cash crisis and Harmony foods had grown dramatically. So Bill and Peter Bradford (an Englishman who had come to American in about 1970 and worked for Erewhon doing organic agriculture at Erewhon Farms near Keene, New Hampshire) began to work for the Sams brothers both at Ceres Grain Shop (the retail store) and Harmony Foods (in the warehouse). Bradford, who now has a very successful natural food store in England named Clearwater Natural Grocer, has been one of the most important promoters of soyfoods in the UK. At this time, Craig Sams set up a bakery. By now, miso and tamari sales had increased; Harmony was still affixing its own label to unlabeled packs.

In 1974 Bill and Peter established Sunwheel as a natural food/macrobiotic distributor. They picked up exotic Japanese imports that Harmony found unprofitable and wanted to drop–so there was little or no competitive feeling with the Sams. By late 1974 Sunwheel Hatcho Miso, Mugi Miso, and Tamari were on the market, imported from Muso (Yuko Okada) in Japan. Sunwheel also made granola and peanut butter. Sunwheel never sold any other soyfood products; they had very limited warehouse space and no refrigeration.

Note: On 17 Aug. 1975 Renée Tara wrote William Shurtleff in California. She was living at 30 B Market St., Bradford-on-Avon, Wilts., England. She is writing a European Macrobiotic Cookbook. She requests information on miso and invites Shurtleff to visit.

In about 1977 Sunwheel acquired a retail store that had been started in and by the Community Health Foundation. By 1979 Sunwheel was very successful, but it needed to be recapitalized or sold. So the partners decided to sell it to a larger health food company; Peter kept the retail store.

In Nov. 1975 Bill established the Self Health Center which by 1976 grew into the Community Health Foundation (CHF). By 1976 CHF was offering classes in soyfoods. Paul Jones was the key man with tofu; he taught classes and started making tofu out of his home in the Highgate area. Paul Jones was definitely the first Caucasian to pioneer tofu in England. Simon Bailey, a baker who was originally with one of the first natural foods stores in England, located in Bath, taught about tempeh. These people were experimenting in the kitchen with soyfoods and taught in a sort of an apprenticeship program. Jon Sandifer, who is still with CHF, learned tempeh from Simon Bailey. CHF sold some tofu and tempeh through its own sit-down restaurant named The Seven Sheaves, then renamed The Natural Snack and changed to a cafeteria. A few people did experiments with miso but it never got to a commercial scale in part because of persistent rumors that Lima Foods was going to start making it.

By the late 1970s soyfoods were growing in popularity in the UK. Two separate groups promoted them; the vegetarians and animal rights people (who liked TVP), and the natural foods and macrobiotic people. Marigold Foods also used TVP in the mid-1970s.

Much of important pioneering commercial work with soyfoods in Europe was done by macrobiotic groups in the Netherlands and Belgium. Bill often went there to teach in 1974-79. Tofu, and later tempeh, were emphasized by groups such as Manna in Amsterdam and De Brandnetel in Antwerp. Macrobiotics was much more active in the Lowlands than in

England.

The Sams brothers later started Whole Earth as a marketing company for their jams. They sold it fairly soon. Greg Sams (disabled) is no longer in the food business; he runs The Chaos Shop in London which sells photographic reproductions of computer-generated chaos patterns. Craig started Realeat Co. and now may be with the Haldane Foods Group. Address: Director, Nova Inst., P.O. Box 4648, Estes Park, Colorado 80517. Phone: 303-586-6265.

2571. Stackler, Ben. 1991. Macrobiotics and soyfoods in the Soviet Union (Interview). *SoyaScan Notes.* Aug. 21. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** The macrobiotic movement in the West has recently been very active in Eastern Block countries. The leaders there are mostly medical doctors. They are treating Chernobyl radiation patients using macrobiotics. Two areas of greatest activity in the USSR are Leningrad (now named St. Petersburg), and a city in the Ural Mountains (east of Moscow) named Chelyabinsk (also spelled Cheliabinsk; a subdivision of the Russian S.F.S.R.). The St. Petersburg doctors have many ambitious plans. They want to manufacture miso and tempeh on a commercial in cooperative with a brewery in St. Petersburg. A year ago there was a macrobiotic conference in Yugoslavia; 500 people from all over Europe attended and Michio Kushi was the featured speaker. In October 1990 Ben went to Moscow and St. Petersburg with 6 macrobiotic people. He had hundreds of pounds of donated miso sent by airlift to the USSR. The *One Peaceful World* newsletter, published by the Kushi Institute in Massachusetts, did a story on his October trip; it includes the names and addresses of the interested people. He will be making a second trip to the USSR within one week, revisiting people he met before.

Note: The MacNeil/Lehrer Newshour reported on 14 Feb. 1992 that a top-secret Soviet nuclear weapons complex is located near the city of Chelyabinsk. It is one of ten which together produced all of the former Soviet Union's nuclear weapons. Address: 1400 Shattuck Ave. #7-2, Berkeley, California 94709. Phone: 415-527-9389.

2572. Drosihn, Bernd; Hess, Albert; Nagel, Christian. 1991. The tofu industry and market in West Germany (Interview). *SoyaScan Notes.* Aug. 25. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Bernd is in the USA with Albert Hess of Das Tofuhaus. They just had a nice visit to Northern Soy in Rochester, New York. Svadesha Vegetarische Feinkost bought Byodo Naturkost in April 1991 and is now in financial trouble because the owners do not understand the tofu market; they are trying to sell Byodo, which is now also having trouble.

Since Huegli bought Soyastern and Yamato, the two companies have steadily lost market share. For the past two years, Soyastern's quality has been very poor, and they have sometimes been unable to fill orders–but that has improved somewhat since they were bought by Huegli (a Swiss company). In 1988 Soyastern alone had 35-40% of the German tofu market, and now it is 20-25%. Soyastern's actual output of tofu stayed about constant but the market as a whole is growing well. Yamato has always been well organized. Another problem is that Huegli is seen by natural food store owners as a "big food company" and these owners do not want to support such companies by buying from them.

Roughly 20 tonnes/week of tofu are now made in Germany, and that is growing at 10-15% a year. Of total sales, roughly 35% is plain tofu and 65% is tofu products. There are many more tofu products. Tofu and tofu products now have much more shelf space in food stores, and many stores that used to carry only one brand of tofu now carry 3-5. Roughly 90% of the tofu sold in Germany is made with organically grown soybeans; Hensel is one major company whose tofu is not organic. A rapidly growing proportion of these organic soybeans are now grown in Europe. The main countries supplying organic soybeans for tofu in Germany, in descending order, are: USA, France, Austria, Hungary, and Germany (the latter grows 20-30 tonnes/year). Some smaller companies (such as Taifun, Albert Hess of Das Tofuhaus, and Christian Nagel) have all been growing well. The largest tofu manufacturers in Germany are: (1) Huegli with 40% of the German tofu market–composed of Soyastern, Yamato, and KMK–is by far the biggest; they also have some brands in the Reform market, and in canteens. Hensel, which has strong connections with Huegli, is not a manufacturer; their tofu is produced at KMK (Kurhessische Molkerei Kassel) in Kassel, which is owned by Huegli. In early 1990 Huegli purchased Heirler, the biggest distributor of fresh health foods in West Germany, and also a brand name in 2,000 Reform Houses in Germany; (2) DE-VAU-GE (GranoVita brand), with 10% of the market, is big in the Reform market; (3) Christian Nagel Hamburg Tofu Manufaktur, 7-8%; (4) Geestland in Bremerhaven, 7-8%; (5) Das Tofuhaus in Lautersheim, 7-8%; (6) Taifun; (7) Svadesha; (8) Soto. Bernd's company is still small but he now makes much more tofu than tempeh, and his sales are growing fast. He got his tofu equipment from Tofurei Jutta Schoenemann near Nuremberg–which was run by a housewife and her husband. They bought their equipment in Japan, made 100-200 kg/week of tofu, and went out of business about 2 years ago. He is not aware of any companies that have gone out of business during the past year, although Svadesha and Byodo are having a hard time.

A major change is that KMK is now producing the tofu for Soyastern and Yamato. Yamato's plant will be closed at the end of this year. It is less expensive for Huegli to produce all of their tofu at one place. Thus by early 1992 KMK will be the largest tofu plant in Germany. It is not clear what will happen to Klaus Gaiser; he does not want to move

away from Tuebingen. Thomas Karas is probably living in Cologne; he was very lucky to be able to sell his company to Huegli though he had debts of about 1 million marks. Huegli assumed only one-fourth of these debts. Soyastern's two main sources of capital (one bank and the man who sold him the chicken factory) took over one-fourth of the debt. Another one-forth was taken over by his supplier of soybeans, and Thomas took on the last one-fourth himself.

The price of tofu in the USA is much lower than in Germany, except for Heuschen-Schrouff tofu, which is sold in Asian food stores. Tofu sold in Asian food stores in Europe is generally much less expensive than that sold in natural food stores. Huegli is trying to recover the market share they have been losing by selling their tofu less expensively; this will probably bring down all tofu prices in Germany–but Bernd hopes it does not fall to the American level.

The organic German Soyfoods Association has had a struggle. People are now encouraging Klaus Gaiser to establish an association of all soyfoods manufacturers in Germany. Another big question is how soyfoods manufacturers will relate to the unified European Community in 1992. Address: 1. Founder and president, Viana Naturkost GmbH, Cologne; 2. Owner, Das Tofuhaus; 3. Owner Hamburger Tofu Manufaktur. All: Germany. Phone: (02233) 41323 or 221-121175.

2573. Drosihn, Bernd. 1991. Tempeh in West Germany (Interview). *SoyaScan Notes*. Aug. 25. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Viana now makes more tofu than tempeh, but their tempeh business is also growing nicely. They started pasteurizing their tempeh about 2 months ago, and that has helped sales. Byodo Naturkost was the first company to make tempeh in Germany, and tempeh has been their flagship product, but their production seems to have decreased substantially. Christian Nagel also makes tempeh. Address: Founder and president, Viana Naturkost GmbH, Cologne, Germany. Phone: (02233) 41323 or 221-121175.

2574. Kane, Marion. 1991. The cutting edge: Sink teeth into vegetarian fare. *Toronto Star* (*Ontario, Canada*). Aug. 28. p. C3.
• ***Summary:*** At the seventh annual Vegetarian Food Faire at Harborfront's York Quay Centre, there will be plenty of mouth-watering food and info to get your teeth into. But there won't be any meat.

The Faire will be held on Sept. 7 and 8, from 11 a.m. to 6 p.m., sponsored by the Toronto Vegetarian Association. It "addresses what the group calls the 'four cornerstones of a vegetarian lifestyle: health, animal rights, environmental concerns and the elimination of world hunger." Soy City Foods will be there to prepare barbecued veggie burgers, tempeh stew, vegetable curries, tofu pot pies, and non-dairy brownies.

Dr. David Jenkins, of the Univ. of Toronto's nutrition department will explain the nutritional benefits of a vegetarian diet.

A large photo shows Penny Cassel of Soy City Foods as she shows off her Tempeh Reuben sandwich, a vegetarian delight. "Tempeh is an Asian food prepared by fermenting soybeans."

2575. Soyfoods Center. 1991. Soyfoods information catalog: Publications by William Shurtleff & Akiko Aoyagi Shurtleff [mail order]. P.O. Box 234, Lafayette, CA 94549. 20 panels. Aug. 30.
• ***Summary:*** This catalog, folded like a road map, is printed with dark blue and pea green ink on white paper. This is the first catalog in which the prices are printed on a separate sheet of paper. 5,000 copies were printed by AMP Printing Inc. in Pleasanton, California.

Note: This was the last catalog Soyfoods Center ever had printed on paper. Future catalogs appeared on the Center's website. Address: Lafayette, California. Phone: 415-283-3161.

2576. **Product Name:** Organic Tempeh.
Manufacturer's Name: Culture Foods Ltd.
Manufacturer's Address: 4 All Saints Workspaces, 75 Raleigh St., Nottingham NG7 4DL, England. Phone: (0602) 788963.
Date of Introduction: 1991. August.
Ingredients: Organic soya beans, organic cider vinegar (trace), Rhizopus oligosporus (tempeh culture).
Wt/Vol., Packaging, Price: 8 oz (227 gm) aluminum foil container with paperboard sleeve. Retails for £0.99.
How Stored: Frozen.
New Product–Documentation: Label sent by Alison J. Clark of Culture Foods Ltd. 1991. Aug. 23. 5.76 by 4.5 inches. Orange and turquoise blue on white. Heavy paper sleeve. Logo resembling the Vegetarian Society's "V" but with a sunflower growing out of it. "No animal ingredients. A delicious, versatile and high protein food. Fry, steam or bake and use in place of meat in all your favorite recipes." A letter adds that the company, a worker's co-operative, sold its first order on 8 Aug. 1991.

Letter from Nadine Cook of Culture Foods Ltd. 1994. Jan. 14. The company is at the same address shown above, and they are still making tempeh and tempeh products.

2577. **Product Name:** Tempeh Chasseur.
Manufacturer's Name: Culture Foods Ltd.
Manufacturer's Address: 4 All Saints Workspaces, 75 Raleigh St., Nottingham NG7 4DL, England. Phone: (0602) 788963.
Date of Introduction: 1991. August.
Wt/Vol., Packaging, Price: 12 oz (340 gm) aluminum foil container with paperboard sleeve. Retails for £1.89.

How Stored: Frozen.
New Product–Documentation: Label sent by Alison J. Clark of Culture Foods Ltd. 1991. Aug. 23. 5.76 by 4.5 inches. Orange and turquoise blue on white. Heavy paper sleeve. Logo resembling the Vegetarian Society's "V" but with a sunflower growing out of it. "No animal ingredients. Tempeh and vegetables in a rich red wine and tomato sauce. No artificial additives of any kind. Tempeh is a versatile high protein soya product." A letter adds that the company, a worker's co-operative, sold its first order on 8 Aug. 1991.

2578. **Product Name:** Tempeh in Wine and Lemon Sauce.
Manufacturer's Name: Culture Foods Ltd.
Manufacturer's Address: 4 All Saints Workspaces, 75 Raleigh St., Nottingham NG7 4DL, England. Phone: (0602) 788963.
Date of Introduction: 1991. August.
Wt/Vol., Packaging, Price: 12 oz (340 gm) aluminum foil container with paperboard sleeve. Retails for £1.89.
How Stored: Frozen.
New Product–Documentation: Label sent by Alison J. Clark of Culture Foods Ltd. 1991. Aug. 23. 5.76 by 4.5 inches. Orange and turquoise blue on white. Heavy paper sleeve. Logo resembling the Vegetarian Society's "V" but with a sunflower growing out of it. "No animal ingredients. Tempeh and vegetables in a white wine, lemon and herb sauce. No artificial additives of any kind. Tempeh is a versatile high protein soya product." A letter adds that the company, a worker's co-operative, sold its first order on 8 Aug. 1991.

2579. **Product Name:** Indonesian Style Tempeh.
Manufacturer's Name: Culture Foods Ltd.
Manufacturer's Address: 4 All Saints Workspaces, 75 Raleigh St., Nottingham NG7 4DL, England. Phone: (0602) 788963.
Date of Introduction: 1991. August.
Wt/Vol., Packaging, Price: 12 oz (340 gm) aluminum foil container with paperboard sleeve. Retails for £1.89.
How Stored: Frozen.
New Product–Documentation: Label sent by Alison J. Clark of Culture Foods Ltd. 1991. Aug. 23. 5.76 by 4.5 inches. Orange and turquoise blue on white. Heavy paper sleeve. Logo resembling the Vegetarian Society's "V" but with a sunflower growing out of it. "No animal ingredients. Tempeh and vegetables in a coconut milk and fresh coriander sauce. No artificial additives of any kind. Tempeh is a versatile high protein soya product." A letter adds that the company, a worker's co-operative, sold its first order on 8 Aug. 1991.

2580. Gray, Sylvia Ruth. 1991. Vitamin B-12: A disappearing act? *Gold Mine Gazette* (*San Diego, California*). Summer. p. 1, 6. [5 ref]

• ***Summary:*** Theorizes as to why the vitamin B-12 content of our foods may be decreasing. "In the 1960s, tests using the protozoan *Ochramonas malhamensis* showed B-12 values for beef liver, beef heart, Swiss cheese and chicken breast to be 122, 14.2, 1.71, and 0.5 mcg/100 gm, respectively. Tests in 1989 by the same protozoan and procedure identified no B-12 in any of these foods and only 2.19 mcg/100 gm in "natural" beef heart–little more than one-seventh of the previous value. Similarly in the 1960s, tests using the bacterium *Lactobacillus leichmannii* showed B-12 values for egg yolk and canned tuna to be 9.26 and 2.8 mcg/100 gm. Tests on these same foods by the same bacterium and procedure in 1990 revealed B-12 values of 1.28 and 0.5 mcg/100 gm," respectively.

"Happily a number of foods used in the macrobiotic and vegetarian communities appear superior to their flesh food counterparts. Wakame, kombu, and nori showed B-12 levels above 9 mcg/100 gm, while mekabu and alaria were approximately 2. (Note: Since bacterial synthesis of vitamin B-12 occurs mostly on the sea vegetables' surface, they are weighed dry and tested unwashed. Findings need to be divided by four to obtain mcg/100 gm cooked portion, and consumers should strain and use the rinse water in cooking.) Aside from sea vegetables, one brand of tempeh was above 4 mcg/100 gm of B-12 and three quality misos ranged between 0.74 and 0.16 mcg/100 gm."

Vitamin B-12 was the last of the vitamins to be discovered (in 1948). It can only be produced in nature by bacterial synthesis. Address: Strictly Macrobiotic, 315 First Ave., Salt Lake City, Utah 84103. Phone: 801-521-7936.

2581. **Product Name:** Tempeh: Fermented Soya Beans.
Manufacturer's Name: Magic Tops.
Manufacturer's Address: 16 Manahambre Road, Princes Town, Trinidad, West Indies. Phone: 1-809-655-3230.
Date of Introduction: 1991. August.
Ingredients: Fermented soya beans.
Wt/Vol., Packaging, Price: 454 gm (1 lb) plastic bag.
How Stored: Frozen.
New Product–Documentation: Leaflet sent by Deolal S. and Kamla Ramnarine, joint directors. 1991. Oct. 8. "Enjoy tempeh." This 6-panel leaflet, printed in blue and red on tan paper, contains 4 recipes with illustrations plus information about tempeh (taken from "What is Tempeh?" and "The Book of Tempeh" by Shurtleff and Aoyagi). "Fermented soya beans. Eat right with every bite. Join the soya food revolution as tempeh comes to the Caribbean. Tempeh is super food." In an accompanying letter Deolal notes that he is diversifying his small ice cream business to include tempeh. He is being guided by the Caribbean Industrial Research Institute, St. Augustine, Trinidad. He would like to visit 1-2 tempeh manufacturers, preferably in Florida.

Letter and Label sent by Deolal Ramnarine. 1991. Nov. 21. They have been making and selling tempeh since 28 Aug.

1991. It got off to a slow start until they did more aggressive marketing. "We are now supplying the health shops. We are also in contact with vegetarian groups making presentations on how to use tempeh. The Seventh-day Adventists of Trinidad and Tobago make a variety of crushed soya bean foods which do not contain tofu or tempeh."

Label is 7 by 3 inches printed on the front and back of a 10-by-5-inch plastic bag. Orange, blue, and white. A wreath surrounds a see-through window. "Tempeh is a low-cost, high-quality vegetable protein and an excellent diet food & low in saturated fats. Tempeh is a rich source of vitamin B12. Tempeh also contains other vitamins, minerals and fibre, and essential amino acids. Tempeh is highly digestible, and is suitable for young children and the elderly. Free of cholesterol." On the back of the label are recipes for: General preparation of tempeh (pan fried with seasonings). Stewed tempeh relish. Tempeh (cheese) burger.

2582. McSweeney, Daniel. 1991. Consumer survey 1991. *Whole Foods*. Aug. p. 34-36, 39, 41.
• ***Summary:*** This survey was conducted at 18 natural foods stores throughout the USA. Product purchases. Percentage of respondents who purchased a type of product at a natural foods during the past 12 months: Cheese substitute 28%, meat 34%, miso 34%, sea vegetables 33%, soy milk 51%, soy sauce 36%, tamari 52%, tempeh 33%, tofu 57%, yogurt (dairy) 64%.

2583. Pickarski, Ron. 1991. Friendly foods: Gourmet vegetarian cuisine. Berkeley, California: Ten Speed Press. 277 p. Illust. Index. 23 cm. [23 ref]
• ***Summary:*** This is a stylish vegan cookbook, with a wealth of sophisticated and delectable soyfoods recipes. The author recommends only high-quality ingredients. Brother Ron grew up in Michigan and during high school spent time in the restaurant business flipping hamburgers. Later he became a Franciscan monk (OFM). A look at his own health revealed the need to change his diet. So Brother Ron changed to a natural vegetarian diet and experienced weight loss and renewed energy. Now he considers himself a food missionary–helping people transform their lives through food. Friendly foods are "foods that are friendly to our bodies, our pocket books, our busy schedules, and our environment."

In the section on dairy-like products, the author recommends soy milk and some "tofu ice creams." He recommends use of soy cheeses sparingly since they are high in fats (especially the softer types). He considers nondairy creamers to be a less healthful than their dairy counterparts, since they are high in saturated fats and artificial additives. "Typically, nondairy creamers contain corn syrup solids, partially hydrogenated vegetable oil (including coconut oil, cottonseed oil, palm oil, or palm kernel oil), sodium caseinate, sodium phosphates, mono- and diglycerides, sodium silico aluminate, and artificial color. I do not consider this type of product to be an example of a high-quality food."

Soy-related recipes include: Marinated vegetables with marinated tofu (p. 41). Shish kebabs (with marinated tofu, p. 42). Marinated tofu with scallions (p. 43). Gefilte tofu with horseradish and charoset sauce (p. 49-50). Zucchini bisque (with tofu, p. 66). Tofu wakame salad (p. 82). Tofu cottage cheese (p. 89). Vegan sour cream (with soy milk, p. 90). Soy mayonnaise (with tofu, p. 90). Silken tofu mayonnaise (p. 91). Lemon cream dressing (with tofu, p. 92). Oil-less miso dressing (with soy milk and white miso, p. 96).

In the chapter on entrees, there are detailed descriptions of tofu, tempeh, and seitan. Soysage (with cooked soybeans and soymilk, p. 105). "Meatballs" (with cooked soybeans, p. 107). American loaf (with silken tofu, p. 112-13). Tofu spinach pie (p. 120). Auberge Hanfield pie (with silken tofu, p. 121). Russian vegetable pie (with silken tofu and tofu cottage or ricotta cheese, p. 122). Greek moussaka (with tofu topping, p. 128-9). Sweet and sour tempeh (p. 133). Southern fried tofu (p. 134). Tofu Swiss steak (p. 135). Tempeh stew (p. 136). Thanksgiving day tofu (p. 137). Tofu Jamaican run down stew (p. 138). Tofu paneer (p. 139). Seitan (p. 140-43). Seitan à la Normandie (p. 144). New England boiled dinner (with tofu or seitan, p. 145). Seitan Parmesan (with vegan cheese made with tofu, p. 147-48). San Francisco stir-fry (with seitan or tofu, p. 151). Berner platte (with protein accompaniments made with tofu and Soysage, p. 155-56). Vegan Béarnaise sauce (with silken tofu, p. 161). Miso sauce (p. 164-65). Tahini lemon sauce (with silken tofu, p. 165). Steamed kale with lemon miso sauce (p. 176).

In the dessert section, there is mention to tofu chocolate as an alternative to chocolate. Carob cake (with tofu chocolate, p. 217). Chocolate cream couscous cake (with filling made with silken tofu, p. 220). Silken tofu chocolate "cheesecake" (p. 221). Key lime shamrock torte (with silken tofu, p. 222). Raspberry sabayon sauce (with silken tofu, p. 232). Tofu chocolate "buttercream" icing (p. 234). Tofu chocolate ganache (p. 234-35). Mocha grain coffee (with any grain coffee substitute, cocoa, brown rice syrup, and soy milk, p. 238). Christmas soy nog (with soy milk and lecithin granules, p. 238).

The last section of the book, titled "The Culinary Olympics," gives recipes that Brother Ron prepared while competing in these Olympics, starting in 1978. These Olympics are held every four years at Frankfurt, Germany, by the International Cooks Society. The American Culinary Federation is the U.S. organization that promotes the competition. "In 1978 I won a gold medal in the national competition, which qualified me to compete in the 1980 Culinary Olympics. In 1980 I founded the American natural foods team and, with this team, international competition to gain widespread competition for vegetarian cuisine. In that year, I became the first professional vegetarian chef to compete in the Olympics and win a medal for totally

vegetarian foods. I also competed in 1984 and 1988... My team won bronze and silver medals in all three years that we entered the competition." Soy-related recipes dominate this section, and include: Baked tofu pâtés (spinach, tarragon, or carrot, p. 241-42; won a bronze medal in 1984). Tofu and sea vegetable quenelles (beet, spinach, or carrot, p. 243-45; won a silver medal in 1988). New York cima roll (with tofu, p. 248-49; won a silver medal in 1988). Tofu seitan Wellington (p. 250-51; won a bronze medal in 1984). Vegan London broil (with seitan, miso, and tamari, p. 251-52; won a bronze medal in 1984). Southern blackened tempeh with tomato-apricot-ginger coulis (p. 253-54; won a silver medal in 1988). Carrot cream in squash shell (with soy milk and tofu, p. 255-56; won a silver medal in 1988). Chocolate squash confection (with Tofu Chocolate Ganache, p. 259-60; won a silver medal in 1988). Address: O.F.M., St. Anthony's Shrine.

2584. Shama, Gilbert; Hall, George M. 1991. Tempeh foods. *European Food and Drink Review* (*UK*). Summer. p. 27-28, 31. [12 ref]
• ***Summary:*** The authors propose the following definition to cover all the different kinds of tempeh: "Tempeh results from the overgrowth by moulds, predominantly those belonging to the genus *Rhizopus,* of hydrated and partially cooked plant materials which have first undergone a primary bacterial fermentation." The plant materials are generally legumes, especially soybeans, however other plant sources, such as coconut press cake, also yield acceptable results. Molds of the genus *Mucor* may play a secondary role in the tempeh fermentation. Other legumes traditionally used to make tempeh in Indonesia are the winged bean, velvet bean, jack bean, pigeon pea, and lamtoro seed.

The authors describe the process for making tempeh, its biochemical aspects, and its future potential. They are evaluating 11 different legumes for their suitability in making tempeh. Address: Lecturers in Biotechnology and Food Engineering, Dep. of Chemical Engineering, Univ. of Loughborough, UK.

2585. Stepaniak, Joanne; Hecker, Kathy. 1991. Ecological cooking: Recipes to save the planet. Mobilization for Animals, Pennsylvania, Inc., P.O. Box 99762, Pittsburg, PA 15233. 228 p. Index. 23 cm.
• ***Summary:*** This vegan cookbook contains 500 recipes, including many using tofu, tempeh, miso, and soymilk. Almost all the recipes are uncomplicated, and the directions are short and simple to follow. Many can be prepared quickly. Sales and proceeds benefit Mobilization for Animals. Reviewed by Debra Wasserman in *Vegetarian Times* (May 1992, p. 97).

Note: The author self-published this book for a while, then the Book Publishing Co. in Summertown, Tennessee, became the publisher. Address: Pittsburg, Pennsylvania. Phone: 412-232-5106.

2586. Fujio, Yûsaku. 1991. Tenpe no kaori to kinshu [The flavor of tempeh, and tempeh starter]. *Toyo Shinpo* (*Soyfoods News*). Sept. 1. p. 8. [Jap]
Address: Kyushu Univ., Nôgaku-bu.

2587. *Toyo Shinpo* (*Soyfoods News*).1991. Jimukyoku ga henkô: Tenpe kenkyû-kai [The Tempeh Study Group has moved to new headquarters]. Sept. 1. p. 1. [Jap]

2588. Spear, Bill. 1991. Soyfoods in Yugoslavia (Interview). *SoyaScan Notes.* Sept. 7. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Bill just returned from a 1-week macrobiotic summer camp at Kumrovec, Croatia, Yugoslavia; 75 people plus staff attended–during the current civil war. Last year he attended the same event, along with 600 other people. There are presently an estimated 5,000 to 10,000 macrobiotic people in Croatia. The major activity is in Zagreb. Croatia has most of the money and industrial productivity in Yugoslavia and that is a major reason that Croatians want independence. The Serbians are a relatively poor majority.

There are two commercial and at least three home-based soyfoods manufacturers in former Yugoslavia. The best contact is Ivan Jugovac (about 40 years old), owner of Anyo located at Skolska Ulica 43A, 51215 Kastav (near Rijeka), Croatia, Yugoslavia. Ivan knows the names of the other soyfoods companies in Yugoslavia and is part of a loosely-knit soycrafters network there. Anyo, which started about 2-3 years ago, makes 250-300 kg/week of tofu (100 kg/day in 4 or 5 batches) and 150-200 kg/week of seitan. From the tofu they also make smoked tofu, grilled tofu, deep-fried tofu, and tofu spread (with okara). The tofu is made in a 100-liter steam jacketed kettle and the nigari is imported from Japan. Their soybeans (which are not organically grown) come from Becej (pronounced BECH-ay) in Serbia, Yugoslavia. The business is doing well. Ivan makes natto for his personal use. He wants to start making miso and amazake commercially, and is looking for sources of koji and koji starter.

A second soyfoods shop in Belgrade, Serbia (name, address, and contact person unknown) makes tofu, seitan, and tempeh on about the same scale as Anyo. It probably started at about the same time as Anyo. There are 1-2 small tofu shops in Zagreb, and one in Novi Sad, Serbia; in each, the tofu is made in a home kitchen. In Slovenia, a tofu company that will be the largest in Yugoslavia is nearly ready to begin operation in Slovenia, but the current civil war has delayed their opening. They plan to make 100 kg/day of tofu.

The man who knows the most about soyfoods in Yugoslavia is Zlatko Pejic, a peace activist who is president of the Society for the Improvement of the Quality of Life and head of the macrobiotic community in Zagreb. His wife is a cooking teacher. He invited Bill to Yugoslavia, has been to

the USA, and lectures throughout Yugoslavia. He has visited most of the soyfoods companies in Yugoslavia, has a fax, and like Ivan speaks pretty good English.

Basically all of the interest in soyfoods in Yugoslavia grew out of macrobiotics. Several of the people who started companies attended the Kushi Institute in London. Two years ago, others attended the International Macrobiotic Institute in Kiental, Switzerland. In both places there are classes in soyfoods production (miso, tempeh, tofu, etc.) taught by various macrobiotic teachers such as Roberto Marrocchesi. Most companies have some books from Soyfoods Center. Bill is still actively affiliated with The Bridge in Connecticut and is a teacher of macrobiotics. Address: North Road, Bantam, Connecticut 06750. Phone: 203-567-0554.

2589. Koba, Hisayo. 1991. Tenpe no chôri to shikôsei [Tempeh cookery and taste]. *Toyo Shinpo* (*Soyfoods News*). Sept. 11. p. 9. [Jap]
Address: Kassui Joshi Tanki Daigaku, Japan.

2590. Matsuoka, Asao. 1991. Tenpe no kôhen'i gensei ni tsuite [On cancer-preventing substances in tempeh]. *Toyo Shinpo* (*Soyfoods News*). Sept. 11. p. 9. [Jap]
Address: Kassui Joshi Tanki Daigaku, Japan.

2591. *Toyo Shinpo* (*Soyfoods News*).1991. Tenpe kenkyû shukai (Heisei sannendo daiikkai) kôen yôshi [Summary of lectures from the Tempeh Study Group Meeting (First meeting of 1991)]. Sept. 11. p. 9. [Jap]

2592. Cohen, Michael. 1991. Early work with soyfoods, The Farm, Laughing Grasshopper, New England Soy Dairy, and The Tempeh Works (Interview). *SoyaScan Notes.* Sept. 17. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Michael's interest in soyfoods began in about 1971-72 when he became a vegetarian, while living communally with friends in Boston. He was interested in Eastern religions and philosophies, Ram Dass, Be Here Now, Hatha Yoga, etc. He probably tasted a little tofu at this time.

In early 1972, Michael took a trip to California, first met Stephen Gaskin, and got introduced to Stephen's Monday Night Class–a week before Stephen's community left (on 10 Feb. 1971) for Tennessee to buy the land that in Sept. 1971 would become The Farm. Michael returned to Boston and worked for the next 9 months to save money. In 1973 he left the USA for a year to travel on an undirected personal spiritual adventure to India, Israel, and the Middle East. While he was in India, various people in Boston with whom he was living communally got more closely involved with The Farm in Tennessee.

In the summer of 1974 Michael moved from Boston to Amherst, Massachusetts, where he got involved in a vegetarian, natural foods restaurant named Equinox. It was a 4-person partnership founded by Judy Roberts (who later married Tom Timmins); Michael was their first employee. Eventually he became a partner. The main dishes in this small natural foods luncheonette were soups, sandwiches, and salads. They occasionally prepared a soy burger from soybeans or a stir-fry tofu dinner entree. Michael worked there for about a year until there were 6-7 partners, then he and his girlfriend (Shelley Moore, who was also working there and was to become his first wife) decided (as did Judy Roberts) to leave. The restaurant soon moved into very large quarters, took on large debts, and eventually went bankrupt.

Michael and Shelley (who was from Memphis, Tennessee) left for a short tour of the southeastern United States. For most of the next 2 years he lived on The Farm in three different locations. Starting in late 1974 he and Shelley lived for 7 months on the 40-acre Virginia Farm, a satellite of the Tennessee Farm in Louisa, Virginia. During that time Michael and Shelley were married. Soybeans were grown along with vegetables and corn on this farm, and the women made soymilk in the kitchen at least twice a week and (as a treat) tofu and/or soyburgers (from mashed soybeans) every week or two. All meals were strictly vegetarian, with no dairy products or eggs. Soymilk was a staple in the diet.

Then they moved to Brattleboro, Vermont, and lived for 1-2 months with Tom and Judy Timmins in their home. Tom was working for Llama, Toucan & Crow, a worker-owned natural foods distributor. Michael then got a job working for Llama. About 6 months later, Llama (which was not making it financially) sold out to their current owner, Barclay McFadden of Stow Mills. At the time of the sale, Tom left Llama and went into partnership with Ira Leviton and Kathy Whelan in the Laughing Grasshopper Tofu Shop.

By this time Michael and Shelley had become much more interested in tofu; they were eating it frequently, had gotten a copy of *The Book of Tofu* by Shurtleff and Aoyagi, and were thinking/dreaming about starting their own small tofu plant in Brattleboro–40 miles from Laughing Grasshopper Millers Falls. Tom Timmins convinced Michael to become a partner in Laughing Grasshopper rather than becoming a nearby competitor. So Tom left Llama, made a couple of runs into Boston driving the Laughing Grasshopper van to distribute the tofu and feel out the company, and in Feb. 1977 paid $2,000 to $2,500 to became a partner in Laughing Grasshopper. He did mostly production, but also delivered tofu to Boston and went to stores to try to pick up new accounts. Tom was more the "numbers person" and Ira fancied himself to be "the tofu master." It all worked pretty well. The company had only one product–nigari tofu. Michael does not recall them making or distributing any tofu pies or cheesecakes.

During this period, from early spring until June, Michael and his family lived on a local satellite of The Farm in Montague, Massachusetts, next to Millers Falls.

In Nov. 1977 Laughing Grasshopper moved to Greenfield and changed its name to New England Soy Dairy.

At that time Steve Hassell was brought in as a controlling partner; he invested $40,000 in the company–money which the company needed and did not feel it could obtain from a bank. On 20 November 1976 Michael and Shelley had their first child. Ira told Michael, "I just hope you have your child on a Saturday so that it doesn't interfere with work."

Shortly after the move to Greenfield, before the company got back into tofu production, Michael decided to take a temporary leave of absence from the company, in part because he and Shelley decided they wanted to have their second child (soon to be born) on The Farm in Summertown, Tennessee. Michael left in June 1978 and Joshua was born in September. They stayed on The Farm until Nov. 1978. After living in Summertown for several weeks Michael and Shelley (as was the custom) donated all of their savings (about $5,000) to The Farm–permanently.

On The Farm, because of his experience at Laughing Grasshopper, Michael was considered to be a fairly knowledgeable soy person, so he went to work in the soy dairy, where the main product was soymilk (fortified with vitamin B-12 and usually sweetened with sugar); a little tofu was made occasionally. After Michael arrived, the soy dairy started making much more tofu for the 1,850 Farm residents. Typically they now made tofu twice a week, and 500 pounds each time. The people loved it. No single person in the Soy Dairy was particularly knowledgeable in making soyfoods; it was run by a rotating crew. Tempeh was made in a separate building, the Lab, by Cynthia Bates and Alexander Lyon. Michael had first learned of tempeh when he, Ira, and Tom had visited Dr. Keith Steinkraus at Cornell Univ. But at The Farm he first had a chance to taste it ("It knocked my socks off"); unfortunately, he never had a chance to make tempeh on The Farm. Michael found the experience at The Farm, with its many equipment breakdowns, extreme poverty, and wasted time to be very frustrating; he was used to running a business efficiently.

After 5-6 months, in Nov. 1978, Michael and his family left The Farm–penniless. Returning to live briefly at the Montague Farm and work at New England Soy Dairy, he found that there was no solid position for him, so he was put in a temporary R&D position. But after a month or two, the Soy Dairy no longer felt like the place he wanted to live and work. Fortunately in Jan. 1979, Michael's father offered to lend him $30,000 to start his own business. A year earlier, Bernie Cohen at the Montague Farm had invited Michael to join in starting a tempeh business, but Michael declined saying, "It will never fly." But this time, within a few weeks, Michael decided to establish The Tempeh Works. The Soy Dairy partners were supportive of Michael's leaving, especially since they planned to focus on dairylike products and no longer planned to make tempeh. In March of 1979 Michael rented a space for the business in Greenfield and he made his first batch of tempeh there in July it was served at the annual Soycrafters Convention in Amherst. The company began regular production in September 1979. The Tempeh Works was America's first Caucasian-run company to make only tempeh in a commercial building. Address: President, Lightlife Foods Inc., P.O. Box 870, Greenfield, Massachusetts 01302. Phone: 413-774-6001.

2593. Cohen, Michael. 1991. Recent developments at Lightlife Foods (Interview). *SoyaScan Notes.* Sept. 17. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Since it began making soy tempeh as The Tempeh Works in 1979, Lightlife Foods has evolved into a company that each year receives about half its income from tempeh and half from tofu. At the peak of hot dog season, 65-70% of sales may come from Tofu Pups and other tofu-based products. In response to tempeh burgers and 5-grain tempeh air-freighted in from California, The Tempeh Works launched 3-Grain Tempeh in May 1982, New England Tempeh Burgers in July 1982, and a line of early Tempté spreads in early 1984. Based on projected growth in sales, the company borrowed $250,000–a large amount for relatively small company. They moved into a new building in the summer of 1984, and actually purchased it in the summer of 1985. This is the building they are located in now.

With new large payments of interest and principal, the company experienced increase competition from other tempeh companies (Appropriate Foods, Soyfoods Unlimited) plus a slowing in growth of the total tempeh market. To try survive with minimal capital investment, Michael proposed to Bob Davis of Light Foods that The Tempeh Works serve as a master distributor of Bob's Light Links (a tofu hot dog made in Sacramento, California, and shipped frozen to Massachusetts). Michael sent the Light Links to his distributors along with orders for his tempeh products. Soon problems developed. First, Light Links contained eggs and Michael was getting many requests for eggless tofu hot dogs. Second, in the peak summer season, many of Michael's orders for Light Links were either not fulfilled or delayed 2-3 weeks; this created a bad relationship for him and the accounts that carried his tempeh. Third, Light Foods did very little promotion of its Light Links by offering discounts, whereas Tempeh Works did lots of discounting–creating more problems with retailers or even lower margins for Michael on the Light Links. In addition, as soon as Michael started to sell a lot of tofu hot dogs and realized what low margins he was earning, he started to think about making such a product himself. One day Tom Timmins of New England Soy Dairy (a large local tofu maker) and Michael sat down at Tom's kitchen table and worked out a plan for Tempeh Works making their own tofu hot dog. But since he had no money to buy equipment, Michael then went to the National Rural Development and Finance Corp., a federally-funded economic development organization in Washington, DC. They had picked Massachusetts as one of their 4 demonstration states. Michael got a loan for $50,000

based on a plan to build the tofu hot dog to a point where he could carry the debt of increasing the size of their plant buying their own equipment. The plan went like clockwork. Lightlife Meatless Tofu Pups were launched in Sept. 1985. For the first 2-2½ years, they were co-packed at a plant about one hour away, then they were made entirely in-house. On 14 Oct. 1987, reflecting the new diversification, the name of The Tempeh Works was changed to Lightlife Foods, Inc. After a year's work, Michael pulled together a $750,000 loan package in May 1988, rolling his former $250,000 loan into it. Today the company is in good shape.

Today, the company's best tempeh products are: (1) The 3-product line of tempeh grills (marinated tempeh burgers, in American, lemon, and barbecue flavors); the three outsell soy tempeh two-to-one. The 18-burger institutional packs, 3 packs per case, also sells very well to natural foods restaurants, retail stores with a lunch counter, and colleges. (2) Soy tempeh (both in a retail and institutional sizes). Many colleges use it in a stir fry, stroganoff, breaded cutlets with mushroom gravy, etc. During the last year Lightlife has had a full-time sales person developing the institutional market. (3) Fakin' Bacon. In addition, Lightlife has just picked up its first airline account. People like tempeh but its unsightliness (mold on the surface) is a big barrier. So second-generation tempeh products are the answer to this problem.

Of Lightlife's tofu products, Tofu Pups are by far the best-seller. They are a "mega-product" for the company. The next best seller is Lean Links Italian, then Foney Baloney.

Looking at the company as a whole, it is in great shape. The past year "has been an absolutely superb year for us." Sales are rising every month and the future looks bright. The big gambles that Michael has taken with large loans have really paid off. The company is now well organized and tight at all levels, especially the core group of around 8 people. "We run a tight ship and we don't spend a dime that is not going to make us money. We're careful. We've taken it slow. One big mistake was taking on a frozen natural cookie dough, totally outside the company's field. We almost lost our shirts on it in a big way. We're committed to bringing out 3-4 new products a year. We're also realizing that the natural foods business is a good one. We're not as interested as we once were in banging our heads against a wall trying to get into supermarkets. If they want us, we're glad to go in, but we're not going to pay them $5,000 to $10,000 per product to get in."

Looking at the next 5 years, the growth appears to lie in prepared (second-generation) products, both in the retail and institutional markets. Address: President, Lightlife Foods Inc., P.O. Box 870, Greenfield, Massachusetts 01302. Phone: 413-774-6001.

2594. Koba, Hisayo. 1991. Tenpe no chôri to shikôsei [Tempeh cookery: Its taste and acceptance]. *Daizu Geppo* (*Soybean Monthly News*). Aug/Sept. p. 24-33. [Jap] Address: Prof., Ikemizu / Kassui Joshi Tanki Daigaku [Women's Junior College].

2595. Lappé, Frances Moore. 1991. Diet for a small planet. Twentieth anniversary edition. New York, NY: Ballantine Books. xliii + 479 p. Illust. by Marika Hahn. Index. 21 cm. [250* ref]
• ***Summary:*** This edition of this classic book contains a new 29-page introductory chapter titled *"Diet for a Small Planet* Twenty Years Later–An Extraordinary Time to be Alive," plus minor revisions in the text. "In 1971, I–an intense 26-year-old in search of herself–sat long hours in the U.C. Berkeley library uncovering facts about the global food supply that turned my world upside down... what was heresy, what was 'fringe,' when I wrote *Diet for a Small Planet* just twenty years ago is now common knowledge. Then the notion that human beings could do well without meat was heretical." Address: Inst. for the Arts of Democracy, 36 Eucalyptus Lane, Suite 100, San Rafael, California 94901. Phone: 415-453-3333.

2596. **Product Name:** Chia's Chili (Meatless; With Tempeh).
Manufacturer's Name: Lightlife Foods, Inc.
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01302. Phone: 413-774-6001.
Date of Introduction: 1991. September.
Wt/Vol., Packaging, Price: 13 oz deli container.
How Stored: Refrigerated, 60 day shelf life.
New Product–Documentation: Talk with Michael Cohen. 1991. Sept. 17. This was introduced last week at the NFM trade show in Baltimore, Maryland. Ad and Spot in Natural Foods Merchandiser. 1992. Feb. p. 24 and 38. Ad is titled "Chill out and get sloppy." "Lightlife introduces two great new heat & eat vegetarian entrees: Chia's Chili and Classic Sloppy J. Flavor too fresh to find in a can."

2597. **Product Name:** Classic Sloppy J. (Meatless; With Tempeh).
Manufacturer's Name: Lightlife Foods, Inc.
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01302. Phone: 413-774-6001.
Date of Introduction: 1991. September.
Wt/Vol., Packaging, Price: 13 oz plastic deli container.
How Stored: Refrigerated, 60 day shelf life.
New Product–Documentation: Talk with Michael Cohen. 1991. Sept. 17. This version of Tempeh Sloppy Joe was introduced last week at the NFM trade show in Baltimore, Maryland. Ad and Spot in Natural Foods Merchandiser. 1992. Feb. p. 24 and 38. Ad is titled "Chill out and get sloppy." "Lightlife introduces two great new heat & eat vegetarian entrees: Chia's Chili and Classic Sloppy J. Flavor too fresh to find in a can."

2598. Nishimoto, Miyoko. 1991. The now and Zen epicure: Gourmet cuisine for the enlightened palate. Summertown, Tennessee: The Book Publishing Co. 250 p. Color photos. Index. 24 x 21 cm.
• ***Summary:*** This is a gorgeous, delightful vegan cookbook (though it uses honey), loaded with color photos. Most recipes, designed for entertaining, embody an atmosphere of elegance with a sense of fun, capturing the best of traditional European cuisine, offering gourmet recipes with an element of Japanese style, simplicity, and flavor. Each recipe is accompanied by a nutritional analysis, and most are remarkably low in fat.

The author is founder and owner of the Now & Zen Bakery (1838 Golden Gate Ave., San Francisco, CA 94115) which is well known for its tofu cheesecakes and other delights, and which sells dried okara. She is also a jazz vocalist and vegetarian chef. Born in Japan to a Japanese mother and an American father, she moved to Mill Valley, California, with her parents when she was age 7 and became a vegetarian at age 12. A photo on the rear cover shows Miyoko Nishimoto. She shows great virtuosity in the use of soyfoods–and wheat gluten. The section on ingredients contains excellent, detailed information on miso, nut milks and creams (almond milk and cashew milk, which the author prefers for some uses to soymilk), agar, okara, soy milk and soy cream, soy sauce, soy sour cream, soy yogurt, tamari, tempeh, tofu, frozen tofu, and pressed tofu.

Soy-related recipes include: Tofu "cheese" (p. 32). Tofu "boursin" or herb-garlic cheese ball (p. 33). Tofu "feta" cheese (p. 35). Tofu cream cheese spread with herbs (p. 36). Eggplant and tofu pâté (p. 51). Smoked tofu, mushroom, and garlic canapés (p. 53). Tofu "mornay" sauce (p. 65). Tofu aïoli (p. 82). An introduction to quick and tasty tofu cream soups is given on p. 108. Each of the following cream soups contain tofu. Cream of pumpkin soup (p. 109). Cream of corn soup (p. 110). Cream of green pea soup (p. 111).

Mediterranean eggplant and tofu gratin (p. 115). Tofu burgers suprême (p. 118). Creamy tempeh curry (p. 119). Tempeh mexicali (p. 121). Sweet and sour tofu (p. 122-23). Whole cabbage with hearty tempeh stuffing (p. 124-25). Herbed soybean casserole or stew (p. 132). Savory tempeh and vegetable stew (p. 134-35). Tofu bourguignon (p. 138-39). Homemade tofu pasta (p. 142-43). Ginger tempeh with green peppers (p. 145). Homemade gluten, Tempeh and gluten burgers, and the Great gluten turkey with dressing (p. 150-160). Tempura tofu (p. 163). Marinated tofu (p. 164). Smoky marinated tofu (p. 165). Believable bacon (with tofu, p. 166). Beans and "bacon" casserole (with tofu, p. 167). Orange-soy dressing (p. 177). Tofu sour cream (p. 179). Tofu mayonnaise (p. 180). Tofu thousand island dressing (p. 182). Tropical coconut banana ice cream or sauce (with tofu, p. 212). A different pumpkin ice cream (with tofu, p. 213). Italian cheese-less cake (with tofu, p. 216). Cashew cheesecake (with tofu, p. 217). Tofu crème (p. 218).

For a lengthy and very positive review of this book by Carol Flinders, see *Vegetarian Times* Nov. 1991, p. 86-87. Address: San Francisco, California.

2599. Njoku, H.O.; Ofuya, C.O.; Ogbulie, J.N. 1991. Production of tempeh from the African yam bean (*Sphenostylis stenocarpa* Hams). *Food Microbiology* 8(3):209-14. Sept. [32 ref]
• ***Summary:*** A tempeh-like product was produced from the African yam bean by fermentation with *Rhizopus microsporus* var. oligosporus. The African yam bean contains 21-29% protein, and its lysine and methionine levels are comparable to those of the soybean. The resulting tempeh was found to be organoleptically acceptable. It was used as the filling for a pie. The fermentation caused significant changes in the crude protein and total carbohydrate content of the bean seeds. Address: Dep. of Microbiology, Food and Industrial Microbiology Div., Univ. of Port Harcourt, PMB 5323, Port Harcourt, Nigeria.

2600. Gilbert, Linda C.; Starr, Sara M. 1991. Natural foods companies broaden their horizons: Organic, vegetarian, convenience dominate industry. *Food Business* 4(20):44. Oct. 21.
• ***Summary:*** Discusses these three industry trends, plus San-J International, White Wave, and Lightlife Foods.

San-J will be introducing its OCIA organic certified tamari gold label in November. The 10-ounce product will sell for the same price as its non-organic counterpart. "While the majority of White Wave's $3 million sales still come from tofu, tempeh products reportedly are not far behind. The company says it is growing at about 30 percent annually, and its first and second generation tempeh products are achieving more than 100 percent growth. White Wave's latest offering is a soy yogurt product called Dairyless that is made with live active yogurt cultures, including acidophilus and bifidus. Lightlife Foods, another major soy foods company, has redesigned its logo and added two new products, a vegetarian chili and a sloppy joe mix, both made with tempeh." Address: 1. President; 2. Vice president. Both: HealthFocus Inc., Emmaus, Pennsylvania. Phone: (215) 967-2233.

2601. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Jiangdou Nutritive Food Factory.
Manufacturer's Address: Jongdou, Jongdou County, Jiangsu Province, China.
Date of Introduction: 1991. October.
New Product–Documentation: Letter from Dong Min-sheng, Dept. of Food Science, Nanjing Agricultural University, Nanjing, Jiangsu Province, China. 1992. April 24. "The first tempeh factory in China, Jiangdou Nutritive Food Factory, is located in Jongdou, Jongdou County,

Jiangsu Province, China. It first started to sell tempeh in Oct. 1991. Production capacity is 1,000 kg/week." Mr. Dong, who conducted the first research on tempeh in China, played a key role in the establishment of this tempeh factory.

2602. **Product Name:** [Tempast {Vegetarian Tempeh Spread}].
Foreign Name: Tempast.
Manufacturer's Name: Lima Foods (Marketer).
Manufacturer's Address: Edgar Gevaertdreef 10, B-9830 Sint-Martens-Latem, Belgium.
Date of Introduction: 1991. October.
Ingredients: Water, tempeh*, sunflower seeds*, whole meal bread*, sunflower oil*, miso, free range eggs, onion*, pumpkin*, dulse (seaweed), ume [plum] vinegar, sea-salt, herbs. * = Organically grown.
Wt/Vol., Packaging, Price: 150 gm glass jar. Retails for DM 6.70 (10/91, Bremen, Germany).
How Stored: Shelf stable; refrigerate after opening.
New Product–Documentation: Label sent by Anthony Marrese of Bremen, Germany. 1991. Oct. 7. 9.25 by 1 inches. Paper. Black on light orange. Color photo of the spread on a slice of bread, topped with a slice of radish and cucumber. CINAB organic certification symbol. Nature et Progres organic certification symbol. Ingredients are listed in Dutch, French, German, and English.

2603. **Product Name:** Organic Tempeh (Frozen).
Manufacturer's Name: Tempeh Foods.
Manufacturer's Address: Felin Geri, Cwm Cou, Newcastle Emlyn, Dyfed, SA38 9PA, Wales, UK. Phone: 0239 87 891.
Date of Introduction: 1991. October.
Ingredients: Organically grown soya beans, Rhizopus oligosporus (tempeh culture).
Wt/Vol., Packaging, Price: 8 oz 227 gm.
How Stored: Frozen.
Nutrition: Per 100 gm (3.5 oz). Calories 165, Protein 18.3%, fat 10.2%, carbohydrates (incl. fiber) 9.4%, calcium 145 mg, phosphorus 240 mg, iron 5 mg, vitamin B-1 0.28 mg, vitamin B-2 0.65 mg, niacin 2.52 mg.
New Product–Documentation: Talk with (call from), followed by a letter and Label, from Tom Wells, now a partner / owner with Louise Tonkin of Tempeh Foods in West Wales. 1992. June 26 and July 22. The company has changed hands. The former owners were Graham Lanman and Jennie Greenhalgh, but they stopped making tempeh several years ago. Tom and Louise started production in Wales in Oct. 1991, after their move from London, where they acquired the name and equipment of Tempeh Foods from an acquaintance of Graham and Jenny who had been interested in setting up on his own account but never really got going. Tom and Louise currently produce only one product, soy tempeh, which is sold only in Wales at wholefood shops. They plan to purchase an old unused schoolhouse, which will serve as both a residence and tempeh shop. That address, which will probably be active by late 1992 will be: Yr Hen Ysgol, Abercych, Boncath, Dyfed, Wales/Cymru, UK SA37 OEX. Phone: 0239-87891.

Label. 4.75 by 4 inches. Green and yellow on white. Front and back self-adhesive labels attach to a plastic bag. "A natural soya delicacy. No preservatives. No cholesterol. Gluten free. High protein. A natural soya delicacy. Delicious easy to use sliced or diced, can be fried, boiled or steamed. A versatile and nutritious food." Below a V-shaped logo: "Approved by the Vegetarian Society." On the back panel are recipes for and illustrations (line drawings) of a Tempeh Burger, Crispy tempeh slices, and Tempeh Pate. "Any grey/black spots are the natural result of the culture forming its seeds which enhance the flavour of the Tempeh, much like the blue veins in some cheeses."

2604. Tribe, Sushila. 1991. Tofu and other soyfoods in Greece (Interview). *SoyaScan Notes.* Nov. 21. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Tofu is no longer available in Athens. Until recently there was a man who made tofu at home in Athens and sold it only at the Alpha-Beta supermarket. People would line up to buy it. He only made about 10 kg a week. But he died several years ago. Sushila would like to start a tofu company in Athens. She knows an investor who is willing to put up money, perhaps as much as $500,000. She wants to make organic tofu, ready-to-eat tofu products, and maybe tempeh. Address: Thoukididou #50, Alimos 17455, Athens, Greece. Phone: 1-98-45-894.

2605. Baumber, Derek. 1991. New developments with tofu and tempeh in New Zealand (Interview). *SoyaScan Notes.* Nov. 24. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Recently 2 new Chinese-run tofu shops have begun operation in Auckland, and a third has purchased a large, automated tofu-making machine for $100,000 and will soon start production. Their tofu is lower priced than that of Bean Supreme, which is New Zealand's largest tofu maker. Bean Supreme also makes an excellent soy ice cream, as well as tempeh (though they no longer advertise the latter). At least one of the Chinese companies is buying tempeh from Bean Supreme and selling it under their own label.

Derek has been making tempeh on a small scale for himself and friends for the past 4-5 years. He plans to start commercial tempeh production soon. After that, he would like to make a soy yogurt. Address: Choice of Foods, 334 Mt. Albert Rd., Mt. Roskill, Auckland, New Zealand. Phone: 629-0665.

2606. Van Gessel, Ike. 1991. Tofu and tempeh in the Netherlands (Interview). *SoyaScan Notes.* Nov. 24. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** Van Dappern Tempeh Co., which started in Rotterdam in 1969 and is now located in Kerkrade, owned and run by Robert van Dappern, changed its name to Tempé Produkten B.V. (Tempeh Products Inc.) in April 1983. The company now makes only two products: Soy tempeh and regular tofu. They started to make tofu in June 1985, shortly after they changed the company name. They are still by far the largest tempeh manufacturer in the Netherlands. The only other tempeh companies are very small. But the interesting news is that they are now also the largest tofu manufacturer in the Netherlands, producing 10,000 cakes/week of tofu. Their tofu plant is totally automated; they developed a machine based on the design of one that is made in Japan, but better than it. Next year, Tempeh Products expects its tofu production to double because of a major contract they have with Albert Heijn, a very large food store chain in the Netherlands; that is where they now sell most of their tofu. Heijn also owns several stores in the USA. Heuschen-Schrouff B.V., located in Landgraaf (several blocks from where Ike lives) used to be the largest tofu manufacturer in the Netherlands, but about 1 year ago they started to have some managements problems, and now they make only about 5,000 to 6,000 cakes/week of tofu. Heuschen-Schrouff is now the second largest tofu manufacturer in the Netherlands (all the other tofu makers are very small) but Heuschen-Schrouff may still be the largest company in the Netherlands selling Asian food products.

Ike's wife is Robert van Dappern's sister. Ike works as a quality manager for a steel company in the Netherlands. He was born in Indonesia; his mother is Dutch and his father Japanese. Address: Dr. Calsstraat 50, 6372 AB Landgraaf, Netherlands. Phone: 045-319-422.

2607. Morell, Tania; Schultz, J.J. 1991. Harmonium Foods tempeh report: Prepared for Armand Asher, owner Harmonium Foods. Ithaca, New York. 66 + 15 p. Nov. 26. Unpublished manuscript. No index. 28 cm. [2 ref]
• ***Summary:*** This report was prepared for Armand Asher (owner, Harmonium Foods, 117 Auburn Ave., Ithaca, New York 14850), who wanted to start a tempeh company in Ithaca. The consumer study was conducted at the Greenstar Co-op, which subsequently burned down, but re-opened in Oct. 1992. The conclusion of the study was that the market for fresh tempeh in Ithaca was too small to support a tempeh shop, but that production of consumer ready tempeh products might support a small shop. Contents:
I: The counseling report (p. 1-19). Executive summary. Introduction: Purpose, scope, and limitations, sources and methods, report organization. The small market for plain tempeh: Taste of plain tempeh unappealing to consumers, usage of plain tempeh confusing to consumers. Wave of the future–Consumer ready products: Two consumer ready products, consumer ready tempeh had higher financial return over fresh tempeh. Financial analysis: Producing only the fresh tempeh for retail, producing and selling a consumer ready product, purchasing the tempeh and then producing a consumer ready product. Conclusions and recommendations.

II: The supplementary materials (p. 20-43). Contents. Marketing information (75 lb/week of tempeh is sold in Ithaca; the main retailer is Greenstar Food Co-op at 30 lb/week). Financial analysis information.

IIA: Handwritten information. Copy of original business plan. Actual consumer survey.

III: The original proposal. Executive summary. Business highlights. Proposal. Consultant skills. Appendix A: Marketing. Appendix B: Kitchen. References & sources.

A bar chart (Part II, p. 23) shows why consumers do not purchase tempeh: It has no taste 9. Do not know what to do with it 6. High cost 3. It has a strange appearance as a fungus 2. It takes too much time to prepare 1.

A bar chart on page 22 shows that 85% of the consumers polled were tofu users, 45% were tempeh users, 45% would purchase locally made tempeh over the brand they currently purchase, 20% have purchased consumer ready tempeh products (burgers, bacon, etc.). Address: 19A Gaslight Village Apt., Ithaca, New York 14850. Phone: 607-257-8438.

2608. Fujimoto, Toshio. 1991. Nattô wa onshû o koete: Zen sekai ni nattô o haken shiyô [Natto transcends love and hate: Let's send natto throughout the whole world]. *Daizu Geppo* (*Soybean Monthly News*). Oct/Nov. p. 21-25. [Jap]
• ***Summary:*** Page 25 contains a sidebar announcing the Tempeh Research Society's Fukuyama Forum. Address: Chikyû Nattô Kurabu, Daihyo [World Natto Club, Representative].

2609. **Product Name:** [Tofu, Tempeh, and Natto].
Manufacturer's Name: La Buona Terra.
Manufacturer's Address: Corso Buenos Aires 36, 16129 Genoa (Genova), GE, Italy. Phone: 010/313241.
Date of Introduction: 1991. November.
New Product–Documentation: Letter from Gianni Viglino (Via Mignone, 1/15, 17100, Savona, SV, Italy). 1991. Nov. 21. The only tofu shop in his area is La Buona Terra at the address and phone number given above. The organization is a macrobiotic center which offers these products fresh each week. Letter from Gianni Viglino of Italy. 1991. Dec. 20. "This macrobiotic center has stopped selling tofu, tempeh, and natto which they produce only for use in their restaurant."

2610. Noguchi, Kazuko. 1991. Tenpe was Saga ni netsuku ka? Tsukuba (1985) kara Saga (1991) made [Will tempeh take root in Saga? From Tsukuba in 1985 to Saga in 1991]. *Daizu Geppo* (*Soybean Monthly News*). Oct/Nov. p. 26-31. [Jap]
Address: Prof., Saga Joshi Tanki Daigaku [Saga Women's Junior College].

2611. Britt, Jenny. 1991. Breaking new ground: First a restaurant and now a booming wholesale business, Ploughshares is a vegan, organic food company aiming to feed the world. *Here's Health* (*England*). Dec. p. 56-57.
• ***Summary:*** Ploughshares is a highly successful vegan, organic food company based in Glastonbury, Somerset–Britain's "New Age capital." A photo shows Michael O'Connell, the company founder, holding up a large tray of cakes. He and his vegan co-workers are deeply committed to an animal-free and more environmentally sensible way of eating. Since 1986 they have established a restaurant (recommended by the Egon Ronay rating service), followed by a wholesaling business, and then last year a cookery school. Michael is both a vegan and a "formidable environmental activist, who runs his own mobile information service called "Spirit of Conservation on the Move"... Formerly a professional musician and record producer with his own band, Michael has been one of the main driving forces behind Ploughshares. Until recently he owned it outright, having put in most of the finance, but in recognition of the equally valuable contribution of others in the business, he has converted it into a co-operative... The core group, who are the main shareholders, are Michael, sisters Fiona and Miranda Bruce, mother and daughter Sophie and Sally Pullinger and Lalita Gordon. Several of this group are musicians who had worked with Michael in the music business. A few years ago, feeling no longer fulfilled by professional music, they set up as an extended family on a smallholding in the Essex countryside and, to help make a living, acquired a mobile catering truck... an eight-tonne kitchen-on-wheels which had previously done service on location feeding hordes of extras in the film Gandhi. They renamed it The Emperor Liu An's Tofu Palace, in honour of the Chinese feudal lord attributed with the invention of tofu, and took to open air shows and festivals, serving vegan food and demonstrating tofu-making."

The key people then moved to Glastonbury to start a restaurant (on High Street) as a permanent base for their vegan cuisine. The restaurant was sold in 1991 as more of the company's energy went into developing and marketing its range of nutritious, often organic cakes. The company has found a building in Glastonbury, which it hopes to convert into an innovative factory–if the money can be raised. The Ploughshares cookery school now teaches 3 students a week on average. They study for a City and Guilds qualification in dairy-free and special diet cuisine. "A Ploughshares Diploma includes tofu and tempeh making on both a domestic and cottage industry scale..." Another feature of the course is the production and use of a leaf protein concentrate (nettles are now used as the raw material) in the form of a nutritious curd named Leafu. Michael became interested in it as a "substitute in British vegan diets for soya beans, whose transportation from abroad uses precious energy. [A company brochure titled "Leaves for Life: Leafu, a high protein food made from leaves" notes that "Leaf fractionation is a way of producing more protein from indigenous plants than any other process. It is highly efficient in terms of energy use and in quantity of protein produced per acre." Leaf curd contains "proportionally more protein, vitamins A and E, iron, and calcium than is found in meat, eggs, or beans."]

Michael, a man with big dreams, can be contacted at Ploughshares Organic, Vegan Food Company, 54 Roman Way, Glastonbury, Somerset, BA6 8AD, England.

Note: This is the earliest document seen (May 2005) that mentions "Leafu" (a word probably derived by merging the words "leaf" and "tofu") or that discusses a commercial food use of leaf protein.

2612. **Product Name:** Redwood Vegetarian Rashers (Tempeh Bacon).
Manufacturer's Name: Redwood Company (The). Div. of JRJ Trading (Importer-Marketer-Distributor). Made in America.
Manufacturer's Address: 243 The Broadway, Muswell Hill, London, N10, England.
Date of Introduction: 1991. December.
Ingredients: Tempeh, shoyu, malt syrup, sea salt, yeast extract, mixed spices, fermented red rice.
Wt/Vol., Packaging, Price: Retails for £1.99.
How Stored: Refrigerated or frozen.
New Product–Documentation: Health Food Business (London). 1992. Jan. p. 12. "Vegetarian breakfast treats with JRJ's organic bacon." This bacon-like product made with organic tempeh retails for £1.99. The tempeh is made from organic soybeans with red rice added to give an authentic color; red rice gives much better color retention than the usual beetroot color. Salt is also added.

Talk with Jeremy Duncan, owner of The Redwood Co. 1992. June 16. This product was introduced in late 1991. About 6 months ago the company moved to its present address: Unit 4, West Burrowfield, Welwyn Garden City, Hertfordshire, AL7 4TW, England. He owns both The Redwood Co. and JRJ Trading, which is an import company. Nowadays he no longer thinks of Redwood as a division of JRJ Trading.

Spot in SoyaFoods. 1992. Autumn. p. 5. "Tempeh alternative to bacon." This may be England's first vegetarian alternative to bacon.

2613. Rondot, Pierre; Sudaryanto, T.; Djauhari, A.; Anwarhan, H. 1991. Soybean utilization, processing, and production policy in Indonesia. *Palawija News* (*Bogor, Indonesia*) 8(4):1-6. Dec.
• ***Summary:*** "More than 80% of the households in Java consume soybean. The next highest consumption rate is in North Sumatra where 55% of the households eat soybean regularly. In Java, annual soybean consumption per capita

varies from 11 to 16 kilograms compared with one to six kilograms in other areas of Indonesia. Java, which produces 47% of Indonesia's soybean, is also its greatest consumer.

"Average soybean consumption for the whole of Indonesia increased from 3.42 kg/cap/year in 1969 to 5.78 kg/cap/year in 1985. Consumption per capita of processed soybean is higher in urban areas than in rural areas."

"The Indonesian 'poultry revolution' has given rise to the modern animal feed-mill industry,... As Indonesia did not have a crushing industry until 1988, the meal had to be imported to regulate the national demand and to sustain the development of the 'poultry revolution'".

In 1987, according to SYGAP survey data, Indonesians consumed 749,600 tonnes of tempeh (86 gm/week), 714,700 tonnes of tofu (82 gm/week), and 48,200,000 liters of kecap (ketjap; Indonesian soy sauce). Per capita consumption of onchom was 4 gm/week. Address: 1. Agricultural Economist, ESCAP/CGPRT Centre, SYGAP Project, Bogor, Indonesia.

2614. **Product Name:** Tempeh Pâté.
Manufacturer's Name: Big Carrot Natural Foods Store (The).
Manufacturer's Address: Toronto, Canada.
Date of Introduction: 1991.
Ingredients: Incl. tempeh, carrots, tamari.
New Product–Documentation: Talk with (call from) RoseAnn Lawrence of Santa Rosa, California (Phone: 707-573-0596). This is the best natural foods store and deli she has ever seen. They even have their own cookbook–but it doesn't contain the recipe for this product. The pâté is made and sold in the store's deli. The recipe is a secret but the ingredients are on the label. It is sold in the form of a big loaf, like meatloaf, and the tempeh adds a chunky consistency. It is delicious spread on pita bread.

2615. Dong, Min Sheng; et al. 1991. [Tempeh–A protein-rich vegetarian meat substitute]. Paper presented at the Chinese Symposium on Food Fermentation. [Chi]*
• ***Summary:*** Note: Mr. Dong, born 23 Aug. 1961 in Hubei province, is one of the few people in China ever to do research on tempeh. He earned his BSc in Agriculture in 1982 and his MSc in Microbiology in 1985. Since 1988 his department has been doing research on tempeh, including the manufacturing process, nutritional value, and safety. This work has been financed by his government. How he has helped to establish the first tempeh-producing factory in China! He would like to go abroad in order to get more research experience in food fermentations. Address: Vice-Chief of the Tempeh Research Group and Instructor of Food Microbiology, Dep. of Food Science, Nanjing Agricultural Univ., Nanjing, Jiangsu province, China.

2616. Jiang, Hanhu; Dong, Minsheng. 1991. [Isolation, screening, and identification of thermotolerable tempeh-producing strain RT-3]. In: 1991. Proceedings of the Annual Meeting of the Chinese Microbiological Society (Jiangsu, 1991). See p. 20. [Chi]
• ***Summary:*** A thermotolerable *Rhizopus* species strain RT-3 was isolated from tempeh. It was identified as *Rhizopus oligosporus* saito. Tempeh prepared using this mold had a good flavor and attractive appearance. The protein digestibility as measured by biological methods was up to 94.4%.

Note 1. This was the first research on tempeh ever reported in China. Note 2. In the Chinese title of the article, tempeh is written in both Chinese and English. The characters for the Chinese term are pronounced "danbei." Address: 1. Prof. and Head, Dep. of Food Science; 2. Instructor of Food Microbiology, Dep. of Food Science. Both: Nanjing Agricultural Univ., Nanjing, Jiangsu province, China.

2617. Sibarani, Sujana. 1991. The effect of tempeh on preventing diarrhea of rabbits against *Escherichia coli.* PhD thesis, University of Indonesia. *

2618. Sudigbia, I. 1991. The use of tempe in the management of pediatrics diarrhoeal cases. Child Health Department of Medical Faculty of Diponegoro University. Unpublished manuscript. *
Address: Child Health Dep., Medical Faculty, Diponegoro Univ., Semarang Univ., Indonesia.

2619. Chelf, Vicki Rae. 1991. Cooking with the right side of the brain: Creative vegetarian cooking. Garden City Park, NY: Avery Publishing Group Inc. viii + 283 p. Illust. incl. many color plates. Index. 28 cm.
• ***Summary:*** This vegetarian cookbook, which contains over 500 healthful recipes, shows a strong macrobiotic influence. The extensive glossary of ingredients includes good descriptions of adzuki beans, many sea vegetables, amaranth, amasake, gluten, gluten flour, koji, kudzu, miso, mochi, natto, natto miso, okara, quinoa, seitan, shoyu, silken tofu, soybeans, tamari, tempeh, tofu, and T.V.P. (Textured Vegetable Protein). All of these ingredients are used in recipes. There are at least 26 tofu recipes, 6 seitan recipes, and 4 tempeh recipes.

The author, who also illustrated this book, has been a vegetarian for 16 years. While living in Quebec, Canada, she wrote several French-language vegetarian cookbooks. The right side of the brain controls thoughts and actions that are creative, intuitive, spontaneous, and artistic, whereas the left side controls more logical, concise, analytical, and scientific thinking. Conventional education encourages development of the left side of the brain. This book encourages creative experimentation and improvisation with the recipes given.

2620. Dieudonne, Marie-Paul; Dieudonne, Pascal; Saulnier,

Alain; Ferrenbach, J.P. 1991. Les nouveaux aliments: Soja–algues [The new foods: Soya and sea vegetables]. Editions S.A.E.P., Ingersheim 68000, Colmar, France. 95 p. Color photos. Index of recipes. 22 cm. Series: Delta 2000. [Fre]
• ***Summary:*** Contents: Part I of the book (p. 4-53) is about sea vegetables, by Marie-Paul and Pascal Dieudonne; Part II (p. 54-91) is about soya, by Alain Saulnier and J.P. Ferrenbach. Introduction. Economic aspects: Soybean production (worldwide, USA, France), world production of protein from various sources in million tonnes (FAO 1976; wheat 51, soya 24.9, rice 23.5, corn 23.4, meat 21.9, fish 11.8, cow's milk 6.7), protein yield, nutritional composition of various protein sources. Main nutritional characteristics of soya. Products made from soybeans: Tofu, tempeh, soymilk (*le jus de soja*), soy sprouts, shoyu or soy sauce. The causes of this explosion [of interest in soya]. Recipes: Of the 35 recipes, 33 feature tofu, 1 features tofu and soymilk, and 1 features soy sprouts. A number of the recipes include fish.

At the end is a glossary (p. 92-93) and a recipe index (p. 94-95). This book, which contains many beautiful color photos, is probably published by or in cooperation with Sojinal (formerly Cacoja) of Colmar and Issenheim. Address: Colmar, France.

2621. Fukushima, Danji. 1991. Recent progress of soybean protein foods: Chemistry, technology, and nutrition. *Food Reviews International* 7(3):323-51. [29 ref]
• ***Summary:*** Contents: Abstract. Introduction. Chemistry: Chemical composition of soybeans (Soybean globulins composed of four major components–2S, 7S, 11S, 15S), importance of three-dimensional structures of soybean protein molecules in food processing, influence of biologically active substances in soybeans on food processing. Technology: Traditional soybean protein foods and recent progress in their technology (soy milk {remove the hypocotyl and hull to remove off flavors; Soyasaponin A as the strongest off flavor}, tofu, kori-tofu, yuba), fermented soybean protein foods: Application of bioreactor for soy sauce production, nontraditional soybean protein foods and recent progress on their technology, recent progress on new soybean protein foods in which soybean proteins are the key material (modified abura-age, modified ganmodoki, deep fried texturized soy protein nuggets). Nutrition: Recent progress on nutritive values of soybean proteins (Soybean proteins have an amino acid score of 100 for persons more than 2 years old), physiological function of soybean proteins (they lower cholesterol levels when used to replace animal proteins). Future of soybean protein foods (Kikkoman fermented soy sauce is well on its way to becoming a universal seasoning. Tofu and tempeh also seem to have a bright future).

"The most important chemical reactions during the process of soybean protein foods are the intermolecular reactions among the residues exposed on the surface of the protein molecules through the denaturation process. In native soybean protein molecules, most amino acid residues responsible for the reactions-such as cysteine (-SH), cystine (S-S), and hydrophobic amino acid residues-are buried in the inside region of the molecule, inaccessible to water. These residues become reactable with each other through the exposure from the inside by heat denaturation during processing. The unique textures of soybean protein foods, such as tofu, kori-tofu, yuba, and texturized products produced by extruder, etc., are the results of both the intermolecular interchange reaction between the exposed -SH and S-S groups and the intermolecular hydrophobic reaction among the exposed hydrophobic amino acid residues. The exposure of amino acid residues is also important for the hydrolysis of soybean proteins by enzymes, through which soy sauce is produced, because the cleavage of the peptide bonds is carried out after binding between the active sites of the enzymes and the enzyme-specific amino acid residues exposed through denaturation." Address: Kikkoman Corporation, 1-25 Kanda Nishiki-cho, Chiyoda-ku, Tokyo 101, Japan.

2622. Hesseltine, C.W. 1991. Peoria, an international center of fermentation excellence. *Transactions of the Illinois State Academy of Science* 84(1-2):1-11. [11 ref]
• ***Summary:*** This paper was presented on 28 Sept. 1989 as the after-dinner address for the 50th Anniversary Celebration of the Peoria (Illinois) Branch of the American Chemical Society. Contents: First fermentations. Hiram Walker Co. (1816-1899; for many years they operated the world's largest bourbon whiskey plant in Peoria). Takamine. Northern Regional Research Center. Penicillin & Dr. Andrew Moyer. Penicillin–others (incl. Dr. Kenneth Raper). USDA's Agricultural Research Service (ARS) culture collection (which dates back to 1904). Polysaccharides. Mycotoxins. Fermented foods (especially soyfoods such as miso, shoyu, and tempeh). Fermentation in Peoria today (ADM uses the old Hiram Walker distillery to make fuel alcohol from corn). Honors and awards. References.

"Dr. Jokichi Takamine was the father of commercial enzymology and one of the pioneers of biotechnology. He was born in 1854 in Japan and received his Doctor of Pharmacology and Ph.D. in Engineering. He became very interested in Western concepts that would be useful to the Japanese but he also was interested in Japanese contributions to the West in science, industry and culture. In 1884 he married an American girl whose father helped him financially start the Takamine Ferment Company in Peoria in 1890. This company's business was to produce 'diastase,' a mixture of glucoamylase and □-amylase. This mixture of amylases was produced by the koji molds (*Aspergillus oryzae* and *A. soyae*) and it was here in Peoria that fungal amylase was first introduced to the West. In the production of alcohol from grain it is necessary to break down the starch to

sugar, which is then fermented to alcohol. Up to this time the starch conversion step of grain was brought about by the use of malt produced by the germination of grains.

"In the Takamine process the malt was replaced by fungal □-amylase and, therefore, was a process in direct competition with malt utilization. Apparently this new innovation was greeted with apprehension by the malt manufacturers. There was labor agitation and a propaganda campaign against Takamine. In 1894 the distillery where he worked was burned to the ground. Arson was suspected but never proven. The distillery which used fungal amylase was rebuilt, but the company dissolved the Takamine corporation and Takamine left Peoria in 1894. In 1894 Takamine obtained a U.S. patent on his enzyme diastase preparation called Taka-diastase.

"Later Takamine founded the Takamine Laboratories in the East [Clifton, New Jersey] and the Sankyo Pharmaceutical Company of Tokyo. He also isolated crystallized adrenaline at the same time that this was done by J. Abel at John Hopkins. Takamine obtained patents on adrenaline. He is also known for arranging for three thousand cherry trees for planting at the Tidal Basin in Washington. Recently a book on Dr. Takamine was prepared and printed by the Miles Company, which some years ago bought the Takamine Laboratories. The book contains his writings translated into English along side the original Japanese."

"The ARS Culture Collection is one of only two large culture collections in the USA, and its primary function is to find and maintain useful or potentially useful microbial and genetic taxonomic material. This collection dates back to 1904 when Charles Thom was hired by the USDA to investigate the mold cheeses. In making these studies, Thom secured several hundred strains of *Penicillium* and *Aspergillus* which became the nucleus of the ARS Culture Collection. At first Thom was at the Connecticut Agricultural Experiment Station, but in 1913 he moved to Washington, DC, taking his cultures with him. The oldest mold culture in the Collection is a strain of *Actinomucor elegans* isolated in 1892. Thom's collection had no formal recognition, and the story is told how Thom worked in the Laboratory on weekends to transfer his collection. In 1940 when the Fermentation Laboratory was established at NRRC, the Thom Collection was moved from Washington, DC, to Peoria and was formally recognized as one of the fermentation groups with Dr. K. Raper in charge. Dr. J. Wickerham joined the group to be curator of the Yeast Collection, and W.C. Haynes was selected to maintain a Bacterial Collection. Since then the number of curators has increased from 3 to 6. Some famous private collections were added in 1940, including the Harvard Collection which had strains isolated before 1900." Address: 5407 Isabell, Peoria, Illinois 61614.

2623. Hesseltine, C.W. 1991. Zygomycetes in food fermentations. *Mycologist* (*The*) p. 162-69. [17 ref]
• ***Summary:*** Contents: Introduction. Tempeh. Ragi and similar starters (Chinese yeast, bubod, murcha). Amylo process. Miscellaneous food uses employing Zygomycetes. Uncertain uses of Zygomycetes in food fermentation.

"Chinese cheese sufu–This important Chinese food is made by the fermentation of tofu with *Actinomucor elegans* (Eidam) C R Benj & Hesselt, or with *Mucor* species, especially *M. dispersus* Hagem in home processes. *Actinomucor elegans* was the mould used in all the commercial preparations investigated by Wai (1964). However, in his paper Wai called it *R. chinensis* var. *chungyuen* but later Chang & Wai (1967) corrected the identification.

"*Actinomucor* appears to be a monotypic genus intermediate between *Rhizopus* and *Mucor."*

An illustration (line drawing) shows *Actinomucor elegans.* Spoirangia, columellae and sporangiophore (from Zycha and Ziepmann, 1969).

The amylo process is used in the saccharification of cereal flour mashes in the production of sugar to be converted into ethanol (ethyl alcohol). The process involves soaking the grain for several hours in water followed by cooking to solubilize the starch. The acidified mash is cooled to 38-40ºC, then inoculated with a mucoraceous mold such as *Mucor rouxii, Rhizopus japonicus, R. tonkinensis, R. delemar,* or *R. boulard.* Air is blown through the mash for 24 hours at 38ºC, then the mash is cooled to below 33ºC and inoculated with yeast. The molds produce saccharifying enzymes as well as some alcohol. According to Schipper (1984) *Rhizopus japonicus, R. tonkinensis,* and *R. delemar* are synonyms of *Rhizopus oryzae.* Address: NRRC, Peoria, Illinois.

2624. Mardjuki, Sandra. 1991. Nutritional characteristics and use of dehydrated tempeh in food products. MSc thesis, California Polytechnic University, San Luis Obispo, California. xvii + 170 leaves. Illust. 28 cm. *
• ***Summary:*** Includes bibliographic references (leaves 139-150). Address: 6381 Via Arboles, Anaheim, California 92807.

2625. Passmore, Jacki. 1991. The encyclopedia of Asian food and cooking. New York, NY: William Morrow. 320 p. Illust. by Jan Smith. Index. 24 cm. [44 ref]
• ***Summary:*** The most complete book of its type seen to date (May 2010), with many helpful cross references (sometimes flawed). Soyfoods are mentioned throughout. Unfortunately, for Chinese foods, the author does not distinguish between Mandarin and Cantonese, or between pinyin (newer) and Wade-Giles (older) styles of romanization. For some of the "Also known as" it is not clear to which of several previous entries this refers (see "Soybean").

Ame (ah meh, Japan): A sweet jelly made from millet.

Azuki bean (*Phaseolus angularis*). Native to China; used in China since the Han Dynasty (206 BC–AD 220): An [or anko] (Japan): A sweetened paste of ground azuki beans available in smooth (koshi-an) and crunchy [chunky] (tsubu-an or tsubushi-an). Sarashi-an: A flour of ground azuki beans. Also known as hong dow (China), dried red beans, red beans [adzuki beans, aduki beans]. See also: Red bean paste, sweet.

Bean curd: Also known as dou-fu, dow foo (China); tahu (Indonesia), momen tofu, tofu (Japan); ta hu, ta hua (Malaysia); tahure (Philippines); tauhu kau (Thailand); dau hu, dau hu chung (Vietnam); bean custard, soybean cake. Illust of: Fried bean curd, pressed bean curd. Almond bean curd (non-soy). Bean curd "brains": Also known as doufu nao (China); taho (Philippines). "Cotton" bean curd: Also known as momen tofu (Japan). Freeze-dried bean curd: Also known as char doufu, doufu pok (China); agedofu, atsu-age, nama-age (Japan); tauhu tod (Thailand), dau hu chien (Vietnam). Fried bean curd pouches: Also known as aburage, usuage (Japan). Gan modoki. Grilled bean curd: Also known as doufu kan [sic], gone (China); yakidofu (Japan). Instant bean curd. Okara. Pressed bean curd: Also known as doufu kan (China), taukwa, tauhu kuning (pressed yellow bean curd) (Indonesia, Malaysia); tokwa (Philippines); tauhu leong (Thailand); dau hu ki (Vietnam). Silk bean curd: Also know as kinugoshi tofu (Japan), shui doufu (China), taho (Philippines). Contains a recipe for homemade "Bean Curd" plus 3 recipes.

Bean curd by-products: Bean curd skin [yuba], bean curd sticks: Also known as fu jook pin, gee jook (China), yuba (Japan), forng ta ohu [tauhu] (Thailand); rolled bean curd, second bamboo.

Fermented bean curd: Also known as foo yu, fu-ru, narm yu (China), tahoe, tahu (Indonesia, Malaysia), tausi (Philippines), bean curd cheese, Chinese cheese, pickled bean curd, red bean curd, soybean cheese.

Moldy bean curd. Bean curd cheese: See bean curd by-products (fermented).

Bean pastes and sauces: Shih and jiang from China: (1) Bean sauce (jiang) also known as taucheo or tau sa (Malaysia, Nonya and Singapore cooking), mien see [mian shi] (China), taoco [Pron. = tao-cho] (Indonesia), tuong ot (Vietnam), bean paste, brown bean sauce, yellow bean sauce. (2) Black bean sauce (a recent addition to the family of Chinese sauces. A major ingredient is puréed fermented black beans with a hint of garlic and star anise. It tastes best when freshly made). (3) Chili bean paste (in addition to chopped dried chilies, it sometimes contains fermented black beans): Also known as lat chu jeung, as lat chu jeung yau (Garlic) (China); kochujang (Korea); bean paste with chili; hot bean paste; Sichuan hot bean paste. (4) Dhwen-Jang (Korea). See also miso. (5) Hoisin sauce (China): A sweet, thick, reddish brown sauce. One ingredient is fermented soybean paste. Not to be confused with the Chinese barbecue sauce called sha cha jang. Also known as hoi sin cheung (China); barbecue sauce. (5) Soybean paste. Also known as mean see jiang (China). (6) Sweet bean paste. In this context it is not the sweet bean paste made from azuki beans, but rather a sweet, thick, dark brown sauce made of ground fermented soybeans and sugar. Its salty-sweet flavor is used in marinades and roast meats. Also known as tim mean jiang (China).

Bean sprout: Mung bean sprouts, silver sprouts (mung bean sprouts with the roots and seed pods removed), soybean sprouts. Also known as: Daai dau nga choy (soybean sprout), ngunn nga choy (silver sprouts), nga choy, sai dau nga choy (mung bean sprout) (China); tauge (Indonesia); moyashi (Japan); kacang ijo, kacang djong, kacang padi (Malaysia); togue (Philippines); taun gawk (Thailand); gia (Vietnam); bean shoots.

Beijing duck sauce (recipe with ½ cup sweet bean paste). Vietnamese-style Beijing duck sauce (with ½ cup sweet soy sauce–kecap manis).

Black bean: See Fermented black bean. Black bean sauce: See Bean pastes and sauces. Fermented black bean sauce. Black soybean: See soybean.

Broad bean paste. Broad bean sauce: "The best is made in Pixian, a city in Sichuan province, where it is used instead of soybean-based seasoning sauces."

Brown bean sauce: See Bean pastes and sauces.

Che hau sauce (Che how, China): See Bean pastes and sauces (Hoisin). Chick-pea.

China: Has the "oldest and most well-documented cuisine in the world." Chinese cheese: See Bean curd by-products (fermented). Chinese hot bean paste: See Bean pastes and sauces.

Dau hu (Dow hoo, Vietnam): See bean curd. Dau hu chien (Dow hoo chee-ian, Vietnam): See Bean curd, fried. Dau hu chung (Dow hoo chee-ung, Vietnam): See Bean curd. Dau hu ki (Dow hoo kee, Vietnam): See Bean curd, pressed.

Dengaku (plus recipe).

Dhwen-jang (Dwen-jang, Korea). Similar to Chinese soybean paste or Japanese akadashi miso. Also known as Korean bean paste. Doufou Kan [doufu gan], China: Bean curd (grilled, pressed). Dou-fu (Dau-fu, China). See Bean curd. Doufu nao (Daufu-nou, China): See Bean curd "brains." Doufu pok (daufu pork, China). See bean curd, fried. Dow foo (dau fu, China): See Bean curd.

Edamame (e dah ma meh, Japan): See soy bean.

Fermented bean curd: See Bean curd by-products. Fermented bean curd cake. See Bean curd by-products; tempe.

Fermented black beans (Shih, China). With recipe for "Fermented black bean sauce" (p. 106). Also known as dau see (China), black beans, dried black beans, preserved back beans.

Fermented red rice. Flours and thickeners: Kuzu (Japan). Mung bean flour. Soy flour (incl. kinako). Foo yu (Fu you, China). See Bean curd by-products (fermented). Forng Tao

Hu (Fong tao huu, Thailand). See Bean curd by-products, bean curd sticks. Fu jook pin (Fu juk pin, China): See bean-curd by-products, bean curd skin. Fu-ru (Fu yue). Gee Jook (Ji Juk, China): Bean curd sticks.

Gluten: Kau fu, kohana fu, matsutake fu, mein jin pau, nama fu, su tang, yaki fu. Also known as: Kau fu, mianjin, mein jin pau, su tang (China), kohana fu, yaki fu (Japan).

Gochujang (Korea). See also: Chili paste, chili sauce. Korean barbecue sauce.

Grilled bean curd: See Bean curd, grilled.

Hatcho miso: See miso, Hatcho. Hot bean paste. Hot black bean sauce. Inaka miso: See miso.

Japan: "Japanese cooks revel in the artistry of their craft. The Japanese love of nature is a challenge to present each ingredient as reminder of its origins: to bring nature to the table...," Regional cuisines are not of great importance in Japan; cooking methods (incl. Dengaku), salting (incl. Teriyaki), cutting and slicing techniques.

Kecap asin (Ket-chup a-seen, Indonesia): See Soy sauce, sweet and salty. Kecap cair (cha-ear, Malaysia): See soy sauce, light. Kecap hitam (Indonesia): See soy sauce, sweet and salty. Kecap ikan (Indonesia): See Fish sauce. Kecap manis (mah-niece, Indonesia): See Soy sauce, sweet and salty. Kecap petis (pet-is, Indonesia): See fish sauce. Kinugoshi tofu (Japan): See Bean curd, silk.

Kochujang (go-choo jang, Korea): See Bean pastes and sauces; chili pastes.

Koikuchi shoyu (Japan): See soy sauce. Continued. Address: Author of several books on Asian cuisine.

2626. Passmore, Jacki. 1991. The encyclopedia of East Asian food and cooking (Document part II). New York, NY: William Morrow. 320 p. Illust. Index. 24 cm. [44 ref]

• ***Summary:*** Continued from p. 153: Korean bean paste: See Dhwen jang. Koshi-an (Japan): See Azuki beans (an). Koya tofu (Japan): See Bean curd, freeze-dried [sic].

Kuzu (Japan): See Flours and thickeners. Lentil (*Lens esculenta*)*:* Red lentil, Red mung beans.

Light soy sauce: See Soy sauce.

Lu soy (lo shui, China): See soy sauce.

Maltose: Made by fermenting germinated grains of barley. When used to glaze foods, may have soy sauce and red food coloring added. Also known as: Malt sugar, [barley malt syrup].

"Ma-po" dofu [Mabo-dofu]: See beef.

Mean see jiang [mian shi jiang] (min see jiang, China): See Bean pastes and sauces.

Mein jin pau [mien jin pau] (China): See Gluten.

Mianjin (China): Gluten.

Mien see (mien-si [mian shi], China): See Bean pastes and sauces.

Miso (Japan): (1) Hatcho-miso. (2) Inaka miso or Sendai miso. Also known as Red miso. (3) Shinshu miso. (4) Shiro miso.

Mochi. Monosodium glutamate. Also known as: Mei jing (China); aji-no-moto (Japan); servuk perasa (Malaysia); ve tsin (Vietnam), M.S.G., taste essence, taste powder.

Moyashi (Japan): See Bean sprout.

Mung bean. Also known as moong ke dal (India); kacang djong, kacang eedjo [hijau, katjang idjo] (Indonesia); kacang hiau (Malaysia); tau ngok (Thailand); dau xanh (Vietnam); green gram.

Nama-age (nah-mah ah-geh, Japan): See Bean curd, deep fried.

Nama fu (Japan): Raw / uncooked wheat gluten.

Natto (Japan). See soybean.

Noodles: (1) Bean curd noodles (China). Also known as Soy noodles, soy vermicelli.

Oils and fats: Soybean oil. (2) Bean curd skin noodles (China) [yuba noodles].

Peanut (with many foreign names and recipes).

Preserved black beans: See Fermented black beans. Pressed bean curd: See Bean curd (pressed).

Red bean paste, sweet: "An important ingredient in Chinese and Japanese cooking, sweet red bean paste is made by boiling the red azuki bean and mashing it to a paste with lard or oil, then cooking it until it is fairly dry or thick. In Japan, red bean paste is made in two textures: the smooth purée is koshi-an and the chunky version, with the beans only partly crushed, is tsubushi-an. It is a filling for cakes and sweet buns, and is used in several desserts." Also known as hong dow sar (China), an (Japan). Contains a recipe for Sweet red bean paste.

Red rice: See Fermented red rice.

Rice: Many type of glutinous and non-glutinous.

Rolled bean curd: See Bean curd sticks [dried yuba].

Seaweed: Many different types. Seaweed gelatin or Seaweed jelly: See agar agar.

Sendai miso (Japan): See miso.

Sesame seed: Black sesame seed, sesame oil, sesame paste, white sesame seed.

Shinshu miso (Japan). Shui doufu (China): See bean curd (silk). Silk bean curd: See Bean curd (silk).

Soybean (*Glycine max*)*:* (1) Black soybeans. (2) Fresh soybeans [edamame]. (3) Yellow soybeans. Soybean cheese: See Bean curd, fermented [fermented tofu]. Soybean condiment: See Bean pastes and sauces. Soybean milk. Also known as tau cheing, tau ni (China). With homemade soymilk recipe. Soybean noodle: See Noodles, bean curd. Soybean oil: See fats and oils. Soybean paste: See Bean pastes and sauces. Soybean sprout: See bean sprout. Soy flour: See Flours and thickeners.

Soy sauce: "An ancient seasoning, first used in China more than 3,000 years ago. Known in its original form as *shih,* it was a thin salty liquid in which floated fragments of fermented soybeans." "Soy sauce is to Chinese and Japanese cooking what the pungent, salty fish sauce known as nam pla or nuoc mam is to Thailand and Vietnam respectively." (1)

Dark soy sauce. Also known as jang yau, see yau (China); koikuchi shoyu, tamari (Japan), kecap pekat (Malaysia); mushroom soy. (2) Light soy sauce: Thinner, saltier, and lighter in color and flavor. It is used in cooking where its light color will not spoil the color of the ingredients. Also known as sang chau, see yau (China), shoyu, usukuchi shoyu (Japan), kecap cair (Malaysia), toyo (Philippines), nam siew (Thailand), xi dau (Vietnam), thin soy sauce. (3) "Lu soy (China) is a 'master sauce' based on soy sauce with sugar, ginger, and five-spice, It is used for simmering poultry and other meats to give a rich flavor and to color the food a deep brown. Also known as lu shui (China)."

Soy sauce, sweet and salty: (1) "Kecap asin (Indonesia) is a thick, salty, dark soy-based sauce used to impart a strong color and flavor. Its sweet counterpart is *kecap manis.* It is similar to, but thicker than, several dark soy sauces used in Chinese cooking." (2) Kecap hitam (Malaysia) is a sweet dark soy sauce. Slightly less spicy than kecap manis. (3) Kecap manis (Indonesia) is a sweet, dark, thick, aromatic soy sauce, especially widely used with satay. "It is similar to, though finer in flavor than, Chinese sweet soy sauce" [tian mian jiang]. Also known as kecap bentang manis (Indonesia); sweet soy sauce. (4) "Sweet soy sauce (China) is a dark, sweet sauce combining soy sauce, sugar, and malt sugar. Its distinctive malt-like taste goes well as a dip for fried snacks, poultry, and seafood." It appears frequently on the table in homes and restaurants in Fukien province, opposite Taiwan on the coast of south-eastern China. For a recipe, see Sweet soy sauce pork (p. 230). Note: This is not generally a commercial product. (5) Tim cheong (Malaysia) is a thick, sweet, black soy sauce, similar to that used in China. In Malaysia it is served with poh pia. Its flavor is closer to that of kecap hitam than to kecap manis.

Sprouts, soybean. See Bean sprout, soybean. Sushi (describes many types, with recipes). Sweet bean paste or Sweet bean sauce: See Bean pastes and sauces.

Taho (Philippine bean curd brains). Tahoe (Indonesia or Malaysia, fermented bean curd). Tahu (Malaysia bean curd). Ta hua (Malaysia bean curd). Tahure (Philippine bean curd).

Tamari (Japan): See soy sauce. Taucheo (Malaysia or Singapore, bean pastes and sauces). Tauge (Indonesia bean sprout). Tauhu kao (Thailand bean curd). Tauhu kuning (Indonesia and Malaysia bean curd pressed). Tauhu leong (Thailand bean curd, pressed). Tauhu tod (Thailand bean curd, fried). Taukwa (Indonesia and Malaysia bean curd pressed). Tau sa (Malaysia bean paste and sauces). Tausi (Philippines, bean curd products, fermented).

Tempe (Indonesia, Malaysia): Fermented soybean cake [tempeh]. Oncom [Ontjom]. Tokwa (Philippine bean curd pressed).

Tosa soy sauce (Japan): The classic sashimi accompaniment. Recipe given.

Tsukemono: Takuan, umeboshi.

Usu-age (Japan): See Bean curd (fried) purses.

Winged bean. Yuba (Japan).

Brief biography: "For more than twenty years she has been professionally involved with Asian food as a writer, teacher, publicist, researcher, consultant, and, of course, cook. She has traveled extensively in Asia and lived in Hong Kong for more than ten years, working as a food writer on a number of newspapers and magazines, which led to a career as a food consultant. Her most recent book, *Asia the Beautiful Cookbook* was listed by *Publishers Weekly* as one of the best books of 1987." Address: Author of several books on Asian cuisine.

2627. Soy City Foods vegetarian cookbook. 1991. Toronto, Ontario, Canada: The Golden Age Food, Ltd. 145 p. 28 cm.
• ***Summary:*** Contents: Dips, spreads & sauces. Soups & salads. Side dishes. Quick & easy recipes. Harvest dinner main dishes. Tempeh main dishes. Tofu main dishes. Other main dishes. Breakfast & brunch. Desserts. Holiday recipes. Glossary. Products made by Soy City Foods: Harvest dinner patties. Falafels. Grain tempeh. Tofu. All soybeans are organically grown, and certified by OCIA.

Some history: In 1975, The Golden Age Food Limited opened the Vegetarian Restaurant in downtown Toronto. In order to produce healthy soy-based products from organically-grown soybeans, the restaurant created its own production facility, Soy City Foods. Address: 2847 Dundas Street West, Toronto, ONT M6P 1Y6, Canada. Phone: (416) 762-1257.

2628. The Mail Order Catalog. Fall–winter 1991-2. Quality books. Vegetarian food products. 1991. P.O. Box 180, Summertown, TN 38483. Catalog.
• ***Summary:*** The book section of this mail order catalog contains listings for an excellent selection of vegetarian cookbooks, and books on animal rights, diet and nutrition, ecology, and native American cultures.

The vegetarian food products section offers TVP granules and chunks, Response textured soy protein concentrates (misleadingly called "Response TVP flakes"), soy powder (powdered soymilk), tempeh starter, nutritional yeast, and instant gluten flour. Address: Summertown, Tennessee. Phone: 800-695-2241.

2629. Tremblay, Yvon. 1991. La santé de la terre: le petit guide santé des anées 1990: le soya et ses dérivés (lait de soya, tempeh, miso, etc.) ansi que le sarrasin et le seitan [The health of the earth: the little health guide for 1990: soybeans and soyfoods (soymilk, tempeh, miso, etc.) as well as buckwheat and seitan]. Rosemère, Quebec, Canada: Presses Libre-choix. 157 p. Illust. by Mario Gailloux. 21 cm. [Fre]* Address: Que.

2630. Wasserman, Debra; Stahler, Charles. 1991. Meatless meals for working people: Quick and easy vegetarian

recipes. Baltimore, Maryland: Vegetarian Resource Group. 96 p. Illust. No index. 22 cm. [10 ref]
• ***Summary:*** In this vegetarian cookbook, the section titled "Soy dishes" (p. 48-53) contains the following: Tofu mayonnaise dip. Fried tofu. Fried tempeh sandwiches. Spaghetti and tempeh sauce. Tofu "eggless" salad. Tofu pie and quick crust. Tofu burgers. Summer tofu salad. Curried tofu with peanuts. Tofu spinach dip. Address: Baltimore, Maryland.

2631. Yokotsuka, Tamotsu. 1991. Proteinaceous fermented foods and condiments prepared with koji molds. In: Dilip K. Arora; K.G. Mukerji; E.H. Marth, eds. 1991. Handbook of Applied Mycology. Vol. 3: Foods and Feeds. New York, NY: Marcel Dekker, Inc. x + 621 p. See p. 329-73. Chap. 11. [118 ref]
• ***Summary:*** Contains a great deal of very interesting information. Contents: 1. Introduction. 2. Fermented soybean foods in East and Southeast Asia: A. Douchi (China), Hama-natto (Japan), and in-yu (Taiwan). B. Shuidouchi (Shandong province, China), thua-nao (Thailand), kinema (Nepal), and natto (itohiki natto) (Japan). C. Tempe [Tempeh] and Oncom [Onchom] (Indonesia) (Making soybean tempe, volatile flavor of tempe, chemical composition and nutritional value of tempe, tempe bonkrek). D. Fermented tou-fu (soybean curd) products: Sufu (China and Taiwan), Tofu-yo (Okinawa, Japan).

3. Fermented salty condiments in a slurry or paste made from soybeans and cereals: A. Doujiang (touchiang) (China) and Tauco [taucho] (Southeast Asia). B. Doubanjiang (Toupanchiang). C. Tianmianjiang (Tienmienchiang). D. Gochujiang and Doenjang (Korea). E. Hishio (Japan). F. Miso (Japan) (Production and consumption of miso, making rice miso and barley miso).

4. Fermented salty liquid condiments made from soybeans and cereals: A. Japanese shoyu (Manufacture of koikuchi and usukuchi shoyu, manufacture of tamari shoyu). B. Soy sauce produced in east and southeast Asian countries other than Japan (Korea, Taiwan, Hong Kong, Singapore, Malaysia, Indonesia, Thailand, People's Republic of China {the process, acid hydrolysis illegal until recently}, chijhi or whole soybean soy sauce still made in the basins of the Zhujiang {Pearl} River and the Huanghe {Yellow} River).

5. Biochemistry involved in shoyu and miso manufacture: A. Selection of raw materials. B. Contribution of improved cooking methods of raw materials to increase the enzymatic protein digestibility. C. Selection and improvement of koji molds. D. Improvement in koji making. E. Microbial and chemical control of salty mash fermentation. F. Flavor evaluation of koikuchi shoyu. G. Stability of color of pasteurized shoyu. H. Nutritional concern about shoyu and miso (salt content). Safety of koji molds and shoyu (aflatoxins).

6. Conclusion.

Tables show: (1) Chemical composition of kinema, thua-nao, and douchi. (2) Changes in nitrogenous compounds during Natto Fermentation. (3) Changes of nitrogen compounds in sufu making. (4) Constituents of some types of miso. (5) Chemical composition of various kinds of genuine fermented shoyu in Japan. (6) Effect of cooking conditions of thoroughly moistened defatted soybean grits on the enzymatic digestibility of protein. (7) Differences between *A. oryzae* and *A. sojae* used for shoyu fermentation. (8) Proteinases produced by *Aspergillus sojae*. (9) Enzyme composition of koji as influenced by the difference of material. (10) Various metabolic patterns by lactobacilli in shoyu mash. (11) Digestiblilities of protein in shoyu, miso, natto, and tempe fermentations. (12) Results of quantitative analysis of flavor constituents in koikuchi shoyu.

Figures show: (1) Flow sheet of tempe making. (2) Flow diagram of sufu making. (3) Diagram of rice-miso fermentation. (4) Diagram of koikuchi shoyu fermentation. (5) Tamari-shoyu fermentation. (6) Microflora changes in shoyu mash fermentation. (7) Classification of Aspergilli. (8) Fermented foods and condiments made from soybeans mixed with or without cereal grains or flour.

Concerning *shuidouchi:* Boiled soybeans are inoculated with *Bacillus subtilis* and incubated at high humidity and at 30-40ºC. This preference for a high temperature may be why the *Chi-min yao-shu* (6th century China) recommended that, when making douchi [soy nuggets], the temperature during incubation be kept rather low. In Shandong, China, salted soy nuggets are made as follows: Clean, soak, and boil soybeans until soft. Place in a cloth bag and cover with straw, which is the best natural source of *B. subtilis.* After incubation for 1-2 days at 25-30ºC the soybeans will be covered with viscous substances. Mix the sticky soybeans with minced ginger and salt, then pack tightly into jars, and age for one week. They are now ready to consume (See references 5 and 6). Address: Research Div., Kikkoman Corp., Noda City, Chiba prefecture, Japan.

2632. **Product Name:** [Tempeh].
Manufacturer's Name: Berliner Tofurei.
Manufacturer's Address: Luebbenerstr. 4, D-1000 Berlin 30, West Germany. Phone: 030/612-7931.
Date of Introduction: 1991?
New Product–Documentation: Letter from Anthony Marrese based on an interview with Detlef Dorow. 1992. Jan. 13. This company tried making tempeh for a while (the date of introduction) is not given, but sales were too slow so they discontinued it.

2633. Die Tofurei mit vegetarischer Kueche. 1991? New soyfoods restaurant or deli. Krefelderstr. 2, D-1000 Berlin 21, Germany.
• ***Summary:*** Letter and menu sent by Anthony Marrese. 1992. Jan. 13. This tofu manufacturing company now

owns a restaurant at the same address as its production facility. A leaflet describing it is titled "Die Tofurei jetzt mit vegetarischer Kueche" (The tofu shop now with a vegetarian kitchen), printed black on orange. It serves a variety of soy-based snacks, drinks, salads, cakes (kuchen), desserts, main courses, and soups. Most are made from tofu, but tempeh and seitan are also on the menu. The company apparently makes the following soy products for sale both at the restaurant and elsewhere in Berlin: Natur-Tofu (loose and vacuum packed), Gewuerz Tofu, Kraeuter Tofu, Algen Tofu, Marinierter Tofu, Getrokneter Tofu, Fritierter Tofu, Raeucher Tofu (regular and marinated), Champignon-Tofu (regular and marinated). All are vacuum packed. Address: Berlin, Germany. Phone: 030 / 393 0927.

2634. Dorow, Detlef; Hoffmann, Ralf. 1992. Update on Die Tofurei in Berlin (Interview). Conducted by Anthony Marrese in Berlin, Jan. 7. 2 p. transcript. Handwritten. Followed by a letter from Detlef Dorow on 17 Feb. 1992.
• ***Summary:*** In Aug. 1989 the name of the company was changed from Berliner Tofurei to Die Tofurei. In June 1991 the company moved to its present address at 2 Krefelderstr. 2 in Berlin. The original and last address was Luebbenerstr. 4, 1000 Berlin 36. The company was established 3 years ago to make tofu. The founders were Detlef Dorow, Ralf Hoffmann, and Misha Wolff. [Note: According to the magazine *Die Geschaeftsidee* (1989. Dec. p. 33) this company was started in Aug. 1988 by 4 friends who liked to make tofu: Detlef Dorrow [Dorow], Ralf Hoffmann, Shi-Jong Chen, and Michael Wolff [or Wolf]. The original company name may have been "Die Benjamine." But Detlef now says that the original company name was Detlef Dorow–Erste Berliner Tofurei.] Over the years, Detlef's friends left one by one: Michael Wolf in 1989, Shi-Jong Chen in 1990, and Ralf Hoffmann in late 1991–because of too much work and not enough money.

While at its original location, the company made Tofu, Tofu-Burger, Okara-Burger, Tofu Variationen, Mungo Sprossen Snack, Tofu Schnitzel, and Sushi-Reisroellchen. The company has also made Tempeh and Seasoned Tofu (with Vegetables, Herbs, Seaweed, or Smoked). Tempeh was discontinued after a while due to sluggish sales. Presently the company makes 200 to 400 kg/week of tofu (production varies widely), and about 250 Veggie Burgers (Tofu Burgers) each week.

The company has 3 full-time partner employees (each with equal ownership) and 2 part-time workers. Growth has been unstable. The building is about 18 by 10 meters, divided into 4 rooms. Gross sales are about DM 250,000 per year. Net worth is unknown. In Aug. 1991 the company started a restaurant at the same address as its production facility. A leaflet describing it, titled "Die Tofurei jetzt mit vegetarischer Kueche" (The tofu shop now with a vegetarian kitchen), printed black on orange, is enclosed. It serves a variety of soy-based snacks, drinks, salads, cakes (kuchen), desserts, main courses, and soups. Most are made from tofu, but tempeh and seitan, which are also on the menu, are purchased from either Viana Naturkost GmbH in Cologne, or Tofumanufaktur Hamburg.

Comments: All is not well at Die Tofurei and they may be out of business very soon for several reasons, the main one being disagreements between the partners. Detlef sees his job as working 8 hours a day, whereas Ralf and Misha feel they are working for a cause which they want to make grow. Low sales and high overhead have forced the issue to a head. Within a year of moving to their last location and having to renovate, a second move was required due to problems with the landlord. This then required a second renovation at the present location. Money for the renovations was borrowed from the bank and the company is already behind in its payments. Sales are low because (1) Their tofu prices are high (DM 7/kg wholesale) due to high overhead; (2) Several tofu companies from Freiburg, Hamburg, Stuttgart, Cologne, etc. have entered the Berlin natural-foods market; (3) Oh Tofurei, which is run by an Asian-German, has the entire Asian foods market in Berlin, including Asian restaurants. Its tofu retails for DM 5/kg. The owner of Oh Tofurei was not willing to be interviewed. He speaks no English (only broken German) and is probably producing several hundred kg of tofu per day.

Ralf and Misha are ready to call it quits after 3 years of hard labor. Detlef wants to keep the restaurant and maybe to distribute tofu made by some other company.

Follow-up letter from Detlef Dorow. 1992. Feb. 17. "Ralf Hoffmann has just left the company, so I rule it by myself with a good worker. Ralf managed the finances for the last 6 months, but it was a big catastrophe. I hope I can reduce the damage. I have had so many problems with the company and my partner Ralf; he managed Die Tofurei for the last 6 months and I managed the "Vegetarische Kueche" restaurant. They run more or less separately. Now I am increasingly forced to make snacks (Sushi-Reisroellchen, Tofu Burgers, Gruenkern Burger, Tofu Baellchen mit Spinatfuellung, Tofu-Speiss) because our company is too small to compete with large companies. Our tofu is made mostly by hand, so it is a lot of work and not much money." Address: Die Tofurei: Krefelderstr. 2, D-1000 Berlin 21, Germany. Phone: 030-393-0927.

2635. **Product Name:** Tempeh Starters, and Miso Starters.
Manufacturer's Name: Future Foods.
Manufacturer's Address: 3 Tai Madog, Stablau, Llanrug, Gwynedd, LL55 3PH, Wales, UK. Phone: (0286) 870606.
Date of Introduction: 1992. January.
New Product–Documentation: Letters from Owen Smith of Future Foods. 1992. Oct. 27 and Dec. 2. He has a small company selling unusual seeds of food plants as well as tempeh and miso starters. He obtains the cultures from GEM

Cultures in California, and started selling them in Jan. 1992. His company is planning to start making its own tempeh starter using the method described in books on tempeh by Shurtleff and Aoyagi.

2636. **Product Name:** Tempeh-Lettuce-Tomato Sandwich, Tempeh Burger, Bar-B-Q Tempeh, Tempeh Curry with Coconut Milk (and Rice), Dolphin Safe Tempeh Salad (Mock Tuna Salad).
Manufacturer's Name: Leo Risin' Foods.
Manufacturer's Address: 1525 Rhode Island, Lawrence, KS 66044. Phone: 913-832-1521.
Date of Introduction: 1992. January.
How Stored: Refrigerated.
New Product–Documentation: Letter and Labels sent by Clayton McHenry, founder and owner of Leo Risin' Foods. 1994. Feb. 22. In January 1992 Clayton named his business Leo Risin' Foods and set up a certified and inspected kitchen in his home at 1525 Rhode Island, Lawrence, Kansas 66044. Starting in January 1992 he produced five deli foods with tempeh for the Community Mercantile, and Clearly Nature's Own, a natural food store in Kansas City, Missouri. The weights of and ingredients in these products are as follows (* = organically grown): Tempeh-Lettuce-Tomato Sandwich (6 oz): Wheat bread, tempeh*, lettuce*, tomato, tofu mayo, sesame oil, spices. Tempeh Burger (7 oz): Wheat bun, handmade tempeh*, lettuce*, onion*, tofu mayo, spicy pickle*, mustard, hot sesame oil. Bar-B-Q Tempeh (6 oz): Wheat bun, handmade tempeh*, rice malt sweetened barbecue sauce, red onion*. Tempeh Curry with Coconut Milk (and Rice, 8 oz): Basmati rice, handmade tempeh*, coconut milk, red chili, onion, cashew, green chili, spices, salt. Dolphin Safe Tempeh Salad (Mock Tuna Salad, 8 oz): Tempeh*, Nayonaise, green onion, parsley*, sunflower seeds, spices.

2637. *Voice of the Turtle* (*Husum, Washington*).1992. Turtle Island to open new plant: March 1992–Hood River, Oregon. 4:1. Jan.
• ***Summary:*** After 8 prosperous years making tempeh in Husum, Washington, the company has outgrown the kitchens of the old Husum Elementary School on the banks of the White Salmon River. During this time, the company has grown more than tenfold in this town of 200 people. In moving across the river to a new state, Turtle Island will be taking over a 6,000 square foot fruit processing facility; a small part will some day serve as a retail outlet. Address: #1 Turtle Lane, P.O. Box 218, Husum, Washington 98623. Phone: 509-493-2004.

2638. *Toyo Shinpo* (*Soyfoods News*).1992. Tenpe ken, Toyama de fooramu Jikkô Iinchô. Tenpe ryori no shidô mo jimoto TV mo hôei [Tempeh Study Group acted as executive committee for a forum in Toyama. Instructions on tempeh cookery were also broadcast on local TV]. Feb. 1. p. 1. [Jap]
• ***Summary:*** A 2-part article. A photo shows Tomomichi Yanagida.

2639. *Toyo Shinpo* (*Soyfoods News*).1992. Tenpe kenkyû-kai. Toyama fooramu hiraku. Honba ryôri no shishoku mo. Nana nin no kôshi de moriagaru [Tempeh study group forum held in Toyama. Tasting of real Indonesian dishes with 7 instructors was a hit]. Feb. 1. p. 3. [Jap]
• ***Summary:*** A photo shows many people, standing at tables and cooking, at the active meeting.

2640. O'Connell, Michael. 1992. History of Ploughshares Foods Ltd. in Glastonbury, England (Interview). *SoyaScan Notes.* Feb. 27. Conducted by Anthony Marrese in England.
• ***Summary:*** This company was founded in 1984 in the Essex countryside by Michael O'Connell and Fiona Bruce under the name "The Emperor Liu An's Tofu Palace." Liu An was the legendary inventor of tofu in China. The business was an 8-tonne mobile catering truck and kitchen on wheels which went to open-air shows and festivals; its purpose was to serve vegan organic food (including tofu), demonstrate tofu-making, and promote veganism. They started operating the truck in Aug. 1984. Recipes prepared in the mobile restaurant in 1984/85 included tofu blueberry mock cheesecake, tofu mayo, tofu sweet cream, tofu lasagna, tofu pudding, tofu ice cream, tofu burgers, tofu gulash, and tofu pizza. In 1985/86 they launched okara steam pudding with dates, okara shepherd's pie, and okara burgers.

In Aug. 1986 the company moved to Glastonbury, started a non-mobile restaurant, and changed the company name to Ploughshares Foods Ltd. (after the Old Testament Biblical expression from The Book of the Prophet Isaiah 2:4 "They shall beat their swords into plowshares, and their spears into pruninghooks: nation shall not lift up sword against nation, neither shall they learn/study war any more").

In 1988 the restaurant introduced tofu quiche (onion and mushroom), okara veggie roll, okara tempeh, okara tempeh Bolognese/moussaka, and braised tofu in miso sauce. In 1989 they launched soya cream cheese with chives, and in 1991 okara tempeh with leaf protein added.

In 1991 the company structure changed from a partnership to a cooperative. Other current members of the co-op are Miranda Bruce, Sophie Pullinger, and Lalita Gordon Milverton.

The company was a pioneer in introducing tofu and new ways of using it to vegan restaurants. Uses included burgers, pies, dressings, creams, main dishes, salads, soups, etc. They introduced foods that were free of dairy products, wheat/gluten, and/or sugar, and developed a leaf protein product named Leafu (i.e. tofu from leaves). Their vegan cooking school was the first such school to receive the "City and Guild" qualification to those who graduate from their residential diploma course teaching vegetarian, organic, and

special diet foods. The company provides a friendly working environment, as for single working parents, and is involved in the wider issues of improving society.

The main reasons for the company success are a commitment to delicious, aesthetic, nutritious food, customer loyalty, and a commitment to research, development, and innovation.

Anthony Marrese adds: "All of their products are good, and their people are especially nice. I spent about 18 months helping with the tofu production and restaurant in 1987/88." Address: 54 Roman Way, Glastonbury, Somerset, BA6 8AD, England. Phone: 0458-831182 or 835233.

2641. *Natural Foods Merchandiser.*1992. Soyfoods' major role in cancer prevention subject of major study: Marketers expect positive results to boost sales dramatically. Feb. p. 20. [1 ref]
• ***Summary:*** "Top researchers believe soyfoods such as tofu and tempeh might help prevent cancer and have begun a three-year, $3 million study to confirm their hypothesis.

"The study was funded in October by the National Cancer Institute (NCI) in Bethesda, Maryland, after a panel of 13 scientific experts concluded more research is needed on cancer-fighting compounds found in soybeans. It is the first time soyfoods have received such attention–and funding–from the institute...

"Although it's too early to say that soyfoods prevent cancer, several compounds with anticarcinogenic activity are found in relatively high concentrations in soybeans, Messina says. Called phytochemicals, they are distinguished from nutrients–some are actually considered anti-nutrients because they make it harder for the body to absorb what it needs. The compounds include isoflavones, protease inhibitors, phytic acid, saponins, phytosterols and phenolic acids."

Includes an interview with Mark Messina, PhD, program director for NCI's Diet and Cancer Branch, about beneficial phytochemicals (non-nutritive dietary components) in soybeans and soyfoods.

2642. Perez, Oswaldo. 1992. El tempey: Caja de Pandora de la ciencia y tecnología alimentaria [Tempeh: Pandora's box of food science and technology]. *La Era Agricola* (*Merida, Venezuela*). Nov/Feb. No. 13. p. 13. [Spa]
• ***Summary:*** Describes how to make tempeh at home. Address: Granja Tierra Nueva, Aldea San Luis, La Azulita, C.P. 5102, Estado Merida, Venezuela.

2643. *Toyo Shinpo* (*Soyfoods News*).1992. Otishiyori ni mo bôya ni mo yorokobareru "tenpe ryôri." Tenpe ken. Toyama fooramu jisshû yori [Tempeh dishes enjoyed by both the elderly and young children. From cooking classes at Tempeh Study Group meeting]. March 11. p. 11. [Jap]
• ***Summary:*** Five Japanese-style tempeh recipes are given. A photo shows Kazuko Noguchi.

2644. *SoyaScan Notes.* 1992. The advantages and disadvantages of wheat gluten and seitan compared with soyfoods such as tofu and tempeh (Overview). March 19. Compiled by William Shurtleff of Soyfoods Center.
• ***Summary:*** Advantages: 1. Wheat gluten and seitan can be made to have more of a meatlike texture and flavor in vegetarian food products using simple technology. 2. They are lower in fat and have a lower percentage of calories for fat.

Disadvantages: 1. Wheat gluten and seitan are much more expensive per unit of weight or unit of protein. 2. The process by which gluten is made is hard on the environment, unless they are made from vital gluten. If made from whole wheat, the wheat starch cause such severe water pollution and clogs up municipal sewage pipes to such an extent that many municipalities will not allow manufacturers to continue operation. 3. The process for making them is very wasteful, since wheat contains only about 14% protein. The rest of the wheat (mostly starch) is wasted–almost as if it were fed to livestock. 4. Gluten is a major allergen; many people are allergic to it. In fact many foods advertise that they are "gluten-free" and many gluten-free cookbooks and other books have been published. 5. Celiac (coeliac) disease and celiac sprue are serious disorders. Most people afflicted with them are advised to follow a gluten-free diet. 6. The quality of their protein is lower.

In summary, in countries such as China and Japan, where both gluten products and soy products have been known and consumed for centuries, soy products pervade the diet and are a significant source of protein, whereas gluten products are used in very small amounts as minor specialty products. In China, they are best known in vegetarian restaurants.

2645. Bounds, Sarah. 1992. The subject of soya. *BBC Vegetarian Good Food* (*England*). Spring. p. 28-29, 31-32.
• ***Summary:*** An introduction, with many color photos, to soyfoods, including TVP, tofu, soya milk, soya flour, soya oil, soy sauce, miso, tempeh, fresh soya [green vegetable soybeans; "soya beans can be eaten fresh straight from the pod, served green and tender..."], and whole dry soybeans. Contains considerable incorrect information.

2646. Dong, Min Sheng; et al. 1992. [Histological observations on tempeh by scanning electron microscope]. *J. of Nanjing Agricultural University* In press. [Chi]* Address: Instructor of Food Microbiology, Dep. of Food Science, Nanjing Agricultural Univ., Nanjing, Jiangsu province, China.

2647. GEM Cultures. 1992. Catalog [Mail order]. 30301 Sherwood Rd., Fort Bragg, CA 95437. 9 p. March. [4 ref]
• ***Summary:*** A new addition to the catalog is "Tofu form

boxes" named "Total Tofu!" Each is made by a local woodworker in Mendocino County using American beech wood. The 8 by 5 by 3½-inch size is large enough to press 2 pounds of tofu. Included also is a 3 oz packet of natural nigari, 3 ounces of Terra Alba calcium sulfate, a double square of Grade 60 cheesecloth to line the box, and directions on how to make tofu and soymilk. Price of a Total Tofu kit, postpaid, is $32.00. Address: Fort Bragg, California. Phone: 707-964-2922.

2648. Johnson, Lawrence A.; Myers, D.J.; Burden, D.J. 1992. Early uses of soy protein in the Far East, U.S. *INFORM* (*AOCS*) 3(3):282-88, 290. March. [54 ref]
• ***Summary:*** A nice history of the subject based on a review of the literature. Contents: Early history in East Asia (industrial uses, chiang and miso, natto, tempeh, soymilk, tofu, shoyu). Emergence of U.S. soybeans (early soybean mills, ADM, Glidden). Chemical understanding of soybean protein (major components/fractions). First industrial applications (oil and meal). Soy protein-based plastics (Henry Ford). Chemurgic movement (U.S. Regional Soybean Industrial Products Laboratory, Northern Regional Research Center, Glidden). Soy protein adhesives (I.F. Laucks). Paper coatings and sizings (Glidden). Soy fiber spinning (Ford, Azlon, Drackett). Other industrial uses. Address: Center for Crops Utilization Research, Iowa State Univ., Ames, Iowa 50111.

2649. Yap, Bwee Hwa Flora. 1992. Tempeh activities. Promotion of tempeh. St. Ingbert, Germany. 3 p. April 5. Unpublished manuscript.
• ***Summary:*** These are two chronologies of her work to help introduce tempeh to Germany. The following is a sampler of activities, in chronological order: 1989 Feb. 18–Start experiments for tempeh starter production. 1989 March 31–First tempeh made. 1989 May 12–Make and serve Tempeh Croutons for about 150 people at the "Bali Evening" in the Saarbruecken high school (*Volkshochschule*). 1989 June 23–Sample of tempeh starter sent to Bernd Steyer of Byodo in Munich. 1989 Dec. 7–Fried tempeh made and served to about 80 people at the "Open door" Maya's tourist office.

1990 Jan. 28–First tempeh delivered for commercial sale to "Mutter Erde" (Mother Earth) natural food shop in the Saarbruecken. Each 200 gm cake sells for DM 3.20. 7 cakes a week are sold, later increasing to 10. 1990 Sept. 18–Report to the Gewerbe Amt of St. Ingbert. Her tempeh kitchen is inspected by 2 persons from the hygiene control (*Gesundheitspolizei*) division. Eventually she gets official permission to make tempeh in her home kitchen. 1990 Nov. 2–Resume deliveries to "Mutter Erde" with package and label. 1990 Nov. 12–First cooking of tempeh for the cooking club of the Kneipp Verein of St. Ingbert.

1991 Jan. 30–Start whole-foods cooking course at the Kneipp Verein of St. Ingbert. They hold a "Tempeh Evening" and at least 15 people attend. 1991 Sept.–Promoting "Das Tempeh Buch." A recipe is now attached to each piece of tempeh.

A note about the Kneipp-Bund (a German national organization) and its state-level Kneipp-Vereins. The Kneipp Bund was founded in 1891 by father Sebastian Kneipp, a catholic priest who lived 1821-1897. The organization is devoted to the promotion of the health of the body-mind-soul through prevention by natural means, including water, fresh air, herbs, diet and lifestyle. Today there are about 150,000 members nationwide. The headquarters and publishing offices are in Bad Woerishofer. Flora has actively worked with this organization to introduce tempeh to its members and leaders. Address: Am Muehlenwaeldchen 1a, W-6670 St. Ingbert, Germany. Phone: 06894 / 53609.

2650. Dong, Minsheng. 1992. Re: Tempeh and soy nuggets (douchi) in China. Letters to William Shurtleff at Soyfoods Center, April 24 and June 18. 1 p. and 2 p. respectively. Typed. [Eng]
• ***Summary:*** "The first tempeh factory in China, Jiangdou Nutritive Food Factory, is located in Jongdou, Jongdou County, Jiangsu Province, China. It first started to sell tempeh in Oct. 1991. Production capacity is 1,000 kg/week. Tempeh has various Chinese names such as danbei, tianpe, tianpei, or doufu [Chinese characters are given for each], which were chosen to sound like "tempeh." Some scholars call tempeh "Indonesian Tou Chiah" [i.e. *doushi* or *douchi* (pinyin) or *tou-ch'ih* (Wade-Giles) = soy nuggets] because they think tempeh is similar to Chinese *douchi,* a fermented soyfood made with specific molds. But I think tempeh is different from Chinese *douchi* in three respects: 1. In making *douchi,* it is not necessary to dehull the soybeans; in fact the hull should remain intact; 2. Douchi is fermented with *Aspergillus oryzae, Micrococcus* species, and/or *Mucor* species, never with Rhizopus species; 3. *Douchi* is composed of separate black particles; it is not a white cake.

"You mentioned that in 1931 William Morse observed a tempeh-like product in Beijing, China, which he called *tou chiah ping* ("soybean cake fried"). I have never heard of *tou chiah ping* [Chinese characters are included]. China has not previously produced tempeh. Very interestingly, I found tempeh to be very analogous to the koji used to make *douchi,* yet this koji is not usually used as food.

In 1991 Jiang Han-hu and Dong Min-sheng (both of the Dept. of Food Science, Nanjing Univ.) presented a paper on tempeh titled "Isolation, screening, and identification of a thermotolerable tempeh-producing strain RT-3." It was published in Chinese in the Proceedings of the Annual Meeting of the Chinese Microbiological Society (1991, Jiangsu, p. 20).

Dr. C.W. Hesseltine, one of America's leading microbiologists and experts on East Asian fermented foods notes (personal communication 24 May 1992) that he has

never heard of Tou Chiah, but he would guess that it is a Hamanatto-like food [such as *douchi*].

In response to a letter asking what "Tou Chiah" is, Dong replies that "tou chiah" is written as "douchi" or "dou chi" in pinyin. There are two types of douchi [soy nuggets] in China: (1) *Xian douchi* [also called *yanshi*] is the salted variety, which is made throughout China. To prepare it, black (or yellow) soybeans are soaked in water, cooked and made into koji. The koji is washed, and fermented, then salt and spices are added. It is aged, then sprayed with water then dried to give *xian douchi.* (2) *Dan douchi* [*danshi*] is the unsalted variety, which is made only in certain parts of Shandong (Shantung) and Hunan (Hunan) provinces. To prepare *dan douchi,* black (or yellow) soybeans are dry steamed in a cooker, cooled, inoculated with *Aspergillus oryzae,* and made into koji. The koji is washed with water, fermented, then aged with distilled wine. Address: Dep. of Food Science, Nanjing Agricultural Univ., Nanjing, Jiangsu Province, China.

2651. Gabriel, John. 1992. Current work with soya in Nicaragua (Interview). *SoyaScan Notes.* April 28. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** John (age 55) and his wife Charlotte (who is now a well-known maker of psychedelic tie-dye clothing) used to make tempeh in Houma, Louisiana, in about 1977. Recently John was in Nicaragua and he plans to do work there, starting in several years, with soyfoods such as tempeh, tofu, and soymilk. He is now working with Chuck Haren of Plenty USA, to put together a grant proposal for a project and funding.

The two best known people involved with soya in Nicaragua are Luci Morren and Anne Souter. Luci is a Danish nun who has founded an organization named Asociatión Soya de Nicaragua (popularly known as Soynica, located at Apartado Postal 4451, C-164 Managua, Nicaragua). Now in her 50s, Luci has been involved with soyfoods for at least 8 years, working with a women's collective of about 5 women and promoting their use (especially as a source of nutrients for poor and malnourished children) in the barrios of Managua. The group now makes tofu using rudimentary equipment; they don't even have a press, so they must squeeze out the soymilk by hand. Luci would now like to start a commercial soy processing operation to make soymilk, tofu, and tempeh. She would like to sell these to restaurants, hospitals, schools, small retail outlets, etc., but she needs both technical and financial help. John is in communication with Luci on a regular basis. Luci is known by most development people in Nicaragua. John describes her as a very dedicated, indeed holy woman–like Mother Teresa of India. According to the SoyaScan database, in the mid-1980s, Luci was working in Mexico, teaching the people about Soya; she was with Cargua at San Cristobal Las Casas, 75 Real de Guadelupe, 29230 Chiapas, Mexico.

Anne Souter is now back in Nicaragua working full time with soya in the area of Matagalpa. She has yet to produce a successful crop of soybeans in Nicaragua.

A development group working with soyfoods in Nicaragua is Alianza Para Comunidades en Acción. Based in the USA (contact Richard Schopfer, director, P.O. Box 30154, Bethesda, Maryland 20814. Phone: 301-229-1742), they have an office in Managua run by Richard's son, Don Schopfer (Aptdo. Postal C-144, Managua. Phone: 72022), and a soy project in Rivas, located 2 hours drive south of Managua near the border with Costa Rica. There Sal Piazza is in charge of a soybean utilization project. He works with several women's groups that have community kitchens. Most of Alianza's major projects are in the fields of health, food production, water, and housing.

Shurtleff & Aoyagi first met John and Charlotte Gabriel on 4 Jan. 1977 in Houma, Louisiana. They had constructed a tempeh trailer and were making tempeh for their own use. At that time they planned to start commercial tempeh production, but they never actually did. Rather they took the tempeh trailer back to The Farm in Summertown, Tennessee, and it was used there to make tempeh for members of The Farm.

Update: Talk with John Gabriel. 1993. Oct. 6. John and Charlotte are in the process of moving permanently to Nicaragua where they hope to arrive in about Feb. 1994 to work with the people to make soymilk, tofu, and tempeh. They plan to learn Spanish first in Guatemala. Chuck Haren says that quite a lot of soybeans are grown in the department of León, Nicaragua, but the yields are not very high; the rainy season requires that short-season varieties be cultivated. Leaf protein concentrate (made from cowpea leaves) is now being added successfully to lemonade in Nicaragua. Chuck Haren has married a Nicaraguan lady named Casta Calderon, who managed Luci Morren's office.

Note: Plenty International (Jan. 1994) notes that Soynica (a non-governmental organization or NGO) is now located at: Apartado #RP-05, Managua, Nicaragua. Address: 11668 Blackberry Place, Nevada City, California 95959. Phone: 916-265-5100.

2652. Boysen, Hans-Juergen. 1992. Soja [Soya]. *Schrot & Korn* (*Germany*). April. p. 16-20. [Ger]
• ***Summary:*** An introduction to soybeans and soyfoods, including whole dry soybeans, soy oil, soymilk, soya meat (Sojafleisch, TVP), Whole soy flour, tempeh, and soy sprouts.

Note: This magazine is sold in German natural food stores (Naturkost-Laden).

2653. Perkins, David D. 1992. Neurospora: The organism behind the molecular revolution. *Genetics* 130(4):687-701. April. [225 ref]

• ***Summary:*** "Under the title 'Fifty Years Ago: The Neurospora Revolution,' Horowitz (1991) has celebrated an anniversary of the epochal 1941 paper of Beadle and Tatum, which reported the first mutants with biochemically defined nutritional requirements. Horowitz's account and others (Horowitz 1973, 1985, 1990; Lederberg 1990) have focused on the people who were involved, the genesis of their ideas, and the role of the 1941 results in transforming biology. The present essay will be concerned mainly with the research organism that was so important to the success of the initial experiments." Address: Dep. of Biological Sciences, Stanford Univ., Stanford, California 94305-5020.

2654. **Product Name:** KISS (Keep It Simple Stirfry) [Lemon Teriyaki, Garlic Italian, or Spicy Szechuan].
Manufacturer's Name: Turtle Island Foods, Inc.
Manufacturer's Address: P.O. Box 176, Hood River, OR 97031. Phone: (503) 386-7766.
Date of Introduction: 1992. April.
Wt/Vol., Packaging, Price: 15 oz package. Each retails for $2.79.
How Stored: Frozen.
New Product–Documentation: Leaflets from Natural Products Expo West at Anaheim, California. 1992. April 10-13. "KISS." and "Discover Turtle Island"–since 1980. To make Lemon Teriyaki KISS, soy-brown rice tempeh is marinated in a zesty teriyaki sauce with lemon. Sold refrigerated or frozen in reusable/recyclable tubs, it is ready to stir-fry when you are! It is great for stir-fries, soups, pasta salads, and hors d'oeuvres. For Garlic Italian KISS, soy tempeh spiced with Italian herbs is marinated in an oil and vinegar based garlic sauce. Perfect for spaghetti, lasagne, pizza, or pasta dishes. For Spicy Szechuan KISS, soy tempeh with cashews is marinated in a spicy red sauce from Northern China. Ideal for stir-fries, sweet & sour, and other Oriental dishes.

2655. Wilson, Lester A.; Murphy, Patricia A.; Gallagher, Paul. 1992. Soyfood product markets in Japan: U.S. Export opportunities. Ames, Iowa: MATRIC (Midwest Agribusiness Trade Research and Information Center). x + 64 p. April.
• ***Summary:*** Contents: Figures. Tables. Acknowledgments. Introduction. I. Soybean processing (by Wilson and Murphy). Food from soybeans: Soybean chemical composition, environmental influences on soybean composition. Soyfood manufacture: Soymilk, tofu, momen tofu, kinugoshi tofu, packed tofu, aseptically-packaged tofu, deep-fried tofu, kori tofu. Tofu-related research: Recent studies at Iowa State University, summary, future research. Other nonfermented soyfoods: Yuba, kinako, texturized soy protein foods. Fermented soyfoods: Miso, shoyu, natto, tempeh. Japanese Agricultural Standards (JAS). Identity preservation and transportation. U.S. soybean quality and the Japanese market: Grain quality, judging quality, potential new markets.

II. Japanese soyfood markets (by Gallagher). Demand and growth prospects: Consumption patterns, demand analysis, forecasts. The U.S. share of the food soybean market: Sources and uses, market share analysis, determinants of relative prices, prospects. Trade and trade barriers: Soybeans, processed products. Summary and recommendations.

Appendixes: A. Excerpts from specifications and standards of food additives, etc.–Manufacturing and storage of tofu. B. Excerpts from standards and certification systems in Japan. C. Additional agricultural standards for soybeans. References.

Table 2.1 shows soybean use for soyfood production in Japan; actual (1986) and projected (2000). Soybeans for tofu are expected to increase from 524,000 to 609,700 tonnes. Soybeans for miso are expected to decrease from 156,000 to 101,600 tonnes. Soybeans for natto are expected to increase from 92,000 to 118,600 tonnes. Figures 2.1 to 2.4 show Japanese per capita consumption of tofu, natto, miso, and soy sauce from 1965 to 1988. Tofu: Japanese annual per capita consumption of tofu has risen since 1965, except that it fell during 1973-1977. In 1965 about 3.6 kg/capita of soybeans were used to make tofu, increasing to 4.4 kg/capita in 1988. If 1 kg of soybeans yields 2.8 kg of tofu, then per capita tofu consumption in 1988 was 12.32 kg or 27.1 lb.

Natto: Japanese annual per capita consumption of natto has risen steadily, from a little less than 0.4 kg in 1965 to 0.6 kg in about 1968, to 0.8 kg in 1988.

Miso: Japanese annual per capita consumption of miso fell from 8 kg in 1965 to about 5.4 kg in 1985, then it began to rise to about 5.7 kg in 1986.

Soy sauce: Japanese annual per capita consumption was about 12 liters in 1965. It fell to 11 liters in 1967, rose to 13 liters in 1973, then fell to 9.8 liters in 1985, after which it rose for 1 year. Address: 1-2. Prof. of Food Science and Human Nutrition; 3. Assoc. Prof. of Economics. All: Iowa State Univ. Phone: 515-294-0160.

2656. *SoyaFoods* (*ASA, Europe*).1992. Helfex '92. 3(2):4. Spring.
• ***Summary:*** "The International Health Food Exhibition, Helfex '92, was held at Wembley, London on 26 and 27 April. Over 160 companies concerned with health, diet, fitness and nutrition exhibited and several new soya products were launched.

"The Haldane Foods Group displayed their new range including a new Light Soya Milk, a new Soya Creem, a vegetarian cheese spread, burger and sausage mixes, and 6 new varieties of tinned products. JRJ Trading (The Redwood Company) had an interesting and tasty range of tempeh-based products including dips, spreads, patés and vegetarian rashers. Soya milks and desserts from Granovita, Haldane, Sojasun (Triballat), Vitasoy were also on display. Berrydales'

No Cream Ices, made from fresh organic tofu and soya milk, introduced their new 4-pack which will allow consumers to purchase four different ices in one pack. Plamil Foods launched a new non-dairy chocolate bar, *Martello* and Marigold Health Food, manufacturers of canned braised tofu and other delicacies, also had a stand."

2657. *Whole Foods.*1992. Source book 1992. 15(5):33-294. May. Illust. Index. 28 cm.
• ***Summary:*** Contents: How to use this book (p. 8). Wholesalers/distributors alphabetical listing. Wholesalers/distributors geographical listing. Brokers. Publishers. Associations. Consultants/service companies.

Product directories: A listing of manufacturers/importers/growers by products: Foods (p. 77-111–soy-related categories include: Beans/bean products, cheese substitutes, coffee substitutes, cultures, miso, soy products, soy sauce, soymilk, tamari, tempeh, tofu, tofu entrees), vitamins and supplements, herbs, cosmetics/personal care, miscellaneous products. Brand names. Product index. Manufacturers/importers/growers alphabetical listing.

Note: The listings related to soy products are full of errors. Address: South Plainfield, New Jersey.

2658. **Product Name:** Impulse Foods Organic Tempeh, Herb and Garlic Organic Tempeh, Organic Dried Tempeh, Smoky Slices (Bacon-like).
Manufacturer's Name: Impulse Foods.
Manufacturer's Address: Radnor Business Centre, Radnor Rd., Horfield, Bristol BS7 8QS, England. Phone: 0272 41690.
Date of Introduction: 1992. June.
Wt/Vol., Packaging, Price: 227 gm.
How Stored: Frozen.
New Product–Documentation: Ad in Health Food Business (England). 1992. July. p. 17. The first 2 products come in 8 oz cakes. The dried tempeh, launched in June 1992, comes in 4 oz packs. The smoky slices (organic) were launched at the same time in the same weight.

Label for Organic Tempeh sent by Anthony Marrese. 1994. May. 5 by 5 inches. Green on white. The company address is now: Islington, Workshops, Bristol BS3 1QB, England. "A delicious cultured soya bean product. Tempeh's distinctive flavor and texture make it ideal as the mainstay of a non-meat diet. After thawing, slices or cubes of tempeh can be deep or shallow fried, steamed or baked. Grey or black mould is the natural result of the culture forming its seeds and enhances the flavour of the Tempeh. The process can be likened to the blue veins in some cheeses." Sell by Aug. 1993.

Spot in Soyafoods (ASA, Europe). 1994. Spring, p. 5. "A tempeh based alternative to bacon." Smoky slices are a frozen tempeh product. A 114 gm pack retails for £1.30.

2659. McGlasson, Linda. 1992. Soyfoods in the next century: Feeding the world one bean at a time. *Health Foods Business* 38(6):30-34, 36. June. [1 ref]
• ***Summary:*** A table gives estimated retail sales of soyfoods in the USA in 1990, in descending order of sales (million dollars): soy sauce $395.5, tofu $94.1, second generation products (such as dips, dressings, entrees, non-dairy desserts, cheeses, yogurts, and imitation meat products) $81.6, soymilk (not including infant formulas made with isolated soy proteins) $60.0, miso $44.5, soynuts $9.7, tempeh $7.5. Total $657 million. Source: Soyatech in Bar Harbor, Maine. The two fastest growing segments are soymilk (increasing at 20% a year) and second generation products (15-20% a year). "Soyfood sales are expected to grow steadily through the next decade as health and environmental concerns become increasingly important factors in food purchasing decisions... an estimated 33 to 50% of all adults are reducing their intake of meat, yet they still have the craving.

Protein Technologies International of St. Louis, Missouri, is developing a line of structured proteins, which are look-alike meat components. There are versions that look and feel like ground beef, crab meat, and chicken.

Angelo Morini, founder of Galaxy Foods, began trying substitutes for the real cheese he was using in his pizza business. He left the pizza business in 1968 and began making soy cheese full-time. The company began slowly by selling to food service customers, then they started marketing the cheese nationally in 1984. In 1985 Galaxy started in the health food industry with a new line, Soyco. Following a fire, the company has relocated in a new 55,000 square foot state-of-the-art manufacturing facility in Orlando, Florida. They are now producing soy cheese products and are scheduled to launch 30 new items this year.

One sidebar, titled "Quickie Dictionary of Soyfoods," defines tofu, miso, tempeh, soymilk, and shoyu. Another says "Soyfoods Take Spotlight in New Infomercial." The infomercial is based on Dr. Michael Klaper's education seminars for doctors and other health professionals titled "Let Food Be Your Medicine." Klaper (a noted physician, author, environmentalist and nutritionist [and vegan]) is co-founder and director of the Institute for the Advancement of Nutrition Education and Research. The tentative title for the new infomercial is "The Nutrition for the 90s, a Transition to Health." It will begin airing in July on cable TV. Radio's Top 40's Countdown host Casey Kasem will emcee the show with Dr. Klaper. The show will feature top scientists and doctors, plus testimonial interviews with many celebrities and famous athletes. Address: Managing editor.

2660. Bersky, Kamil. 1992. Re: Work with soyfoods, seitan, and amazake in Czechoslovakia. Letter to whom it may concern, July 30. 1 p. Typed, with signature.
• ***Summary:*** "We are now producing 5 varieties of seitan, 5 varieties of tempeh, amasake, tofu, and we can offer

barley malt. Our plan is to start koji and miso production, open a macrobiotic center with a year-round program, a kindergarten, and a small restaurant with a shop." Address: M.D., The Macrobiotic Centre of Czechoslovakia, Mlynska 659, 51 801 Dobruska, Czechoslovakia. Phone: 42 443 21578 (fax).

2661. Martin, Claire. 1992. Regardless of poll, bland food's sales rise. *Denver Post.* Aug. 6.
• ***Summary:*** About Steve Demos and White Wave Soyfoods Inc. Photos show: (1) Worker David Kremin labeling and stacking tofu on a conveyor belt. (2) A carousel curding machine inside White Wave's tofu plant in Boulder, Colorado. Sales of White Wave tofu grew only slowly from 1977 (when Demos started the company) until 1985. But in 1985, when Demos decided to market "second-generation soy products–cooked tempeh burgers, soy hot dogs, soy yogurt... Customers literally ate it up. Sales doubled that year, and kept growing. White Wave's growth rate last year was 30 percent. (Its stock is privately held.) This year, Demos expects sales to meet or exceed $5 million, and to produce 7 million pounds of tofu and soy products in all 50 states. The No. 1 seller? Raw tofu–despite the yuck factor. Part of the answer may be that shoppers in the United States are shifting their focus from price and convenience to health and nutrition."

Demos is now "contemplating a product [a hot dog?] that combines tofu and meat. 'The meat industry thinks that's sacrilegious. The tofu industry thinks that's sacrilegious. I don't think its sacrilegious. It's one way to get someone to make the transition from meat to soy.' Another way is creative advertising. Inspired by the presidential campaign, White Wave marketing director Paul Chasnoff came up with a six-word publicity campaign, perfect for bumper stickers: 'I eat tofu and I vote.'" Note: These bumper stickers can be ordered from White Wave for $2 each. Address: Denver Post Staff Writer.

2662. *Toyo Shinpo* (*Soyfoods News*).1992. Kyôto de Tenpe kenkyû-kai sôkai [General meeting of the Tempeh Study Group in Kyoto]. Aug. 21. p. 1. [Jap]

2663. GEM Cultures. 1992. Catalog [Mail order]. 30301 Sherwood Rd., Fort Bragg, CA 95437. 9 p. Aug. [4 ref]
• ***Summary:*** This catalog celebrates the company's 12th anniversary. The first section is titled "Powdered cultures for soycrafters." On page 1: "Powdered Tempeh Starter, PTS: Tempeh is a delicious. Indonesian, cultured soyfood with a chewy texture. Whether your Interest is in exotic foods, eating lower on the food chain for health, social or economic reasons, or cutting back on meat, cholesterol, or calorie consumption, tempeh fills the bill. A vegetarian source of Vitamin B12, this versatile food can be fried in the traditional manner or baked, broiled, steamed, or barbequed. Easily cultured without special equipment, homemade tempeh tastes and smells wonderful, slices better, and costs far less than commercial tempeh.

"The tempeh mold, *Rhizopus oligosporus,* that binds the cooked soybeans together into a sliceable cake, is grown on an entirely vegetable medium. Mature spores are harvested and combined with sterile organic rice flour for easy and accurate measuring on every batch. Complete culture directions and recipes are included. One pound of dry soybeans prepared as directed will make 1 3/4 pounds of tempeh. Preparation time–less than 2 hours. Incubation time–about 24 hours at 85 F (32 C). Kept cool and dry, PTS has at least a 6-month shell life at full potency.

"Kit PTS, 11gm, three 1-pound batches (makes 5+ pounds). $2.50 each.

"Big PTS, 35 gm, ten 1-pound batches (makes 18 pounds). $4.00 each.

"Half Kilo PTS, 500 gm, packaged in bulk. $35.00 each.

"Full Kilo PTS, 1000 gm, packaged in bulk. $65.00 each.

"Powdered Natto Starter: Called *Natto* in Japan and *Thau-nao* in Thailand this cultured soyfood has a strong, somewhat persistent, unique flavor. The bacteria, *Bacillus subtilis* var *natto,* that culture the cooked soybeans make a sticky, viscous polymer during the 6-12 hours of incubation which creates whispy threads evident when the cultured soybeans are pulled apart. A good source of protein, this robust soyfood adds zest to any grain or noodle dish, soup or sandwich. A little goes a long way, so what is not intended for use in a day or two may be easily frozen.

"Natto Starter Kit: This packet contains complete culture directions, recipes, and enough spore to start 3 recipes of natto, each making 5 cups or 1½ pounds.

"Bulk Natto Starter: A concentrated spore preparation, this vial has sufficient spore to start 48 pounds of dry soybeans. Prepared according to the included directions it will therefore make about 86 pounds of natto.

"Natto Starter Kit: Makes 4½ pounds. $2.50.

"Commercial Natto Starter: Makes 86 pounds. $10.00."

Also: Amazake, miso, shoyu, and tamari starters from Japan. Five types of *tane koji* (koji starter) imported from Japan. Commercial miso and shoyu koji spore packets. Organic light rice koji. Natural salts for curding tofu: Natural nigari, Terra Alba calcium sulfate. Self-renewing cultures: Kombucha tea fungus. Fresh sourdough. Seed miso. Fresh fil mjolk, fresh viili, fresh kefir curds. Cookbooks with culture. Sea vegetables from the Mendocino Sea Vegetable Co. Kitchen culture items. Address: Fort Bragg, California. Phone: 707-964-2922.

2664. McSweeney, Daniel. 1992. 10th Annual Whole Foods Consumer Survey: Getting to know your customers. A profile of an aging and affluent consumer emerges from the survey. *Whole Foods.* Aug. p. 32-34, 36, 38, 43-44.

• ***Summary:*** A table titled "Food purchases" (p. 43) shows the percentage of respondents who purchased a type of product at a natural foods during the past 12 months, in descending order of popularity (also shows percentages for 1991 and 1990): Tofu 52%. Soy milk 42%. Tamari 38%. Soy sauce 29%. Miso 28%. Tempeh 25%. Cheese substitute 19%. Sea vegetables 17%. Note: The sample size is not given.

2665. **Product Name:** Tofu Tempeh Burger, Tofu Vegies Burger.
Manufacturer's Name: Nutrisoy Pty. Ltd.
Manufacturer's Address: 255 Forest Road, Arncliffe 2205, NSW, Australia.
Date of Introduction: 1992. August.
Ingredients: Organic soybean (non genetically modified), water, soy sauce, sunflower oil, spices, natural nigari (magnesium chloride), culture (*Rhizopus oligosporus*).
Wt/Vol., Packaging, Price: 200 gm.
How Stored: Refrigerated.
New Product–Documentation: Label and letter (e-mail) from Tony Wondal of Nutrisoy. 2005. April 26. He started making and selling these two products in Aug. 1992. Note: He invented this interesting Tofu tempeh Burger.

2666. *Toyo Shinpo* (*Soyfoods News*).1992. Kyôto de sôkai hiraku. Rainen kaisa-chi (Tôkyô, Meiji-dai) kimeru [Tempeh Study Group's general meeting was held in Kyoto. Next year's general meeting place was decided–Meiji University in Tokyo]. Oct. 1. p. 2. [Jap]

2667. *Toyo Shinpo* (*Soyfoods News*).1992. Kenkyû seika no happyô mo. Kyôto furitsu-dai de. Tenpe-ken sôkai hiraku [General meeting of the Tempeh Study Group was held at Kyoto University. Research results were reported]. Oct. 1. p. 1. [Jap]

2668. Dong, Minsheng. 1992. Re: Tempeh products and "oncom" in China. Letter to William Shurtleff at Soyfoods Center, Nov. 30. 1 p. Typed. [Eng]
• ***Summary:*** "We are presently busy in developing a series of tempeh foods. These foods are going on the market.

"We would like to develop a new Indonesian fermented food–'Oncom' [onchom] in collaboration with you or your center. China, as you know, has a very large population and a low protein intake, but 900,000–1,200,000 tons per year of defatted groundnut presscake are used as fertilizer and animal feed. If we can change them into 'oncom,' these wastes could be of great economical and social value." Address: Dep. of Food Science, Nanjing Agricultural Univ., Nanjing, Jiangsu Province, China.

2669. **Product Name:** Skinny Dippers (Spreads and Dips) [Spring Garden, Bretonne, Hawaiian, Aztec, Spicy Greek, or Chinese].
Manufacturer's Name: Redwood Company (The). Div. of JRJ Trading (Marketer-Distributor). Made in America.
Manufacturer's Address: P.O. Box 1298, London, N20 0YT, England. Phone: 81 / 368 2638.
Date of Introduction: 1992. November.
Ingredients: Incl. tempeh, soymilk, miso.
Wt/Vol., Packaging, Price: 120 gm pack retails for £1.20.
How Stored: Refrigerated.
New Product–Documentation: Spot in SoyaFoods. 1992. Autumn. p. 5. "Skinny Dippers spreads and dips." Four flavors are based on tempeh: Spring Garden, Bretonne, Hawaiian, and Aztec. Two are based on soymilk: Spicy Greek, and Chinese. Other soya ingredients used, depending on the flavor, include soya bean sprouts and miso.

2670. *Voice of the Turtle* (*Hood River, Oregon*).1992. Hood River plant opens. Nov. p. 2.
• ***Summary:*** Since 15 May 1992 Turtle Island Foods, Inc. has been making all of its food products out of its spacious plant in Hood River, Oregon, overlooking the Columbia River. The loading dock is 2 minutes from interstate I-84, 65 miles east of Portland. The company is in a building previously occupied by companies that made tortillas and canned fruit. Address: P.O. Box 176, Hood River, Oregon 97031. Phone: (503) 386-7766.

2671. Noguchi, Kazuko. 1992. Tenpe ryôri fukyû ni tsutomeru [Making an effort to promote tempeh cookery]. *Toyo Shinpo* (*Soyfoods News*). Dec. 1. p. 13. [Jap]
• ***Summary:*** A photo shows Kazuko Noguchi. Address: Saga Joshi Tanki Daigaku.

2672. Arocena, Javier. 1992. [Re: Recent developments at Zuaitzo]. Letter to William Shurtleff at Soyfoods Center, Dec. 14. 2 p. Typed, with signature on letterhead. [Spa; eng+]
• ***Summary:*** In June 1988 he moved his company to Plaza Santa Maria, 01001 Vitoria-Gasteiz. He knows of three other soyfoods manufacturers in Spain: Natur-Soy, Vegetalia, and La Sojeria, all near Barcelona.

"I was a pioneer in the production of tofu and seitan in Spain but for the last 12 years I have kept on doing the same thing, working only at the family level, making little but doing it well.

"Now we are living in the country at Villanueva Tobera, 09214 Condado de Treviño (Burgos), Spain... about 25 km from Vitoria-Gasteiz.

"As of today, our plans are not to increase our work with tofu and tempeh derivatives, but rather to develop new products, above all the full gamut of fermented soy products... such as miso, tamari, natto, and amazake." But since he has difficulty understanding English, he would like to get Spanish-language publications. Address: Zuaitzo, Villanueva Tobera, 09214 Condado de Treviño (Burgos),

Spain. Phone: 945/28 86 30.

2673. Soyfoods Assoc. of America. 1992. Soyfoods 2000: Merchandising soy products into the next century (Ad). *Natural Foods Merchandiser.* Dec. 16-page color special supplement, 8½ by 11 inches, inserted after p. 28.
• ***Summary:*** Contains full color ads by Morinaga Nutritional Foods, Inc. (Mori-Nu Tofu, Firm and Extra Firm), Lightlife Foods, Inc. (5 types of tempeh, Tempeh Burgers [Lemon Grill, American Grill, Barbecue Grill], Tofu Pups, Vegetarian Chili, Sloppy J, Foney Baloney, Fakin Bacon, Lean Links), Worthington Foods, Inc. (Natural Touch Okara Pattie, Garden Pattie, Dinner Entrée, Lentil Rice Loaf), Sovex Natural Foods, Inc. (Better Than Milk, Tofu Ice Cream [Vanilla or Strawberry], Good Shepherd Spelt, Millet-Rice Flakes, For Goodness Flakes!), Vitasoy (U.S.A.) Inc. (Light Vanilla, Original, and Cocoa soy drinks).

Contains black-and-white ads by White Wave, Inc. (Five Grain Tempeh, Meatless Tofu Steaks, Soya A Melt Soy Cheeses [Regular or Fat Free] and Singles, Lemon Broil Tempeh, Amaranth Tempeh, Teriyaki Burgers, Organic Tofu, Dairyless Non-Dairy Yogurts, Tempeh Burgers, Sea Veggie Tempeh, Meatless Healthy Franks, Snack'n Savory Tofu), Cemac Foods Corp. (Unbelievable brand Cheesecake; based on nonfat baker's cheese; contains no soy, no fat, no cholesterol), Solait International Ltd. (Solait Powdered Soy Beverage), Tofutti Brands, Inc. (Lite Lite Tofutti, Tofutti Cuties, Land of the Free [Non-dairy frozen desserts, free of fat and sugar, sweetened with fruit juice], Tofutti Egg Watchers, Better than Cream Cheese, Sour Supreme [Non-dairy sour cream], Premium Tofutti, Tofutti Soft Serve Mix), Sharon's Finest (TofuRella), American Natural Snacks (Soya Kaas), Great Eastern Sun (Miso Master brand misos), The Macrobiotic Wholesale Company, Turtle Island Foods, Inc. (Keep It Simple Stirfry–Diced Marinated Tempeh), Betsy's Tempeh (Tempeh), Quong Hop & Co. (The Soy Deli–9 Tofu Burgers, 3 Savory Baked Tofu, Pacific Tempeh, 3 Tempeh Burgers, 7 fresh water packed and vacuum packed tofu), MYCAL Group (natural dehulled soybean flakes).

Articles and sidebars include: "Welcome to the future: Soyfoods 2000." "Soyfoods Association names new executive director" (Virginia Messina, whose photo is shown). "Soyfoods Association mission statement." "The modern evolution of soyfoods," by Michael Whiteman-Jones and William Shurtleff (Shurtleff's photo is shown). "Unraveling the soyfoods merchandising mystery," by Michael Whiteman-Jones. "Research shows soyfoods may help prevent cancer," by Mark Messina, PhD (whose photo is shown). "Key reasons to buy soy: Environmental, nutritional, economic."

This attractive insert was coordinated by Franke Lampe and edited by Lisa Turner, both of NFM.

2674. *Opzij* (*Netherlands*).1992. Inkomsten dankzij de sojaboon [Income thanks to the soybean]. No. 12. p. 37. Dec. [Dut]*
• ***Summary:*** This Dutch feminist monthly magazine, whose title means "move over," reports that a foundation in the Netherlands named Stichting Krakti Gotong Rojong ("Cooperation-Makes-Strong Foundation") teaches 25 women in Suriname (in the Commewijne district) how they can grow soybeans in an environmentally-friendly way. The women–who are all bread-winners and have little children–learn the work from agricultural experts at Wageningen, The Netherlands. They can borrow from the Foundation small agricultural equipment. They get their soybean seeds from Dutch traders, who see this as a potential new market. After harvest, the soybeans are processed to make tempeh and tahoe (tofu), which are excellent alternatives to meat. And there is much demand for these soy products in Suriname, where meat has become too expensive for many people because of the bad economic situation. To give more women the chance to advance economically, the Foundation wants to expand the project.

Those who want to support this project can send donations to bank account number 51 78 67 621 to the attention of the Stichting Krakti Gotong Rojong in Delft. For information, phone 015-144721.

2675. Shipley, Betsy; Pfaff, Gunter. 1992. Cooking with "Indonesian bean steak." S&P Farm, 14780 Beardslee Rd., Perry, MI 48872. 12 p. 22 cm. [12 ref]
• ***Summary:*** Contains 14 vegetarian recipes. Address: Perry, Michigan. Phone: 517-675-5213.

2676. Haryono, -; Sudigbia, I. 1992. Efek positif tempe terhadap mukosa ususanak penderita diare [Positive effect of tempe on intestinal mucous in children suffering from diarrhea]. *Journal of the Indonesian Nutrition Association* 17(57):67. [Ind]*
Address: Indonesia.

2677. Jing, Hanhu; Dong, Minsheng. 1992. [Isolation, screening and identification of a thermo-tolerable tempe-producing strain RT-3]. *J. of Nanjing Agricultural University* (*Nanjing Nongye Daxue Xuebao*) 15(3):97-101. [8 ref. Chi; eng]
• ***Summary:*** "A thermo-tolerable *Rhizopus* sp. strain RT-3 was isolated from tempe [tempeh]. It was identified as *Rhizopus oligosporus* Saito. Tempe prepared by using this fungus has a good flavor and attractive appearance. Its true digestibility measured by biological methods was up to 94.4%, analogous to animal protein. This research was first reported in China." Address: Dep. of Food Science, Nanjing Agricultural Univ., Nanjing 210014, Jiangsu province, China.

2678. Vegetalia. 1992. Recetario [Recipe book]. Castellcir

(near Barcelona), Spain. 32 p. 21 cm. [Spa]
• ***Summary:*** The Introduction to this handsome color booklet (which contains many color photos), was written by Salvador Sala. It states: "Thanks to you, this year in 1992 we will celebrate the 6th year of Vegetalia's existence. It has not been easy to get to where we are now, but it has been very satisfying, especially for me. When, in April 1986, together with Carmen and Tomás, we decided to form Vegetalia, our dream was to facilitate the improvement of the quality of life, in the ecological way."

For each of the following foods there is an introduction, a nutritional analysis, then several recipes: Seitan, tempe (a color photo shows tempeh sold in perforated plastic bags, and immersed in a broth in jars), tofu (a color photo shows tofu sold in self-sealing bags and immersed in a liquid in jars), pickles, amasake [amazake], gomasio [gomashio], and Algas Klamath (a type of sea vegetable), and Vegetalin (made with whole wheat, olive oil, sea salt, natural leavening, and sesame). Page 32 notes that the company makes seitán, tempe, tempe estofado, tofu, tofu tres delicias, paté -de tofu y miso, etc. It also sells an large line of natural foods made by other companies, including: Soycisse (a type of soy frankfurter). Tofume (smoked tofu). Biosoy (soymilk). Postre de Soja (Soymilk desserts, in hazel-nut/filbert, vanilla, chocolate, apricot, strawberry, and pear flavors). Soy yogurt (natural and low fat). And Vegetalia is working to help the Third World via CEPAN in Brazil.

Note: This is the earliest Spanish-language document seen that mentions amazake, which it calls "amasake."
Address: Castellcir (near Barcellona), Spain. Phone: +34 3-866 61 61.

2679. Astuti, Mary. 1992. Iron bioavailability of traditional Indonesian soybean tempe. PhD thesis, Tokyo University of Agriculture. [Eng]*
Address: Native of Indonesia.

2680. Berk, Zeki. 1992. Technology of production of edible flours and protein products from soybeans. *FAO Agricultural Services Bulletin* No. 97. 178 p. [173 ref]
• ***Summary:*** Contents: Foreword. 1. The soybean: Background, production, marketing, agricultural characteristics, physical characteristics and morphology of the soybean, chemical composition (moisture, proteins, lipids, carbohydrates, minerals). 2. Utilization of soybeans: Utilization options for soybeans, whole bean utilization, the oil mill route (utilization of the oil fraction, utilization of the meal fraction). 3. Oil-mill operations: The expeller (operation principles, advantages and disadvantages of the expeller process, equipment), the solvent extraction process (operation principles, receiving and storage of soybeans, preparation for extraction, solvent extraction, post-extraction operations). 4. Edible soybean flours and grits: Introduction, definitions, composition and quality parameters (definition and classification of edible soy flours and grits, composition, quality standards), full fat soy flour and grits (production processes, utilization), defatted soy flours and grits (production processes, utilization). 5. Soybean protein concentrates (SPC): Introduction, definition, composition, types, production processes (the aqueous alcohol wash process, the acid-wash process, heat denaturation/water extraction process), utilization (basic considerations, use in bakery products, meat products, other uses). 6. Isolated soybean protein (ISP): Introduction, definition, composition, types, production processes (conventional process, problems in conventional processing, alternative processes), utilization (meat products, seafood products, cereal products, dairy-type products, infant formulas, other uses). 7. Textured soy protein products: Introduction, spun-fibre based texturization, extrusion texturization, steam texturization, utilization (meat extenders, meat analogs, other applications). 8. Soymilk and related products: Introduction, composition and classification, production processes (the traditional process, the Soya Technology System (STS) Process, the INTSOY (Illinois) process, the Buhler Process for soy micro-powder), soymilk related products. 9. Tofu, tempeh, soysauce and miso: Introduction, soy sauce, miso, tempeh, tofu (Introduction, regular and silken tofu, kori-tofu, deep-fried tofu, fermented tofu). Appendixes: I. Standards and specifications. II. Organizations and government agencies. III. Manufacturers and suppliers of soybean processing plants and equipment. IV. Sample budget quotations for complete soy processing or soybean related food manufacturing plants. Address: Technion–Israel Inst. of Technology, Haifa, Israel.

2681. Cardenas, Danilo C.; Legaspi, Benjamin M. 1992. The status of soybean production and utilization in the Philippines. In: Increasing Soybean Production in Asia: Proceedings of a Workshop. 1992. Bogor, Indonesia: CGPRT Centre. 187 p. See p. 119-35. Held 21-24 Aug. 1990 at Phitsanulok, Thailand. [8 ref]
• ***Summary:*** Contents: Introduction. Production situation: Production trends, economics of soybean production, price trends, marketing of soybean. Philippine foreign trade situation: Soybean imports, soybean exports. Soybean utilization. Government policies/programs affecting the industry: Policies, programs. Major problems besetting the local soybean industry. Conclusions.

The soybean, also know locally as "utao," has become an increasingly important economic crop in the Philippines. Yet in 1987 (the latest year for which figures are given) only 5,698 tonnes (metric tons) were harvested from 6,490 hectares, having a value of 45,169,000 pesos. This represented only 0.02% of the total Philippine quantity of agricultural production, and only 0.05% of total farm area and value. Philippine soybean production peaked at 11,466 tonnes in 1982. Most of the country's soybeans are grown

in the southern Mindanao region (72.1%), followed by northern Mindanao (10.0%) and central Mindanao (9.4%). Imports of soybeans and products have steadily increased since Philippine farmers do not produce enough soybeans to meet local demands; the value (FOB US$) rising from $61,989,000 in 1980 to $127,981,000 in 1988. The main imports are soybean meal (accounting for 86.87% of total import value), refined soybean oil (5.19%), soybeans (4.18%), and crude soybean oil (223%). Before March 1986 the National Food Authority (NFA) had the sole authority to import soybeans, but with the introduction of the trade liberalization program, importation has reverted to private firms. In 1989 the country's major sources of imported soybeans were China (which supplied 42% of total imports), Brazil (34%), and the USA (15%). Exports, which are negligible, have grown from $136,000 to 1,123,000 during the same period. The main exports are soy sauce (accounting for 91.03% of total value), salted and fermented soybeans (tausi, 3.34%), and soybeans (2.65%).

Table 7 lists and describes "Soybean-based food products popularly used in the Philippines." Fermented products include soy sauce, salted and fermented soybean (*tausi*), tempe (tempeh), soybean paste (miso), and soybean curd (fermented tofu cubes; a soft cheese-type product with a salty but mild flavor, eaten as a relish or cooked with meat and vegetables). Non-fermented products include soybean sprouts (*toge*), soybean cheese (*tokwa* [tofu]), Geerlings cheese (taho, soymilk curds; a sweet dessert or snack food for children), soybean milk, and roasted soybean (soy coffee).

"In terms of food usage, Filipinos, unlike other Asians, have not developed a taste for soya-based products... Most of the soy products available in the market are either made at home or in family-operated shops.

"It is interesting to note from the report of Co (1987) that small scale food processors engaged in manufacture of taho and tokwa preferred locally grown beans to imported ones. They claimed that local soybeans have a distinctive 'fresh' quality which imparts a finer and smoother texture to their finished products providing a longer shelf life than that produced from imported beans.

"Recently, several developments in the local economy have signaled a revival of interest in the use of soybean as food. In 1980 Nestle Philippines Incorporated began commercial production of powdered soymilk products and later a baby soya-cereal food formulation and a soya-based meat extender which is produced primarily for export to other Asian countries. Today Nestle Philippines, in co-operation with the Land Bank of the Philippines, the Regional Offices of the Department of Agriculture and PCARRD is encouraging local production of soybean and had adopted a no importation policy.

"Some years ago, the use of TVP also gained a permanent foothold in the local processing industry. It is used in the manufacture of ground meat products and as a meat extender. Almost all TVP used in the country is imported except for the locally manufactured full-fat TVP which is being produced by the Vitarich Corporation, one of the biggest feed millers in the country. The company has built a full-fat soya processing plant capable of utilizing 900 MT [metric tons] of soybean per month. Unfortunately, all its raw soybean requirements are imported from the U.S. and China.

"Soybean flour, protein concentrate and protein isolates are the newest soya-based products and are now used extensively in the country for the formulation of meat emulsion products. All raw materials are imported and there is no local manufacturing capability at present."

"Programmes: As early as the 1970s, the government tried to involve itself to some degree in boosting national soybean output, despite the low priority it accorded to soybean in general. It was an involvement borne out of an urgent need to meet the growing requirements of the local feed milling and livestock industry, rather than of a need to address the high incidence of malnutrition among Filipinos. Accordingly, the government launched a number of programmes to improve soybean production, most of which failed to achieve their goals. At present, only the PCARRD-coordinated Soybean Pilot Production Programme continues to function. This programme was initiated in late 1983." Address: 1. Supervising Science Research Specialist, Philippine Council for Agriculture, Forestry, and Natural Resources Research and Development (PCARRD); 2. Dep. of Agriculture Bureau of Plant Industry, Los Baños National Crop Research and Development Centre. Both: The Philippines.

2682. Leneman, Leah. 1992. The tofu cookbook. Hammersmith, London, England: Thorsons–An imprint of HarperCollins Publishers. 127 p. Illust. Index. 24 cm.

• ***Summary:*** "These no-meat, no-dairy, cruelty-free recipes foster health and a healthy environment by replacing meat and dairy products in traditional recipes with tofu... and soy milk. From bouillabaisse and guacamole to lasagna, curries, and ice cream, here are delicious new takes on your favorite international recipes." The copyright page notes: "Many of these recipes previously appeared in *The International Tofu Cookery Book* and *Soya Foods Cookery.*

Contents: Introduction. Types of tofu. Other soya (soy) foods: Soya milk, soya yogurt, soya mayonnaise, bean curd sticks or sheets, tempeh, soy sauce, miso, soya cheese (such as Veeze). Notes on recipes. Making tofu at home. 1. Soups and dips. Note: Ingredients for every recipe are given in both Imperial/Metric and American units. 2. Salads. 3. British- and American-style dishes. 4. Mexican-style dishes. 5. Mediterranean-style dishes. 6. Indian-style dishes. 7. Chinese- and other Far Eastern-style dishes. 8. Desserts. Recipe reference chart (for quick and easy recipes, recipes

suitable for a single portion, and recipes for a dinner party).

Note: *Webster's Dictionary* defines bouillabaisse (pronounced bu-yuh-BAYZ, a term derived from the French and first used in 1855) as a highly seasoned fish stew made with at least two kinds of fish. See also: Potpourri. Address: 19 Leamington Terrace, Edinburgh EH10 4JP, Scotland.

2683. Margen, Sheldon. 1992. The wellness encyclopedia of food and nutrition: How to buy, store, and prepare every variety of fresh food. New Nork, NY: Rebus. 512 p. Illust. Index. 26 x 21 cm.
• ***Summary:*** Soy-related information appears on the following pages: Soybeans, illustrated and described (p. 60). Sprouts, including soybean and adzuki bean sprouts (p. 158-60). "Soybean sprouts contain small quantities of toxins that can be harmful, if eaten in large quantities" [uncooked, see p. 356]. Legumes (p. 348-58), incl. soybeans, "soy nuts," soy milk. Legumes are "by far the best plant source of protein..." Per half 3½ ounces (½ cup cooked) soybeans contain more calories, fat, protein, iron, and calcium than any other of the 15 legumes listed (p. 351). How to avoid the gas problem. Tofu, miso, and tempeh (p. 357, sidebar). Non-dairy frozen desserts (made from tofu, p. 461). Soy cheese (p. 469). Soybean oil and margarine (p. 497-98).

Concerning vitamin K, see p. 16, 27, 30. The RDA for adults is 45-80 mcg. The body stores this fat-soluble vitamin for a relatively long time. Without this vitamin, blood would fail to clot. Preliminary studies suggest it also plays a role in maintaining strong bones in the elderly. Bacteria in the body's intestines manufacture about 80% of the vitamin K we need, and the rest comes from the diet. Deficiencies are almost unknown, and they are usually caused by an inability to absorb the vitamin, rather than an inadequate intake. Sources: Cabbage, cauliflower, spinach and other leafy vegetables, cereals, soybean oil and other vegetable oils. Address: School of Public Health, Berkeley, California.

2684. Sass, Lorna J. 1992. An ecological kitchen: Healthy meals for you and the planet. New York, NY: William Morrow and Company, Inc. xv + 492 p. Index. 26 cm. [35+* ref]
• ***Summary:*** This excellent vegetarian (actually vegan), ecological cookbook, proves that the most environmentally sound diet is also the healthiest and, for many, the most delicious and economical. It emphasizes whole grains, fruits and vegetables, focuses on unprocessed and minimally packaged foods, use of regional and seasonal foods, efficient menu planning, and creative recycling of leftovers. Delightful quotations relevant to the book's subject are scattered throughout.

The chapter titled "Tofu and tempeh" (p. 217-31) contains basic information and many recipes. Other soy-related recipes include: Thai vegetable soup (with tofu, p. 39). Ten-ingredient lo mien (with tofu, p. 165-66). Triple bean maybe it's chili (p. 186-87). Black soybeans (p. 191-92; keep the skins on by adding salt). Curried mustard green with tofu (p. 255). Chinese-style stir-fry of kale, onions, and marinated tofu (p. 258). Tahini-miso spread (p. 315). Sun-dried tomato dip (with tofu, p. 318). Brilliant beet dip (with tofu, p. 319). Onion upside-down cornbread (with tofu, p. 323-24). Tofu whip (like whipped cream or whip topping, p. 398).

The very fine chapter / glossary "Ingredients A to Z" (p. 399-468) includes: Aduki / azuki beans, agar, almond butter, almonds, amaranth, amasake (incl. koji), arame, barley malt syrup, black beans–fermented (salty black beans), Bragg liquid aminos (like soy sauce, but not fermented, making it an ideal seasoning for those who suffer from yeast sensitivities), daikon, dulse, gomashio, hijiki, job's tears, kombu, kuzu (kudzu), kuzu kiri, lupins, miso, mochi, natto, nigari, nori, peanut butter, peanuts, quinoa, rice–brown, rice cakes, rice syrup, sea vegetables, tamari-roasted seeds, seitan (wheat gluten), sesame butter (tahini), sesame oil, sesame seeds, shoyu, soybeans, soybeans–black, soy cheese, soy flakes, soy flour, soyfoods, soy grits, soy ice cream, soy milk, soynuts, soy oil, soy powder (powdered soy milk), soysage, soy sauce, soy yogurt (fermented), tahini, tamari soy sauce, tempeh, tofu, umeboshi plums, wakame, wasabi, winged beans. Note: Also contains recipes for many of these glossary items.

A color portrait photo on the inside rear dust jacket shows Lorna Sass–with a brief biography; she is a culinary historian, cookbook author, and food writer. Address: Box 704, New York City, NY 10024.

2685. Toomay, Mindy; Hadler, Susan Geiskopf. 1992. The best 125 meatless pasta dishes. Rocklin, California: Prima Publishing. xvi + 318 p. Illust. Index. 22 cm.
• ***Summary:*** This vegetarian pasta cookbook contains information about tofu, tempeh, and miso, plus 7 tofu recipes, 2 tempeh recipes, and 2 miso recipes. Agé (puffy deep-fried tofu) is used in: Soba in broth with fried vegetables and agé. Soy sauce is used in various broth recipes.

2686. Adebayo, Catherine A. 1993. Re: Request for *Rhizopus oligosporus* inoculum. Letter to William Shurtleff at Soyfoods Center, Jan. 1 p. Typed, with signature. [Jap]
• ***Summary:*** "I wish to seek your assistance as regards the supply of the above mentioned organism from your Institution. This will enable me to carry out my final year project work on Tempeh production at the Department of Microbiology..." Address: Faculty of Science, Dep. of Microbiology, Ondo–State University, Ado–Ekiti, Ondo State, Nigeria.

2687. Shipley, Betsy; Pfaff, Gunter. 1993. Major breakthrough for tempeh! Major soyfoods processing

opportunity! (Leaflet). Perry, Michigan. 1 p. Single sided. 28 cm.
• ***Summary:*** This leaflet was sent to all tempeh makers in Jan. 1993. The letterhead reads: "Betsy's Gourmet Tempeh–a handcrafted cultured soyfood. We stake our future on the bean!"

"We have developed a novel way of making 'Indonesian BeanSteak'–Betsy's Tempeh. This tempeh has mainstream potential... We offer our production patent (pending) and our trademark for sale. At this point we are open to any and all ideas as to how Betsy's Tempeh can go national/international as soon as possible... In 1991 we grew 48% by word of mouth." Address: S&P Farm, 14780 Beardslee Rd., Perry, Michigan 48872. Phone: 517-675-5213.

2688. White Wave, Inc. 1993. White Wave mission statement, company overview, and list of products currently sold (News release). 1990 N. 57th Court, Boulder, CO 80301. 2 p. Jan.
• ***Summary:*** "White Wave's mission is to creatively lead the full integration of low technology soyfoods into the average American diet. Our interest is in promoting the use of foods we consider the world better off with, rather than without."

"White Wave employs approximately 60 people and projects sales of over $4 million for 1992. Under the guidance of founder and president Steve Demos, White Wave has grown more than 20% annually for the last 5 years and was named the 1992 Small Business Manufacturer of the Year by the Boulder County Chamber of Commerce."

White Wave has six product lines: Tofu (7 products), tempeh (8), marinated tempeh (4), Dairyless soy yogurt (8), prepared foods–heat and serve (7), and Soya A Melt soy cheese (5 flavors plus 2 flavors of soy singles). Address: Boulder, Colorado. Phone: 303-443-3470.

2689. Badani, Bernard. 1993. Edible soybean mission report, Korea, Indonesia, Taiwan, February 1993. Ottawa, Ontario, Canada: Agriculture and Agri-Food Canada. iii + 14 + 17 p. 28 cm. Spiral bound.
• ***Summary:*** Contents: Foreword. Acknowledgements. Mission members: Tino Breuer, Ron MacDougall, Dr. Gary Ablett, Jim Lowe, Bernard Badani. 1. Visit to Korea: Executive summary, report, conclusions, recommended follow-up. 2. Visit to Indonesia: Executive summary, report, background, price structure, quality requirements, conclusions, recommended follow-up. 3. Visit to Taiwan: Executive summary, report, background, price structures, conclusions, recommended follow-up. Appendix A. List of contacts (photocopies of business cards of people met on the trip). List of 26 invitees for Canadian soybean seminar in Seoul (15 Feb. 1993), including academic researchers, government, soybean crushers, soysauce association, tofu association, food-related media, soybean milk manufacturers (Kwangja General Foods Co., Namyang Dairy Co., Lotte-Chilsung Beverage Co., Samyuk Foods Co., Dong-A/Otzka Co., Dr. Chung's Foods, See Joo Industry Co.). List of participants for Indonesia and business cards from Indonesia (incl. Primkopti, Sarpindo, Ikapti, Yeo's-P.T. Salim Graha). Business cards from Taiwan. Address: Oilseeds Div., Grain Marketing Bureau, Grains and Oilseeds Branch, Agriculture Canada, Ottawa.

2690. Murphy, Patricia A.; Wang, Huei-ju. 1993. Total genistein and daidzein content of soy foods. *FASEB Journal* 7(4, Part II):A742 (Abst. #4283).
• ***Summary:*** "The major soy isoflavones, genistein and daidzein, inhibit tyrosine protein kinase, are weakly estrogenic, have moderate antioxidant activity and may have an anticarcinogenic effect by preventing oxidative damage." Heat processing changes the distribution of glucosides but not the total isoflavone content. Twenty commercial soyfoods and 10 institutionally prepared foods were evaluated for isoflavone content by HPLC photodiode array detection. Total genistein and daidzein ranged from 20 to 1,550 ppm and 0 tot 750 ppm (dry weight basis), respectively. High protein soyfoods, such as whole dry soybeans, textured soy flour (TVP), tempeh, and soymilk yielded total isoflavone contents that may provide an anticarcinogenic dose (0.7 to 2.0 mg per gm of food). Address: Food Science and Human Nutrition, 2312 Food Sciences Building, Iowa State Univ., Ames, Iowa 50011.

2691. **Product Name:** Tempe Indonesia (Nutrisoy).
Manufacturer's Name: Nutrisoy Pty. Ltd.
Manufacturer's Address: 255 Forest Road, Arncliffe 2205, NSW, Australia.
Date of Introduction: 1993. February.
Ingredients: Soybeans, water, cider vinegar, and culture (*Rhizopus oligosporus*).
Wt/Vol., Packaging, Price: 250 gm.
How Stored: Refrigerated.
New Product–Documentation: Label with date sent by Tony Wondal of Nutrisoy. 2005. April 26. He started making and selling this product in Feb. 1993. Red and black on white. Front panel: "Fresh–Baru!"

2692. *Schrot & Korn* (*Germany*).1993. Tempeh: wenn Sojabohnen und ein Pilz zusammentun [Tempeh: When soybeans and a mold come together]. Feb. p. 26-27. [Ger]
• ***Summary:*** A nice introduction to this Indonesian fermented soyfood, including a brief history, description of how tempeh is made, nutritional value, ways of using it in cooking, and varieties of tempeh. The work of Flora Yap to introduce tempeh to Germany is discussed.

2693. White Wave, Inc. 1993. White Wave Soyfoods–The conscious choice (Ecology and nutrition information cards). 1990 N. 57th Court, Boulder, CO 80301. 1 p. 3 by 5 inches.

• ***Summary:*** These creative, colorful, and informative cards were available at the Natural Products Expo West at Anaheim, California. 1995. March. Each 3 by 5-inch card is printed on both sides. On the front is a title, a subtitle, a cartoon, and a brief message. On the back are more details. The titles are: "A hot flash about tofu" (Consumption of soyfoods may help Japanese women relieve the symptoms of menopause). "Soy protein is complete" (Soyfoods such as tofu and tempeh provide all 8 of the amino acids our bodies need). "Veggie protein saves petrol" ("One unit of energy can produce 39 times more protein from soybeans than from meat. So, a vegetarian diet helps our resources last far into the future"). "Soyfoods save water" ("It takes over 5,000 gallons of water to produce a pound of beef, but only 25 gallons to produce a pound of wheat").

Note: These are the earliest information cards seen (Oct. 2001) that mention soy. Address: Boulder, Colorado. Phone: 303-443-3470.

2694. White Wave, Inc. 1993. Quick & easy recipes (Recipe cards). 1990 N. 57th Court, Boulder, CO 80301. 3 by 4 inches.

• ***Summary:*** These colorful recipe cards were introduced in Feb. 1993 and were available at the Natural Products Expo West at Anaheim, California. 1995. March. Each 3 by 4-inch card is printed on both sides. On the front, at the top is written "Quick & Easy Recipe." Below that is the recipe name, a brief description of the recipe by Leonardo, White Wave Corporate Chef, and a large White Wave logo. On the back is the recipe itself.

There are cards for: Tempeh mock chicken salad. Tempeh Reuben. Lemon broil [tempeh with] pasta sauce. Almost Chinese hot & sour soup. Sizzling savory tofu steaks. Pepper tofu steak sandwich. Address: Boulder, Colorado. Phone: 303-443-3470.

2695. Pinault, Pascal. 1993. Re: Work with tofu and tofu products in Martinique. Update on soyfoods in the Caribbean. Letters to William Shurtleff at Soyfoods Center, April 2 and 27. 4 p. and 5 p. Handwritten, with signature. Plus list of his products and prices, resumé, and photos of his home, equipment, and Morne-Vert.

• ***Summary:*** Pascal saw and ate tofu for the first time in May 1980 when he was living in India, while visiting some friends in Poona (Maharashtra). He bought 1 pound of tofu at a tofu shop but he is not sure if they were making the tofu in a back room of the shop or at some other place. "I suppose this tofu manufacturing plant in Poona was an offshoot of the Rajneesh Ashram, which was very active at that time and place." Pascal lived in Goa, south of Bombay, from 1976-1980; there he baked bread leavened with palm wine. He learned most of what he knows about soyfoods while living and working, mostly in health food stores or health farms (see attached resume), in the Catskill Mountains area of New York from 1981 to 1987. There he learned to make tofu for his personal use (not for sale) by adding lemon juice to hot soymilk then pressing it in a cloth. During two other trips to India in 1982-83 and 1986 he found and bought chunks of a dry soy protein product resembling TVP which must be cooked in water. He found this soy protein product very interesting for a country like India which has such a shortage of protein, however the price was high–about 10 rupees/kg compared with 2½ rupees/kg for wheat.

In Jan. 1988 he and his family moved to Martinique. "I was compelled to make tofu for myself and my family because there was no other vegetable protein available in Martinique, except for this chunky TVP. I was still using lemon juice instead of nigari and making 2 pounds of tofu at a time. Then in 1991, as I started to import Japanese food products from France (umeboshi, seaweeds, amasaké, etc.), I ordered a small booklet on making tofu using nigari. Plus I had an excellent book (*Les Aliments Fermentés Traditionnels,* by Claude Aubert [1985]) in which I found recipes and nutritional details on many foods like tofu, okara, sufu, tempeh, amasaké, and, in general, all the foods subjected to lactic acid fermentation. In Martinique he has been making an average of 12 to 20 pounds of tofu every week since Oct. 1991 when he moved with his family to mountainous Morne Vert. Occasionally he makes larger amounts for a health food store that sells it or when he caters for groups. His main work is to introduce and popular tofu and soyfoods in Martinique. He would like to expand his tofu and vegetarian "traiteur" (catering) business; his main problem is lack of funds, so he plans to apply for financial aid.

The water he uses to make his tofu comes straight from a spring a mile up in a beautiful mahogany forest. He also makes sprouts–mostly alfalfa, mung bean, and clover, but sometimes wheat grass. He uses most of the tofu he makes to produce second generation products such as tofu mayonnaise, hot squash pies with miso-tofu topping, tofu & cocoa (or carob) sweet pie, tofu salad, spring rolls (*Nems*).

"I know of two vegetarian restaurants in town (Fort-de-France) that make their own tofu and serve it to customers, but no one in Martinique uses tofu as extensively as I do, thanks to my 7 years' stay in the Catskill Mountains. In fact, it takes a long time to get people used to tofu in an island where Creole culinary habits are still well-established."

One of the restaurants that makes tofu is Le Second Souffle, owned by Mr. Gerard Sainte-Rose (27 Rue Blenac, 97200 Fort-de-France, Martinique, FWI 0033. Phone (596) 63-44-11). He has owned this vegetarian restaurant for quite a while now and is mostly interested in reviving the consumption of local fruits and vegetables. "Gerard is the only person in Martinique that I actually saw growing and harvesting soy beans. That was 2 years ago. He had grown soybeans on a piece of agricultural land in Ducos, a town near Le Lamentin, which is not far from the capital

city of Fort-de-France (Martinique). He got the soybean seeds from a friend in St. Lucia (a Caribbean island just south of Martinique). Mr. Sainte-Rose harvested only a few soybeans; they were small but healthy looking. He is an organic gardener who sells his products out of his restaurant. He presently has a 6 hectare farm were he grows organic vegetables for his restaurant. Two years ago we had an agreement to set up a tofu plant together in his restaurant. He promised me a job (that's when I gave him my recipes), and he even started to acquire some material for making tofu. But he never followed through. That's when I started making tofu by myself, even without the proper material setting. He even bought some of my tofu. I think he would probably be interested in growing more soy, if approached very tactfully, and if he sees financial interest without having to pay a counterpart. He is an interesting person with a lot of good ideas," but he tends to be hard to work with as a partner.

On St. Lucia one can find the "Soy Place" is Castries, the main town in St. Lucia They make tofu there, sell it, and cook it for the food-counter [take-out] part of the shop. People grow soy beans on St. Lucia and on Dominica, maybe with help from Canadians. They make tofu and cook it. One "Ital" rastafarian restaurant in Roseau, Dominica, serves tofu pâté and deep-fried, plus "accras" (fried okara dumplings). "In Dominica I heard of two other places where they make and serve tofu. Ital food, which has absolutely nothing to do with Italian food, is the name that the Rastafarians give to the main dish of their mostly vegetarian diet (except for fish). In this main dish, chunky textured vegetable protein is sometimes used in place of fish. "In the Caribbean, including Martinique, Ital food is available in quite a few Rastafarian places, which they call their 'ghetto.' These are restaurants open day and night that include reggae 'sound systems. The chunky TVP remains the main vegetable protein they use; they also use it in other dishes such as vegetarian cous-cous, etc. They are, in my experience, a bit hostile to tofu, seitan, or other such new foods, at least in Martinique; maybe when it comes from a white person they presume it is not vegetarian." He has heard of (but has not seen or tasted) smoked tofu dried over a fire using green banana leaves.

Pascal is interested in vegetarianism and macrobiotics. He likes tempeh and would like to start now to make and introduce it to Martinique, where it is totally unknown.

Concerning seitan: "I first started to make seitan in Martinique under the same circumstances as tofu–lack of vegetable proteins other than beans. Not having ready-made gluten, I first made it by washing white-flour wheat dough. That was a very long and messy process but was well worth it. Then I found wheat gluten in the Tama catalogue–the company I mentioned that specializes in Japanese products. That's when I started to sell seitan–though there is not much demand for it. I learned to make seitan while living in the Catskill mountains of New York from a macrobiotic British girl friend who also taught me how to make amazake.

Update of April 27, 1993. "Since my family sent me tempeh starter (thanks for giving them the address), I have started small-scale production."

Update of July 17, 1993. "I first made amazaké, in Martinique, in 1992. Even though I gave samples to quite a few people, nobody has seemed to be interested in this product, or to realize the versatility of it! So, I keep ordering it from Tama, packed in glass jars, and make my own once in a while, using 'Cold Mountain' starter. I've been a bit disappointed by this non-reaction. Amasaké being one of my favorite sweeteners, which I value more than any breakfast or desert cereal. My youngest daughter ate it as a first 'solid' food when she was only 5 months old, along with bananas."

"If you allow me a personal remark about my work in Martinique, I find it extremely ungratifying. The public here is highly suspicious of anything new and foreign. My little business doesn't allow me to assume my financial obligations, and I sometimes consider going back to the U.S. But I still want to try harder, at least for a few months."

Note: This is the earliest English-language document seen (Oct. 2010) that uses the term "amasaké" to refer to amazake. Address: "Caplet," 97226 Morne Vert, Martinique, French West Indies 0033. Phone: 596 55-56-57.

2696. Yap, Bwee Hwa Flora. 1993. Re: Work to introduce tempeh to Germany. Reasons that many Germans dislike soybeans. Letters to William Shurtleff at Soyfoods Center, April 3 and April 23. 2 p. each. Typed, with signature.

• ***Summary:*** After leaving the United States, Flora worked (with a scholarship) for 7 years at a wine institute in Wuerzburg (*Bayerische Landesanstalt für Wein, Obst und Gartenbau*). After they were unable to extend the fellowship any longer, she found work at a chemical/pharmaceutical firm (Chephasaar) in Rohrbach, St. Ingbert. There she worked for 17 years doing hygienic control, lab work, literature research and foreign correspondence, until she was laid off in 1987 when the firm had financial problems. On the waiting list for retirement, she got social benefits for 5 years until 1992 and now she is receiving "retirement" payments.

After becoming unemployed in 1987, she did some translation work then used this money to buy an incubator to prepare tempeh starter. Her original cultures came from the Centraal Bureau voor Schimmelcultures in Baarn, The Netherlands. This same organization delivered tempeh starter (Rhizopus) to Byodo, a tempeh maker in Munich, but it was very expensive–about 300 German marks for 100 gm. Byodo was the only German tempeh maker that Flora knew of and they did not want to buy her starter, so she started making tempeh herself and selling it to "Mutter Erde" in Saarbruecken (beginning on 28 Jan. 1990). Then she started introducing tempeh in German cooking courses concerning whole foods ("Vollwert Ernaehrung"). But she found little interest among Germans interested in whole foods, since they generally preferred raw foods.

Flora is currently very busy inviting people who are interested in tempeh making to come to her home to learn how. This has become the focus of her work. Recently she visited Bernd Drosihn of Viana and found that his tempeh was "overripe" (*busuk*). The older people in Germany, including many leaders of cooking classes, are against the soybean. Their reasons are: (1) Many people still regard soya as cattle feed. They had to consume soya during wartime [World War II] and they think it is a low-class food; (2) Many persons do not want to consume soy, because they think that they are taking away the food from the people of the third world; (3) The 'Vollwert' fans do not want soy because it is not domestic. This is not true; in 1982 (or earlier) they started in Hohenheim near Stuttgart with the cultivation of soybeans. Now they are boycotting U.S. soy. "The last 3 weeks I started making tempeh from sunflower seeds (to meet people's request), but it is not sold by 'Mutter Erde.' Now I have stopped doing that. (4) One lady teacher of a cooking course has had the courage to tell me why she cannot accept tempeh. Besides the above mentioned reasons, she said tempeh is too much 'prepared'. She means that in the Vollwert kitchen the best way is to serve the food as raw as possible (vegetables, fruit, etc.). She is against the addition of mold (I asked her what about bread, yoghurt, sauerkraut, cheese, etc.)." Address: Am Muehlenwaeldchen 1a, W-6670 St. Ingbert, Germany. Phone: 06894 / 53609.

2697. Maurelli, Nancy A. 1993. Soy simple, soy good at Twin Oaks in Louisa: A community effort in Louisa makes soy good for vegetarians. *Times-Dispatch* (*Richmond, Virginia*). April 21. p. E1, E3.
• ***Summary:*** "More Americans are discovering what Asian peoples have known for centuries: Soybeans are good food. They are the best source of protein from the vegetable kingdom, with all eight essential amino acids."

"Central Virginia has its very own soy shop, producing more than 2,100 pounds of tofu and 25 pounds of tempeh weekly. Originally called Virginia Soyworks, the business was acquired in March 1991 by Twin Oaks, a self-sustaining community of about 100 people in Louisa County. Each member of Twin Oaks contributes more than 40 hours weekly to enterprises that support the community." The author visited Twin Oaks, and she describes in detail how tofu is made there. Contains a recipe for Cleo's Famous Tofu Loaf. Photos show: (1) The inside of the tofu shop where a worker, Iowa Richmond, is cutting a large block of tofu into cakes. (2) Nancy Maurelli. Address: Columnist, The Vegetarian Way.

2698. Herian, Anne M.; Taylor, S.L.; Bush, R.K. 1993. Allergenic reactivity of various soybean products as determined by RAST inhibition. *J. of Food Science* 58(2):385-88. March/April. [16 ref]
• ***Summary:*** RAST stands for "radioallergosorbent test." Soybean allergy is a common childhood food allergy, although it is less common than allergies to cow's milk, eggs and peanuts. Food allergies are generally more common in children than in adults. In this study of atopic adult patients, using RAST inhibition as a measure, the allergenicity of a variety of soy products was compared to that of whole soybeans. Results indicated that, when expressed on a per protein basis, although extracts of tofu, miso, tempeh, and fermented soy sauce were allergenic, they were as little as one tenth as allergenic as extracts of whole soybeans. Address: 1. Dep. of Food and Research Inst., Dep. of Food Microbiology and Toxicology, Univ. of Wisconsin, Madison, Wisconsin 53706; 2. Dep. of Food Science and Technology and Food Processing Center, Univ. of Nebraska, Lincoln, Nebraska 68583-0919, address inquiries to second author.

2699. Leneman, Leah. 1993. 365 plus one vegan recipes: Delicious meals and ideas for every day of the year. Hammersmith, London, England: Thorsons–An imprint of HarperCollins Publishers. 144 p. April. Index. 24 cm.
• ***Summary:*** Chapter 1 of this book, titled "The Vegan Dairy," gives recipes for homemade soya milk, mock cream (from soya milk), soya flour cheese, yogurt cheese (from soya yogurt). There are also recipes for cashew or almond milk, cashew cream, and cashew cottage cheese.

Chapter 11 (p. 85-100), titled "Tofu and other Soya Foods," contains a long introduction plus the following recipes: Home-made tofu. Tofu and onions. Sweet and sour tofu and vegetables. Sea-flavored crisp tofu slices. Mushroom stroganoff. Tofu kebabs. Tofu casserole. Warming winter stew (with tofu). Korean-style kebabs (with tofu and miso). Tofu and green pea bhajia. Tofu 'scrambled eggs.' Scrambled tofu and mushrooms. Tofu piperade. Spicy tofu scramble with red pepper and tomato. Tofu knishes. Tofu and pea curry. Tofu burgers. Swiss steak (with frozen tofu). Savoury tofu 'mince' (with frozen tofu). Crispy fried sea-flavoured frozen tofu. Tofu goulash. Smoked tofu stew. Smoked tofu, courgette and sweetcorn risotto. Smokey duvec (with smoked tofu). Pease pudding and smoked tofu bake. Smoked tofu pasties. Steamed savoury smoked tofu pudding. Smoked tofu charlotte. Lek and smoked tofu au gratin. Smoked tofu and mashed potato cakes. Tempeh croquettes with mushroom sauce. Tempeh hash with potatoes. Indonesian-style tempeh. Tempeh stroganoff. Japanese-style tempeh kabobs. Tempeh burgers. Tempeh chilli. Mock 'ham' (with dried bean milk sheets [yuba]). Mock 'chicken' (with yuba). Mock chicken cooked Indonesian style.

Chapter 13 is entirely about sea vegetables, and a number of the recipes contain tofu, tempeh, miso, or soya milk. A number of other recipes throughout the book also use soyfoods as an ingredient. Address: 19 Leamington Terrace, Edinburgh EH10 4JP, Scotland.

2700. **Product Name:** [Tempeh].

Foreign Name: Tempeh.
Manufacturer's Name: Pascal Pinault.
Manufacturer's Address: "Caplet," 97226 Morne Vert, Martinique, French West Indies 0033. Phone: +59 6 55 56 57.
Date of Introduction: 1993. April.
New Product–Documentation: Talk with Pascal's sister, Marie, who called from Orange County, California, to enquire about a source of tempeh starter for Pascal. 1993. March 17. Pascal has been very involved with soyfoods for many years. He has been making tofu and tofu products out of his home in Martinique for several years; he sells these mostly to restaurants. He would like to start making tempeh.

Letter from Pascal Pinault. 1993. April 27. "Since my family sent me tempeh starter (thanks for giving them the address), I have started small-scale production, photocopied information from a 1985 book by Claude Aubert titled *Les Aliments Fermentés Traditionnels* plus a few recipes and circulated it, along with a piece of tempeh, for sampling. So far I sold only 2 lb of it to 2 customers, yesterday. I went this morning to a carpenter and ordered 3 large trays for making tempeh. I hope this marvelous vegetarian protein will win some people's hearts and stomachs, just like it did mine!" For background details see letter from Pinault, April 1993.

2701. Demos, Steve. 1993. Tempeh at White Wave and in America. (Interview). *SoyaScan Notes.* May 22. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Tempeh is still White Wave's most profitable product line–despite the fact that for the past two year's most of the company's attention has been going into developing dairylike products. And tempeh is a much easier product to make than many of the company's other products. Its more fun and less problems. White Wave currently makes about 18,000 to 22,000 lb/week of tempeh and they are looking at automating one part of the process. White Wave is the largest tempeh maker in America, followed by Lightlife Foods, with Turtle Island Foods a distant third–its presence is mostly on the West Coast. He also hears about Santa Cruz Soyfoods (Wildwood), Betsy's Tempeh, Cricklewood, and a few others here and there.

On the East Coast (which is White Wave's weakest market), his basic tempehs are priced 20% higher than that of Lightlife, yet it sells very well. People seem to prefer White Wave quality. Rather than reducing costs, Steve plans to elevate and promote the product more with Chef Leonardo and an enclosed Chef Leonardo recipe. He will advertise it in *Vegetarian Times* and *Natural Health* (formerly *East West Journal*). Address: President, White Wave Inc., 1990 North 57th Court, Boulder, Colorado 80301. Phone: 303-443-3470.

2702. *SoyaScan Notes.* 1993. New Trend: Specialized manufacturers of tofu and tempeh become manufacturers of many types of soyfoods (Overview). May 22. Compiled by William Shurtleff of Soyfoods Center.
• ***Summary:*** The first soyfoods manufacturer in America to make a wide variety of different types of soyfoods was White Wave of Boulder, Colorado. They began as a tofu manufacturer in Sept. 1977, but by 1978 had introduced Soy Sannies (sandwiches with miso-tahini spread) and Soymilk (in 3 flavors). In 1979 they launched Soy Tempeh, Polar Bean (a soymilk-based soy ice cream, which they also made from Tofu Today / Tofruzen starting in 1985), Soya Rice Tempeh, Vegetarian Soysage, Tamaried Nuts, and a host of deli-type ready-to-serve tofu products such as Missing Egg Salad, Tofu Cheesecake, Tofu Cinnamon Rolls, etc. In Jan. 1989 White Wave began its move into dairylike products in a big way with Soy A Melt (a soy cheese with casein) followed in May 1991 with White Wave Dairyless (a soy yogurt in 5 flavors and the company's most successful product ever). New flavors of soy yogurt were introduced in 1992 and 1993. Note: White Wave was also the first post-1975 soyfoods company in America to grow by acquiring other companies–Soyfoods Unlimited (a tempeh manufacturer) in Dec. 1986; and Laudisio Veggie Life, a maker of veggie burgers, in March 1993.

Lightlife Foods in Greenfield, Massachusetts (named The Tempeh Works before April 1987) started as a tempeh manufacturer in Sept. 1979. In May 1984 they started to make Weissman's Original Tofu Sausage for John Weissman of the Vegetable Protein Co. In Sept. 1985 they launched Lightlife Meatless Tofu Pups (meatless hot dogs), and in Oct. 1987 they launched Lightlife Party Pups (meatless frankfurters–cocktail size Tofu Pups; Renamed Tofu Party Pups by Feb. 1988). Today Lightlife makes a wide range of tempeh and tofu products.

Sharon's Finest in Santa Rosa, California (named Brightsong Tofu from June 1978 to June 1980; Redwood Valley Soyfoods Unlimited until June 1982; Brightsong Light Foods until June 1987; Rose International until 1990) started as a tofu manufacturer in June 1978. By Aug. 1980 they were making and selling soymilk. Their diversification began in 1984 with Mix Plus+ (a liquid mix to make tofu frozen desserts) and LeTofu (non-dairy soy ice cream in hard pack and soft serve). Related ice cream products followed. In early 1986 Richard Rose reformulated Soy-O, a soymilk yogurt for Brown Cow West. In May 1986 the company launched Fruit D'Lite (a fruit-sweetened sorbet/mousse liquid soft serve mix) in 4 flavors using isolated soy protein as the soy ingredient. The move into soy cheese began in June 1986 with Mozzarella Style Tofu-Rella (an organic tofu-based cheese analog with casein). In July 1987 the company launched Le Yogurt (a dairy-based soft-serve frozen yogurt dry mix). In Jan. 1992 they launched Heart's D'Lite (a fat-free cheese alternative in various flavors) with organic tofu and casein and tofu as the main ingredients. By 1992 Sharon's Finest was primarily a marketer of soy cheeses; they sold their cheese to many other food companies

and even exported them to the UK.

2703. Albert-Matesz, Rachel. 1993. Tempeh temptations! *Vegetarian Journal* (*Baltimore, Maryland*) 12(3):22-25. May/June.
• ***Summary:*** An introduction to tempeh with 6 recipes. Address: Freelance writer, Seattle, Washington.

2704. **Product Name:** Organic Soybean Tempeh.
Manufacturer's Name: Dreamhill Delights.
Manufacturer's Address: 170 Dreamhill Dr., Williams, OR 97544. Phone: 503-846-7120.
Date of Introduction: 1993. May.
Ingredients: Cultured organic soybeans, vinegar, water.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Letter from Judy Iwata-Smith. 1994. May 1. Her company bakes about 100 loaves of bread and makes about 40 tempeh patties a week.

Form filled out and Label sent by Judy Iwata-Smith. 1994. June. Her company started making Organic Soybean Tempeh in May 1993. They now makes 60 lb/month. This is their only soy product. The so-called patties are simply 8-ounce square cakes of tempeh. Label is 2.5 by 4.25 inches. Black on white. "Excellent source of fresh vegetarian protein. This label is printed on recycled paper. Tempeh may have small black or gray spots which is normal of the tempeh culture. Tempeh has a pleasant mushroomy aroma. Store unstacked in refrigerator if using within a week or freeze for longer shelf life." Gives serving suggestions.

2705. **Product Name:** Tempeh.
Manufacturer's Name: Lean Green Foods.
Manufacturer's Address: P.O. Box 534, Volcano, Island of Hawaii, HI 96785.
Date of Introduction: 1993. May.
New Product–Documentation: Talk with (call from) Benjamin Hills on the Island of Hawaii. 1993. May 28. He started making tempeh commercially, out of his palatial home, on 8 May 1993. He now sells it to his friends but soon he will start selling it at a local farmers' market. His business has no name yet. His main competition is White Wave tempeh, imported frozen from the mainland. Benjamin imports his soybeans from Midwest Soya International on the mainland.

Talk with (call from) Benjamin Hills on the Island of Hawaii. 1993. Sept. 23. The name of his company is now Lean Green Foods.

Letter from Benjamin Hills. 1994. Jan. 26. "Lean Green Foods became official with the state of Hawaii in August 1993. Production got rolling this week and the product bag with Label are enclosed." He is making two products: Soy Tempeh with Lupin and plain soy tempeh for the local Indonesian people. His business card reads: "Lean Green Foods–Hilo, Hawai'i. Protein for the Future. Benjamin Hills, P.O. Box 10562, Hilo, Hawai'i 96721-5562. Phone: (808) 985-8563."

Talk with Benjamin Hills who calls From Hawaii. 1994. May 31. Susan Wallace (who started Surata Soyfoods with him) is now working with him in Hawaii making tempeh. They are in the process of developing a Ginger-Teriyaki Tempeh Burger.

2706. Library of Congress, Subject Cataloging Div., Processing Services. 1993. Library of Congress subject headings. 16th edition. Washington, DC: Cataloging Distribution Service, Library of Congress. 4 volumes.
• ***Summary:*** For the basic idea, words and LC call numbers see the 12th edition (1989). Address: Washington, DC.

2707. *Voice of the Turtle* (*Hood River, Oregon*).1993. Yo yos are out, frisbees are in!. May. p. 2.
• ***Summary:*** "After three years of sending out hundreds of yo yos to customers who have sent us 10 wrappers from our packages for recycling, we are changing our offer a little bit. Our new tempeh packages, due out in June, will offer a classy, 130 gram Wham-O Frisbee made from recycled plastic in exchange for 5 wrappers, plus $4.95 shipping and handling." On the Frisbee is written: "Reflyer–Made from recycled plastic." Address: P.O. Box 176, Hood River, Oregon 97031. Phone: (503) 386-7766.

2708. Perkins, David D. 1993. Why do scientists study Neurospora (Interview). *SoyaScan Notes.* June 1. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** *Neurospora* is a model organism and today much more is known about it than almost any other fungus. Species of *Neurospora* have been widely used in genetical and biochemical studies. The best known are *N. crassa* and *N. sitophila* both of which are eight-spored and heterothallic. *Neurospora* was probably the first member of the Pyrenomycetes, those with 8-spored asci, to have the sexual cycle worked out in the 1920s by people who were interested in basic problems of genetics recombination. Then it was chosen in 1941 as the first biochemical nutritional mutant, which ushered in the age of molecular genetics.

The reasons why *Neurospora* has proved so useful as a tool in biochemical and genetical research are that (1) Wild-type strains have simple nutritional requirements (a carbohydrate source, simple mineral salts, and one vitamin–biotin). This makes it ideal for getting mutations that had growth factor requirements; (2) Mutations can be induced readily by irradiation of conidia; (3) Growth and sexual reproduction is rapid; and (4) The tetrad analysis by means of ascus dissection is relatively easy. For these reasons, *Neurospora* has become mother of all the new developments in DNA and molecular biochemistry. It has a lot of relatives that are plant pathogens, others that are used in commercial

applications, and one food use in onchom.

He will send a review that outlines these advantages. Address: Dep. of Biological Sciences, Stanford Univ., Stanford, California 94305. Phone: 415-723-2421.

2709. Messina, Mark. 1993. Welcome to *The Soy Connection. Soy Connection* (*The*) (*Chesterfield, Missouri–United Soybean Board*) 1(1):1-2. [7 ref]
• ***Summary:*** Discusses the growing interest in soyfoods (such as tofu, tempeh, soymilk, and miso) in America. They are becoming more mainstream. An estimated 2/3 of all tofu is sold in traditional supermarkets. Tofu consumption in America has doubled during the past 10 years.

2710. **Product Name:** Blue Mountain Country Farm Tempeh, and Tempeh Burgers.
Manufacturer's Name: Naturama.
Manufacturer's Address: 84 Kloof St., Gardens, Cape Town 8000, South Africa.
Date of Introduction: 1993. June.
Ingredients: Tempeh: soybeans, tempeh starter. Burgers: Soybeans, tempeh starter, tamari, 100% pure apple juice, virgin olive oil.
Wt/Vol., Packaging, Price: Tempeh: 300 gm. Tempeh Burgers: 200 gm.
How Stored: Frozen.
New Product–Documentation: Letter from Michael Tidd, founder and owner of Naturama. 1993. July 25. "I have just begun a small-scale tempeh shop here in South Africa and I am just about to start some Amazake experiments." By using your "Book of Tempeh" "I have been able to start selling tempeh and tempeh burgers on the local market with increasing success." Letter and Labels sent by Michael Tidd. 1993. Aug. 12. He began producing tempeh and tempeh burgers on 28 June 1993. Concerning soyfoods companies in South Africa, "there are only a couple of home kitchen size tofu makers in so far as I can see whom I shall try to locate so as to send you their particulars. I think due to various reasons the wholefood movement has definitely been slow off the mark here compared to the U.S. and Europe, but nonetheless its only a matter of time before it spirals upwards."

Both tempeh Labels. 3.75 by 5.5 inches. Black ink on white paper (photocopied). Tempeh serving suggestion: "Indonesian Fried Tempeh: Thaw tempeh, soak pieces of fresh tempeh in brine (4 tsp. salt in 4 cups water) for 20 minutes. Pan fry in oil or margarine or deep fry till golden brown. Try it topped with sauce, baked on pizza or in sandwiches."

Tempeh burgers serving suggestion: "Thaw burgers then either pan fry for 3-4 minutes each side or grill for 2 minutes each side. Serve in a wheat-free roll with lettuce, tomato, and pickle."

Letter from Michael Tidd. 1994. Nov. 11. He "lived for a couple of years in South Africa until April 1994." He sold his business, Country Farm Foods, which was making tempeh and amazake in South Africa, to Bobby McLean, and he is now living in Reading, England. "I am about to have a go here in England."

Talk with Michael Tidd, who calls from Reading, England. He will soon start making and selling tempeh as Tidd's Tempeh.

2711. *Newsletter of the Soyfoods Association of America* (*Libertytown, Maryland*).1993. Thank you to the American Soybean Association. 4(2):2.
• ***Summary:*** "The American Soybean Association has awarded the SAA [Soyfoods Association of America] a grant for $27,625.00 to develop and distribute educational materials on soyfoods and to produce periodic press releases. The grant will be used to produce a 4-color brochure on soyfoods and eight individual, camera-ready fact sheets on tofu, soymilk, tempeh, miso, texturized vegetable protein, soy flour, soy-based meat analogs, and soy oil. Materials will be made available to state soybean boards for distribution to consumers and volunteer soy promoters, to state level cooperative extension nutritionists for distribution to consumers through county home economics offices, and to health professionals for use in health and nutrition education programs. The first two fact sheets–on tofu and soymilk–will be available this month. All of the materials will be completed by Fall, 1993."

2712. Shurtleff, William; Aoyagi, Akiko. comps. 1993. Tempeh and tempeh products–Bibliography and sourcebook, 1815 to 1993: Detailed information on 616 published documents (extensively annotated bibliography), 423 commercial tempeh products, 216 original interviews (many full text) and overviews, 247 unpublished archival documents. Lafayette, California: Soyfoods Center. 449 p. Subject/geographical index. Author/company index. Language index. Printed June 4. 28 cm. [2078 ref]
• ***Summary:*** This is the most comprehensive book ever published about tempeh and tempeh products. It has been compiled, one record at a time over a period of 18 years, in an attempt to document the history of this subject. Its scope includes all known information about tempeh, worldwide, from 1815 to the present, plus detailed information on each of the following four closely related subjects–the first three of which are popular Indonesian foods:

1. Onchom (125 records; also spelled ontjom or oncom; peanut presscake or okara fermented with *Neurospora*). *Neurospora* is the single most important mold used in genetic and biochemical research; 2. Tempeh bongkrek (49 records; made from grated coconut or coconut presscake). 3. Non-soy relatives of tempeh (54 records, such as winged bean tempeh). 4. Early studies on *Rhizopus* molds in which tempeh is not mentioned (43 records).

This book is also the single most current and useful source of information on each of these five subject, since 79% of all records contain a summary/abstract averaging 125 words in length.

This is one of more than 40 books on soybeans and soyfoods being compiled by William Shurtleff and Akiko Aoyagi, and published by the Soyfoods Center. It is based on historical principles, listing all known documents and commercial products in chronological order. It features: 35 different document types, both published and unpublished; every known publication on the subject in every language–including 175 in Japanese, 140 in Indonesian, 96 in German, 68 in Dutch, etc.; 216 original Soyfoods Center interviews and overviews never before published. Thus, it is a powerful tool for understanding the development of tempeh and related products from their earliest beginnings to the present.

The bibliographic records in this book include 616 published documents and 247 unpublished archival documents. Each contains (in addition to the typical author, date, title, volume and pages information) the author's address, number of references cited, original title of all non-English publications together with an English translation of the title, month and issue of publication, and the first author's first name (if given).

It also includes details on 423 commercial tempeh products, including the product name, date of introduction, manufacturer's name, address and phone number, and (in many cases) ingredients, weight, packaging and price, storage requirements, nutritional composition, and a description of the label. Sources of additional information on each product (such as references to and summaries of advertisements, articles, patents, etc.) are also given.

Details on how to make best use of this book, a complete subject and geographical index, an author/company index, a language index, and a bibliometric analysis of the composition of the book (by decade, document type, language, leading periodicals or patents, leading countries, states, and related subjects, plus a histogram by year) are also included. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549. Phone: 510-283-2991.

2713. **Product Name:** SuperBurger (Made with Tempeh).
Manufacturer's Name: Turtle Island Foods, Inc.
Manufacturer's Address: P.O. Box 176, Hood River, OR 97031. Phone: (503) 386-7766.
Date of Introduction: 1993. June.
Ingredients: Aug. 1994: Certified organic soybeans (grown in accordance with Section 26569.11 of the California Health and Safety Code), brown rice, Wehani rice, wild rice, water, shoyu (soy sauce), lemon juice, onions, garlic, vinegar, starter culture (Rhizopus oligosporus).
Wt/Vol., Packaging, Price: 3 oz. patty.
How Stored: Frozen or refrigerated.
Nutrition: Per patty (85 gm): Calories 122, calories from fat 14, total fat 1.5 gm (1% daily value; saturated fat 0.5 gm), cholesterol 0 mg, sodium 339 mg (14%), total carbohydrate 15 gm (dietary fiber 8 gm, sugars 0 gm), protein 12 gm. Vitamin A 110%, calcium 8%, vitamin C 0%, iron 2%. Percent daily values are based on a 2,000 calorie diet.
New Product–Documentation: *Voice of the Turtle* (Hood River, Oregon). 1993. May. p. 1. "New for June: Look! In your refrigerator! Its SuperBurger." "After 13 years of effort, we have created a new burger that is low in fat (1.5 grams per 3 oz. patty) and high in flavor." A black-and-white photo shows the burger on a bun with trimmings.

Product with Label purchased at Berkeley Natural Grocery Co. 1994. Aug. 20. The product is now named "Superburgers." Two 3-oz. marinated tempeh patties are sealed in a plastic pouch, and packaged inside a paperboard sleeve. "The Ultimate Vegetarian Burger Experience." Each patty contains only 1.5 gm of fat.

2714. **Product Name:** Low Fat Millet Tempeh.
Manufacturer's Name: Turtle Island Foods, Inc.
Manufacturer's Address: P.O. Box 176, Hood River, OR 97031. Phone: (503) 386-7766.
Date of Introduction: 1993. June.
New Product–Documentation: *Voice of the Turtle* (Hood River, Oregon). 1993. May. p. 1. "Also new in June: Low Fat Millet Tempeh." This tempeh, which uses more grains and less soybeans than usual, derives only 9% of its calories from fat.

2715. Xu, Zeng Quan. 1993. Tempeh in America and molded soybeans in China (Interview). *SoyaScan Notes.* July 16. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** He is a native of China but is now making tempeh in Michigan. Tempeh reminds him somewhat of a food named *mei dou* ("molded + beans") which his mother and other housewives used to make in Jiangsu province near Shanghai. The warm weather there makes it easy to produce. His mother (and other housewives) then used the *mei dou* to make soybean jiang (similar to Japanese miso). The Korean word *meju,* also referring to mold-fermented soybeans, was probably derived from the Chinese *mei dou.*

He has never seen tempeh in China nor heard of *'Tou chiah ping'* [soybean fried cake] observed, described, and photographed by William Morse in Beijing, China, in 1931. Address: Rosewood, Ann Arbor, Michigan.

2716. Katoh, Kiyoaki. 1993. Current status of tempeh in Japan (Interview). *SoyaScan Notes.* July 20. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** The Third Asian Symposium on Non-Salted Soybean Fermentation and the International Soybean Food Fair will be held in Akita, Japan, on 4-6 June 1994. There is a legend in Japan that natto originated in Akita, and there is also a large natto manufacturer there. Many countries in

Southeast Asia will participate. He is still very involved in tempeh issues in Japan, and maintains a close contact with Indonesian tempeh researchers. The Tempeh Study Group (*Kenkyu-kai*) has its regular meeting twice a year and 60-70 people (including himself) typically attend. A very good and popular restaurant in Shibuya, Tokyo, named Jembatan Mérah (Red Bridge), features many delicious tempeh dishes. They feature ethnic foods, including Thai and Vietnamese cuisines. The chef of the restaurant used to work with Torigoe Seifun. Their tempeh is made by the village cooperative shop in Hyogo prefecture (initiated as part of a local community activation program). This tempeh shop ships their tempeh all over Japan, including to the Indonesian embassy in Tokyo, several Indonesian restaurants in Tokyo, and to individuals who order it. The only other tempeh shop, also part of a village activation program, is led by Prof. Kazuko Noguchi (a woman) of Saga. When Mr. Kanasugi died, the natto people discontinued their interest in tempeh. All the large private companies (Marusan, Torigoe Seifun) also stopped. Address: Tajimaya rice company, International Affairs, Japan.

2717. Katoh, Kiyoaki. 1993. New developments with soyfoods in Africa (Interview). *SoyaScan Notes*. July 20. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Mrs. Yasuko Torii is very involved in efforts to introduce soyfoods to southern Africa and South Africa, especially Capetown. Katoh joined FAO (the Food and Agriculture Organization of the United Nations) in 1987 and was a biotechnology officer there for 2 years and very much committed in Africa. He was active in work with soybeans in Nigeria, Cameroon and other countries. He has written about that work. The crucial question is how to interest African people in using soyfoods. There is now increasing South-South cooperation. For example, Indonesian people are very interested in transferring tempeh technology to Africa. The German government is sponsoring such a program on tempeh and Dr. Darwin Karyadi is leading the Indonesian work; the minister of Science and Technology, Dr. Habibi, is very keen on this. The best man to contact concerning soya in Africa is Dr. Shiv R. Singh (pronounced Sin), who used to work with IITA at Ibadan, Nigeria, and is now Director of the Western Africa Department of the World Bank in Washington, DC. He is the key man with soya in Africa. Address: Tajimaya rice company, International Affairs, Japan.

2718. Pfaff, Gunter. 1993. Apparatus for culturing plant materials as foods. *U.S. Patent* 5,228,396. July 20. 16 p. Application filed 20 April 1992. 8 drawings, 6 drawing sheets. [23 ref]
• ***Summary:*** Describes an incubator apparatus and method for making tempeh. The apparatus uses an incubator comprised of a water bath. The tempeh is incubated in shallow metal trays which are supported on racks. Address: 14870 Beardslee Rd., Perry, Michigan 48872.

2719. Karyadi, Darwin. 1993. Re: Novel substances in tempeh. Letter (fax) to William Shurtleff at Soyfoods Center, July 31. 1 p.
• ***Summary:*** It is known that tempeh (which is free of cholesterol) contains isoflavones and an anti-diarrhea compound. The latest discovery is that it contains superoxide-dismutase (SOD) enzymes which scavenge free radicals. Address: Nutrition Research Development Center, Jl. Dr. Semeru No. 63, Bogor 16112, Indonesia. Phone: (0251) 321763-326348.

2720. Executive Committee Secretariat. 1993. The Roots of Biotechnology in Monsoon Asia: The Third Asian Symposium on Non-Salted Soybean Fermentation and International Soybean Food Fair. Akita Cultural Center, Akita City, Japan: 4-6 June 1994 (Leaflet). Akita, Japan. 2 p. July.
• ***Summary:*** The executive committee for this event is: Chair: Prof. Tadao Watanabe. Vice-Chair: Prof. Fumio Yamauchi. Indonesia Advisor: Dr. Darwin Karyadi. United Nations University (UNU) Food and Nutrition Programme Advisor: Dr. Abraham Besrat.

The symposium hopes to focus on South-South cooperation for technical transfer of soybean technologies (koji, tempe, natto) to Africa in order to alleviate an impending protein crisis beyond the year 2000.

Program outline: Part I: International Soybean Food Fair–Industrial/commercial exhibition and cooking demonstration of ethnic cuisine using soybean products. Part II: Public Symposium–World soybean overview with perspectives for international technical cooperation in Africa. Part III: The Third Asian Symposium on Non-Salted Soybean Fermentation. Session 1. Koji for fermented soybean (Kikkoman, Nagano Miso Institute, China, Korea, Akita). Session 2. Natto in Asia–Microbiology, enzymology, health-medical studies. Kinema of Nepal, Tuanao [Thua-nao] of northern Nepal, Bhutan. Session 3. Tempe (Overview by Dr. Darwin Karyadi, contributions from Indonesia, Germany, USA, Japan and others–on microbiology, biochemistry, nutrition, physiology, medical studies, cooking, and industrial development). Part IV: The Role of Soybeans in Africa–The Perspective beyond 2000 (organized in cooperation with UNU Food and Nutrition Program). Sessions: Agriculture of Sub-Saharan Africa and soybean development (World Bank, IITA, JICA). Tofu technology adapted to West Africa (Dr. Nakayama, IITA). Indigenous fermented legumes in West Africa. Introduction of soy into Sub-Saharan African diet. Achievements of UNU Tempe Training Program (Indonesia/UNU; with Poster presentation of UNU funded research). Proposal on South-South cooperation.

Technical tours will be organized from three participating countries: Indonesia, USA, Germany. Address: c/o Akita International Assoc., Aidex Building 8th floor, 2-1-60 Sanno, Akita City, Japan 010. Phone: 0188-64-1181.

2721. Haren, Chuck. 1993. Maya soy Guatemala. *Plenty Bulletin* (*Davis, California*) 9(2):1-2. Summer.
• ***Summary:*** "I spent two mornings at Alimentos San Bartolo (ASB), the Mayan owned and operated soy dairy near Solola that Plenty helped to create in 1979-1980. Alimentos San Bartolo is a business that is owned by the community of San Bartolo. A board of eight directors, who are the Community Development Directors for the village, watch over the operations. Our old friends Elena and Augustine continue to work there. ASB has a total staff of eight people.

"They sell about 2,000 frozen ice creams and fruit flavored milk bars every month during the six-month dry season. Also, each month they sell 700-800 lbs. of tofu and 60-80 lbs. of tempeh to stores in Antigua (Guatemala), Panajachel and Guatemala City. Some packaged soybeans and soy flour are sold and a small amount of milk is delivered to individual homes that like it. The prices of all these products are slightly lower than comparable foods on the market. The business is just making enough now to cover the small wages they are receiving and the other basic operating costs. They are not making enough to repair major equipment failures or to replace equipment when needed. All the equipment has been very well-maintained by the staff and the sanitation standards are very high.

"One thing that was obvious was the need to establish a small restaurant outlet in Solola if the ASB is going to develop a wider market for soybean foods among the Mayan people. They need a place near the center of Solola. They need an opportunity to show people the variety of delicious ways soybeans can be included into traditional foods at a very low cost and also educate the populace about the nutritional value of soybean foods. Now the local people only buy the frozen milk/fruit bars, ice cream and a small amount of milk. Why?–because they are not expensive and are sold in forms that are similar to foods they are accustomed to. Almost all of the tofu and tempeh is sold to stores catering to tourists... Now virtually all of the okara is used as compost to fertilize the gardens... Soybeans used at ASB are grown near the coast. They are purchased in Guatemala city. Inappropriate varieties, technical methods and lack of infrastructure used earlier limited soybeans from becoming a cash crop among farmers at the altitude of Solola (6,000-7,000 ft). Some people say soybeans cannot be established as a crop in this area because of the costs of fertilizer, fungus [fungicides] and insecticides needed, and the lack of sunlight during the rainy season."

"Fundadase is a Mayan NGO with a paid staff of about 25 people that supports community development work in areas surrounding Chichicastenango and Chimaltenango. They receive the majority of their funding from a Danish NGO."

In March of this year Haren participated in a successful 9-hour soybean workshop in Chichicastenango attended by more than 100 men and women from surrounding villages. "This group is very well organized." A meal was served which included soy harina drinks, okara stir-fried with vegetables and potatoes, and soymilk with vanilla. Then a practical demonstration of soybean processing was conducted. Finally several hundred pounds of soybean were sold to interested attendees in one and two pound packets. Of the 9 million people living in Guatemala, about 6 million are indigenous Maya. A 1991 United Nations study found that 6.5 million Guatemalans are living in extreme poverty. Photos show: A Mayan woman straining soymilk to make tofu at Alimentos San Bartolo. Two women preparing corn and soya tamales for the FUNDADASE demo. Address: Program Director.

2722. Matsuo, Masako; Hitomi, Eri. 1993. Suppression of plasma cholesterol elevation by okara tempe in rats. *Bioscience, Biotechnology, and Biochemistry* 57(7):1188-90. July. [18 ref]
• ***Summary:*** Okara tempeh is rich in soy fiber and also contains some soy protein. Isolated soy protein and casein contain no fiber. In comparison to casein, cholesterol levels in rats consuming isolated soy protein decreased by approximately 20%, whereas those consuming fermented and non-fermented okara decreased by about 30%. Address: Gifu Woman's Univ., 80 Taromaru, Gifu 501-25, Japan.

2723. **Product Name:** Native Tempeh (With Soy & Millet).
Manufacturer's Name: Native Foods.
Manufacturer's Address: 71485 Painted Canyon Rd., Palm Desert, CA 92260. Phone: 619-346-2939.
Date of Introduction: 1993. July.
Ingredients: Organic soybeans, organic millet, water, rice starter, vinegar.
Wt/Vol., Packaging, Price: 1 lb plastic bag.
New Product–Documentation: Talk with (call from) Tanya Malch. 1994. Feb. 4. She started commercial production of Soy and Millet Tempeh at this new company which she founded. She sells mostly to restaurants and is looking for packaging and sealing equipment. Soy Power distributes Lightlife tempeh in the Los Angeles area and offers bulk discount, but White Wave is the main brand. Tanya used to run a restaurant named The MT Plate.

Label sent by Tanya Malch. 1994. Feb. 4. 5.5 by 8 inches. Photocopy black ink on chartreuse paper. An illustration of two natives, flying at a 45 degree angle above 3 palm trees, one with a spear, both with rings in ears and nose. One is saying "A native food from Bali," the other "Save our Earth!" The text below the product name reads: "A clean, controlled, 'come on' food." Another flyer notes that

under the name Chef Tanya Petrovna she teaches cooking classes using TVP, tempeh, and seitan in southern California.

Spot in Vegetarian Times. 1996. March p. 112. Amy O'Connor writes that Tanya Petrovna is owner of Native Foods, Smoke Tree Village, 1775 E. Palm Canyon Dr., Palm Springs, California. Phone: 619-416-0070. She makes her own tempeh, seitan, and TVP.

2724. Centa, Roland A. di. 1993. Re: Introducing tempeh and tofu to Italy. Letter to William Shurtleff at Soyfoods Center, Aug. 9–in reply to inquiry. 4 p. Typed, with signature. Followed by a letter of Sept. 10 answering questions.
• ***Summary:*** Roland was one of the first people to introduce soyfoods to Italy. He was very interested in macrobiotics and was a close friend of Michio Kushi. "My interest in food was to heal people with food and I had a lot of success using a holistic approach to help people with major diseases. For all these cures I used a lot of miso, tempeh, and tofu. Good miso was available. However tempeh and tofu had to be locally produced. I cured people from 1980 until about 1985.

"As I am a businessman I was always business minded in order to produce, make a profit, and be able to realize my ideas–which always cost. I am educated in international law and advise corporations who want to expand abroad.

"Tempeh: There was only tempeh available for Paris, made by a lady there named Anita Dupuy, who delivered and sold it to Le Bol en Bois (a macrobiotic restaurant in Paris) and to some consulates and embassies (such as the Philippines). As I was busy elsewhere I sent Giovanna Mazzieri (of Milan, Italy) to Paris [for 1 week in Feb. 1983] to study the process. She was a very busy lady and a fan of macrobiotics after I healed her husband of a very difficult disease. She was very smart and she produced tempeh in Milan in about 1980 [actually mid-1983]. It was perfect and of very good quality. It was sold in a few health food stores. (Letter from Roland of Sept. 10 says Giovanna's tempeh was never sold commercially in stores; she produced tempeh only non-commercially from Feb. 1983 until today. Roland taught her to make tofu in June 1982; she started to make and sell it shortly thereafter).

"Actually it never took off commercially and eventually was used only for selected people, me and my patients. At that time I was very strict in eating macrobiotic. I was very sensitive to the quality of tempeh: I didn't like the acid taste. On the island of Bali I once ate some tempeh which was very acid. Therefore I used to deep freeze it in order to have it ready when we wanted tempeh with perfectly good taste. Today it is no longer produced, or only in small quantities, for the use of the family of Giovanna and some friends in Italy. As I am no longer living in Italy and I stopped curing people, unfortunately I don't use tempeh any more myself. I was interested to find out whether it worked in curing people. It did! However in order to make a profession and profit-making enterprise, I preferred to do other jobs.

"Tofu: Tofu was produced by myself. I am sure I was the only one who produced it on the basis of your teaching the first time in Italy in 1978. After seeing an ad in the *East West Journal,* I ordered your *Book of Tofu* by mail.

"Tofu already existed in Italy in Chinese restaurants in all the major cities. They called it Tau-Fu. After studying your book, I went to many kitchens in order to observe how it was produced, and with the cooks I ate the okara which was never offered to the clients of the restaurants but was seasoned very hot for themselves. The main restaurant I studied at was "La Muraglia," which means "The Wall" and which still exists.

"I then bought the Tofu Kit [made by Larry Needleman of The Learning Tree] which was advertised in the *East West Journal.* With this kit I started to make my first tofu. It was at once of very good quality.

"I started to make the equipment following the instructions in your book and twice a week produced 10 kg of tofu, which was used by my family, and sold in health food stores and later to my patients. I sold the tofu also in bakery shops where I offered the clients free samples to taste before they eventually bought it. I had a few sales. I produced the tofu in the kitchen of my apartment on Via Maffei in Milan. I got up very early and at 8 A.M. the kitchen was clean–you couldn't see anything left of the production. My wife [who was Vietnamese] didn't want to have a mess in the kitchen when she got up.

"Before I going to work as a consultant in the morning, I delivered the tofu to various shops. I didn't sell as a company because the quantity was too small to justify a commercial set-up yet. After about a year, when the whole business was working well, I transferred everything to a friend of mine who was looking for a job. He did it also in his apartment, but had problems with the neighbors who saw the kettles steaming on his balcony and they wondered what he did in his place. As nobody knew what tofu was, he said he was making some kind of cheese. The neighbors thought he might even have cows in his flat, and they managed to kick him out of his rented apartment after he had been making tofu there for about one year.

"When we heard that a company from Rimini [located 200 miles southeast of Milan and run by Gilberto Bianchini] had also started to produce tofu, we stopped production I didn't get the feedback in profit from this business; I preferred to use my time in other operations and buy the tofu made by Gilberto Bianchini at health food stores in Milan. I am sure I would have had success in Italy if I had continued. But I didn't have the support of my family, even though my wife was Vietnamese, and therefore I oriented myself to other activities. Someone who makes 10 kg of tofu in his kitchen before going to work must be a bit crazy–right?

"Nowadays in France I eat tofu about 2-3 times a week, as does my companion, Barbara, and our 4-year-old Carolina.

"Tofu-Kit: In about 1979 I produced about 100 tofu kits, which I sold for 30,000 lires to friends and other people who were interested in making their own tofu. As it was actually a copy of the American tofu-kit which I bought in the U.S., I wanted to see whether there was a real interest in this product before marketing it in Italy. Since it didn't sell very well, I didn't go ahead with it. Eventually I planned to buy the copyright from the tofu-kit people in the U.S. In 1979 I also published booklets in Italian and French titled "Tau-Fu Kit" and Tofu Kit" respectively. One was sold with each tofu kit; they were not sold separately.

"You have been for me a kind of guru, without knowing each other, because I have a lot of admiration for your approach. You are probably successful because you did only this: Writing about things related to soya." Address: 3, Boulevard d'Aguillon, 06600 Antibes, France. Phone: (33) 07-80-70.

2725. Obis, Mariclaire Barrett. 1993. Take another look at soyfoods. *Vegetarian Times.* Aug. p. 54-56, 58, 60, 62, 64, 66. [8 ref]
• ***Summary:*** A good introduction to soyfoods including whole dry soybeans, fresh green soybeans, soy flour and grits, soy sauce, soy oil, textured vegetable protein, soymilk, okara, soy yogurt and cheese, tofu, tempeh, and miso. Address: Contributing editor, Vegetarian Times.

2726. Sakaguchi, Noboru. 1993. Re: Early history of tempeh in France. Making good nigari tofu in France. Letter to William Shurtleff at Soyfoods Center, Sept. 3–in reply to inquiry. 1 p. Handwritten. [Jap; eng+]
• ***Summary:*** "In 1981 Anita [Dupuy] started making tempeh with a man named Jean-Luc Alonso. Anita was in charge of the commercial aspects of the business and Jean-Luc did the production. The company is no longer in business. I recently talked with Jean-Luc and I think he will be sending you more details. His address is presently "Gaia," 11 rue François Chancel, 31190 Auterive, France. Anita is now in the Netherlands.

Concerning our tofu production, in August 1985 we moved to a suburb of Paris named Champigny and changed the name of our company to Daizou. We have been producing tofu ever since. I am beginning to understand that making good tofu using natural nigari is based on getting good soybeans, so I have become very interested in agricultural issues and have begun to study agriculture. The key question is whether we can grow good soybeans in Europe.

Note: The letterhead and envelope read: Tama–Distribution de Produits Naturels. Address: Tama, 883 rue de Bernaü, Z.I. du Plateau, 94500 Champigny-Sur-Marne, France. Phone: 49 83 79 94.

2727. Mazzieri, Giovanna Fosso. 1993. Work with soyfoods in Italy (Interview). *SoyaScan Notes.* Sept. 17. Conducted by William Shurtleff of Soyfoods Center. Followed by a 4-page typed letter of 6 Oct. 1993.
• ***Summary:*** Giovanna was in touch with Soyfoods Center in 1985 when she was interested in having *The Book of Tofu* translated into Italian. That project was not successful because she was unable to find a publisher.

Giovanna thinks she was the first person in Italy to ever make tempeh. Roland di Centa asked her to go to Paris; she went there for one week in February 1983 and Anita Dupuy taught her how to make and cook with tempeh. At the time, Anita was definitely selling her tempeh to many shops in Paris, including Le Bol en Bois, other natural food or macrobiotic shops, and also to the Indonesian Embassy in Paris. She was also making and selling tempeh sandwiches. Anita told Giovanna that she had been in Indonesia for a long time, and that she had learned how to make tempeh there. Giovanna still has Anita's business card. It shows that Traditions du Grain was located at 16, Avenue Jean-Jaures, 94200 Ivry. Phone: 671.89.88. Anita's personal residence was 25 rue du 18 Juin 1940, 94400 Vitry. Phone: 681.85.41.

Giovanna returned to her home in Milan, and in May/June 1983 she started making tempeh non-commercially for Roland and six other people. She gave away most of her tempeh free of charge; just a few people paid for it. She never sold tempeh commercially because it takes official authorization and lots of money to open a shop. She could not afford to do it legally and she did not want to take the risk of doing it illegally just to earn a little money. But she is still making tempeh at her home for her friends and herself. She orders her tempeh starter from GEM Cultures in the USA. In June 1983 she also wrote and published a 7-page booklet in Italian, titled "Tempeh," to teach people how to cook with tempeh. It contained nutritional information plus 14 recipes. She also gave tempeh classes at which she distributed this booklet. To date, no books on tempeh have been published in Italian. As far as she knows, the first and only company that has ever sold tempeh commercially in Italy is La Finestra Sul Cielo S.r.l., an important macrobiotic center, located at Via Brandizzo 149, 10088 Volpiano (Torino). Phone: 011/9951818. She thinks they started to sell tempeh in 1992/1993.

Concerning tofu: She learned how to make tofu from Roland di Centa, who was her master, in June 1982. She also never sold tofu commercially for the same reasons she did not sell tempeh. She helped to popularize tofu in Italy through classes and the distribution of tofu recipes. She knows of four books about tofu in Italian that are now in print: *Il Libro della Soia* (1989, published by Mediterranee), *La Soia in Cucina* by W. Pedrotti (1990, published by Casa Verde), *Il Tofu* by Martha Fischer (1992, published by Mistral Demetra), *La Soia* by W. Pedrotti (1993, published by Mistral Demetra).

Giovanna knows Gilberto Bianchini (pronounced bee-

an-KEE-nee) very well. He was a very early tofu producer in Italy, starting in Milan in about 1982 or 1983 (she thinks) at about the same time as Giovanna. In Milan at that time there was only one vegetarian food retail shop and they did not like to sell tofu; they encouraged people to eat cheese instead. So Gilberto had a very hard time. Giovanna is sure that Gilberto started making tofu in Milano and then he moved to Rimini. Gilberto did very active and good work with tofu in Italy and he made a product of fine quality, but she thinks he is not producing it any more. Gilberto is now living at Via Cuoco 7, 47037, Rimini, Italy. Phone: 0541/373670.

Other people who pioneered in introducing soyfoods to Italy were Ferro Ledvinka in Florence. He worked for Mitoku in Japan, and is now a macrobiotic consultant in Florence. Phone: 055/217204. Also Carlo Guglielmo and Elena Roggero, macrobiotic consultants in Turin at the same address as La Finestra Sul Cielo.

She is aware of the following companies producing and selling tofu commercially: (1) Fonte Della Vita, Via Monviso 18, Cuneo, Italy. Phone: 0172/66397. (2) Soyalab, Via B. Cellini 48N, 50020 Sambuca Val di Pesa (Firenze). Phone: 055/8071268.

Giovanna is still active promoting and teaching about soyfoods in Italy. There is a growing interested in soyfoods compared to 10 years ago. Now consumers ask for them. Address: Via Santa Tecla 3, 20122 Milan, Italy. Phone: 02 8646 1747.

2728. Bjornson, Sheri. 1993. Tempting tofu and tempeh: Health benefits, versatility help popularize soyfoods. *Daily Ledger–Post Dispatch* (*Antioch, California*). Sept. 21. p. 21-22.
• ***Summary:*** Ron and Nancy Hoskins of Oakley, California, are vegetarians and they teach vegetarian cooking classes. One is titled "Introduction to tofu and tempeh," and another is "Introduction to TVP and gluten." Ron learned about soyfoods when he lived at The Farm in Summertown, Tennessee. Contains recipes for: Greek salad with tofu. Tofu-dill dip. Hawaiian tempeh kabobs with pineapple and peppers. A color photo shows Ran and Nancy at a table with tofu and some books from The Farm's Book Publishing Co.

2729. Hachmeister, Kathleen A.; Fung, Daniel Yee-Chak. 1993. Tempeh: A mold-modified indigenous fermented food made from soybeans and/or cereal grains. *Critical Reviews in Microbiology* 19(3):137-88. [185 ref]
• ***Summary:*** An excellent review of the literature. Contents: Introduction. Mold-modified indigenous fermented foods: Miso, shoyu (soy sauce), hamanatto, sufu, fermented rice (sierra rice), tapé (lao-chao), ang-kak, ogi, tempeh, ontjom (oncom, lontjom), bongkrek (tempeh bongkrek), kenima. Processing developments in legume tempeh manufacture: Traditional tempeh fermentation, industrial production of tempeh, methods of preparation (cleaning, dehulling, hydration and acid fermentation, partial cooking, draining, cooling, and surface drying, inoculation, fermentation containers, incubation, harvesting, storage, and preservation, uses and preparation of tempeh). Organoleptic properties of tempeh. Microbiological aspects of legume tempeh: Microbial ecology, traditional and modern soaking methods, effect of soaking, acidification, and initial bean pH, effect of boiling prior to inoculation, effect of *Klebsiella* and *Enterobacter*, effect of lactic acid bacteria and yeasts, microbiological safety and quality, heating prior to consumption. Nutritional quality of legume tempeh. Chemical and biochemical changes in legume tempeh: Changes in protein and amino acids, changes in carbohydrates, changes in lipids, antioxidant potential, changes in minerals, changes in vitamins. Antinutritional factors associated with legumes: Flatulence-producing factors, protease inhibitors, tannins, phytic acid, hemagglutinins, other antinutritional factors. Cereal grain tempeh–practical applications: Background information, materials and methods, results and discussion, conclusions and future developments. Summary. References. Address: Dep. of Animal Sciences and Industry, Kansas State Univ., Manhattan, KS 66506.

2730. *Heath Foods Business.*1993. Owner operated co-op has new address. Sept. p. 80.
• ***Summary:*** Surata Soyfoods Cooperative announces a move to new quarters at 325 West 3rd Ave., Bldg, A, Eugene, Oregon 97401-2524. The worker-operated co-op makes hand-crafted tofu and tempeh using organically grown soybeans.

2731. Vaidehi, M.P. 1993. "Tempe"–A biotechnological boon for nutritionally rich foods. *Beverage & Food World* (*Bombay*) 20(4):35-36. Sept.
• ***Summary:*** Although Indians prepare many fermented foods (such as idli, dosa, dhokla, kadabu, curds, etc.), it was not until the author visited Indonesia that she realized there are many fermented foods of which Indians are unaware. "Tempe" is the "most impressive fermented food nationally adopted for improving nutrition and health of the children of Indonesia." The author learned about tempeh when she was offered a fellowship by the United Nations University to participate in a food fermentation technology and training/research course at the Nutrition Research and Development Centre, Bogor, Indonesia. After an extensive tour of many tempeh production places in Java, she concluded that tempeh is a food with great potential, and that in all countries it can be used "to improve the socio-economic, nutritional and health status of the great majority of the population."

A table shows the nutritional value of different types of tempeh and tempeh powders. A flow sheet for tempeh production is also given. Address: Dr., Prof. and Head,

Dep. of Rural Home Science, Univ. of Agricultural Sciencs, Bangalore, India.

2732. White Wave, Inc. 1993. White Wave soyfoods food service product list (Leaflet). Boulder, Colorado. 1 p. Single sided. 28 cm.
• ***Summary:*** Lists six categories of products: (1) Tofu: Vacuum pack organic hard style tofu (2/5# pouches). Meatless tofu steaks (2/4# pouches).

(2) Dairyless Soy Yogurt: Lemon kiwi (6/2# tubs). Organic plain quarts (6/2# tubs).

(3) Soy A Melt Soy Cheese: Cheddar style (4/7.25# loaves). Mozzarella style (4/7.25# loaves). Monterey jack style (4/7.25# loaves). Garlic herb style (4/7.25# loaves).

(4) Meat Substitutes: Meatless healthy franks (10# cases). Meatless healthy bologna (10# cases). Vegetarian sloppy joe (19# buckets). Traditionally seasoned seitan (2/6# pouches). Diced traditionally seasoned seitan (2/6# pouches).

(5) Veggie burgers: Tempeh burger (60/3 oz. cases). Teriyaki tempeh burger (60/3 oz. cases). Veggie life burger (48/3.5 oz. cases). Lemon broil tempeh (90/2 oz. cases). Tempeh cutlet (60/3 oz. cases).

(6) Tempeh: Original soy tempeh (20/8 oz. packs). Address: 1990 North 57th Court, Boulder, Colorado 80301. Phone: 303-443-3470.

2733. White Wave, Inc. 1993. White Wave soyfoods retail product list (Leaflet). Boulder, Colorado. 1 p. Single sided. 28 cm.
• ***Summary:*** Lists six categories of products. * = Also available in food service pack: (1) Tofu: Reduced fat organic tofu. Organic tofu*. Snack'n savory tofu. Meatless tofu steaks*. Spicy szechuan stir fry. Tofu in garlic sauce stir fry.

(2) Dairyless Soy Yogurt: Raspberry. Strawberry. Blueberry. Peach. Apricot mango. Lemon kiwi*. Vanilla. Organic plain quarts*.

(3) Soy A Melt Soy Cheese: Cheddar style*. Mozzarella style*. Monterey jack style*. Garlic herb style*. Mixed variety case. Fat free cheddar style. Fat free Mozzarella style. American soy singles. Mozzarella soy singles. (4) Meat Substitutes: Meatless healthy franks*. Jumbo meatless healthy franks*. Meatless healthy links. Meatless healthy bologna*. Meatless healthy bacon. Vegetarian sloppy joe*. Vegetarian chili. Tempeh barbecue. Traditionally seasoned seitan*.

(5) Veggie burgers: Tempeh burger*. Teriyaki tempeh burger.* Veggie life burger*. Lemon broil tempeh*. Tempeh cutlet*.

(6) Tempeh: Original soy tempeh*. Soy rice tempeh. 5-grain tempeh. Wild rice tempeh. Address: 1990 North 57th Court, Boulder, Colorado 80301. Phone: 303-443-3470.

2734. Soyfoods Association of America; American Soybean Association. 1993. Good news about soyfoods. San Francisco, California. 16 p. 19 cm.
• ***Summary:*** This attractive booklet, containing 6 color photos, introduces soyfoods. Produced jointly by the Soyfoods Association of America and the American Soybean Association, it represents a first in cooperation between these two organizations. Contents: Soyfoods–A healthy choice: Soyfoods lower blood cholesterol, and fight cancer. Adding soyfoods to your menu: It's easy! The soyfoods family: Soybeans and edamame or fresh green soybeans, soy flour, texturized soy protein (TSP), soymilk, tofu, tempeh, miso, meat analogs, soy oil (a brief description is given of each). Soy recipes: Miso soup. Tofu chocolate cream pie. Creamsicle spritzer (with soymilk). Banana pancakes (with soy flour, soymilk, and soy oil). Sloppy joes with texturized soy protein. Barbecued tempeh. Nutritional value: Gives the composition of tofu (soft, silken, firm), meat analogs, soy oil, miso, texturized soy protein, tempeh, soymilk (regular or lite), and soy flour (full fat or defatted). Address: 1. One Sutter St., Suite 300, San Francisco, California 94104; 2. American Soybean Assoc., 540 Maryville Centre Drive, Suite 390, St. Louis, Missouri 63141-9200. Phone: 1. (415) 393-9697; 2. 1-800-Talk-Soy.

2735. Sudigbia, I. 1993. Tempeh for nutritional treatment of childhood diarrhoea [diarrhea]. Paper presented at the XV International Congress on Nutrition. Held 26 Sept. to Oct. 1 at Adelaide, Australia. *
• ***Summary:*** Tempeh is suitable for use in nutritional treatment during and after episodes of diarrhea, whether in clinical or community use.

Note: This paper was published in the ASA [American Soybean Association] Technical Bulletin series (MITA(P) No. 518/12/92 Vol. HN20 1993) (Available from ASA, Singapore). Address: Child Health Dep., Medical Faculty, Diponegoro Univ., Semarang Univ., Indonesia.

2736. Guglielmo, Carlo. 1993. Re: Introducing tempeh and amazake to Italy. Letter (fax) to William Shurtleff at Soyfoods Center, Nov. 5–in reply to inquiry. 2 p. [Eng]
• ***Summary:*** "I feel honored to receive an enquiry from you about tempeh. The books by you and your wife have been wonderful companions for many years. Yes, we have really been the first to introduce tempeh to Italy, even if we didn't continue with that activity for a long time. Let me tell you briefly our story.

"Together with my wife, Elena, and my friend Adriano Poggin, I founded the East-West Center "La Finestra sul Cielo" in Torino [Turin], Italy, in 1978. The address was Via Saluzzo 23 in Torino. The center offered classes on healing, cooking, shiatsu, etc. and I worked as a macrobiotic counselor. A little later we also opened a natural food store (at Via Berthollet 4) and a macrobiotic restaurant (at Via Massena 1).

"The store and the restaurant are still in operation, even

if we are not involved with them any more. I closed the center in 1992 to have enough time to continue my activity as a macrobiotic teacher and to work in the company. (Also, after 15 years, I had enough of that activity.)

"'La Finestra Sul Cielo' import and distribution company was founded in 1987 in Volpiano (near Torino) by Elena, Adriano, and me. We started making that same year, in the fall of 1987 at Via Brandizzo 416, Volpiano The name of the product in Italian was 'Tempeh.' On the label was a brief description of the product–which was totally unknown at that time. The tempeh was pasteurized in plastic packets and could keep for about 1 month in a refrigerator. I personally worked on developing the production process, together with a friend named Lucio de Berti, who actually produced the tempeh. We learned to make tempeh from your books. My wife and I had the opportunity to try tempeh while staying in Boston, Massachusetts [studying macrobiotics], during 1980 and 1981. We felt the importance of introducing this wonderful food to Italy. But it took several years to realize that goal. We continued to make tempeh for about one year, then unfortunately, we discontinued the production. After that time we did not distribute soyfoods any more, since other companies specialized in making and distributing them.

"Later Lucio married a Belgian woman and moved to Belgium where he is still making tempeh and other soyfoods. His company name is Food for Freedom. We started importing amazake from Holland in 1987 or 1988. We were the first company to introduce amazake to Italy and we still import it.

"We are now planning to include fresh soyfoods distribution (not production) in our activity again; we plan to start in the first months of 1994." Address: La Finestra Sul Cielo s.r.l., Via Brandizzo 149, 10088 Volpiano (Torino), Italy. Phone: 011-988.55.21.

2737. *SoyaScan Notes.* 1993. Chronology of the American Soybean Association's growing interest in promoting soyfoods in America. Nov. 5. Compiled by William Shurtleff of Soyfoods Center.

• ***Summary:*** 1992 Jan.–Keith Smith of ASA calls Mark Messina PhD, at the National Cancer Institute and asks what Mark knows about possible cancer-preventing substances in soybeans. ASA was getting a lot of enquiries on the subject, which was Mark's specialty at NCI.

1992 Dec.–ASA decides to allocate a large portion of their 1993 research funds for health-related research. The 1993 budget contains $1,200,000 in funding for three 2-year projects which each received $400,000 over the 2 years. One project by Stephen Barnes involves soy and prostate and breast cancer, one by Maurice Bennink of Michigan State involves soybeans and colon cancer, and a third by William Wong involves cholesterol metabolism in soy.

1993 March–ASA allocates $27,625 for the Soyfoods Association of America (mainly Ginny and Mark Messina) to develop and distribute educational materials on soyfoods and to produce periodic press releases. The grant will be used to produce a 4-color brochure on soyfoods and eight individual fact sheets on tofu, soymilk, tempeh, miso, texturized vegetable protein, soy flour, soy-based meat analogs, and soy oil. These materials will be made available to state soybean boards.

1993 June–*The Soy Connection,* a quarterly newsletter on the nutritional benefits of soyfoods, starts to be mailed to 70,000 registered dieticians across the U.S. This high-quality publication, edited by Mark Messina, contains articles by experts in their fields, plus some good recipes.

1993 Oct.–Dr. Mark Messina is officially hired by ASA as a consultant. He gave about 12 public speeches on soy, diet, and chronic disease prevention in 1993, and has 15 more planned for 1994. Messina also coordinates nutrition research for a group named the North Central Soybean Research Program. As part of this, Steve Sonka of the University of Illinois is conducting a $43,000 economic impact analysis to determine the market potential for soyfoods and its effect on soybean consumption. The report is expected out in Dec. 1993. USB only has 3 paid employees and 60-65 volunteers, so they hire the ASA to do projects using money from USB and everything that ASA does is approved by David Thomas.

1993 Oct.–USB has a booth (probably its first) at the annual 3-day conference of the American Dietetic Assoc. attended by roughly 10,000 people. ASA and Dr. Messina were there. Evans Food Group, ASA's big food-related public relations firm in Seattle, Washington, was also there. The booth was geared mostly toward soy oil, but most of the interest from dietitians was in soyfoods. Fact Sheets on soyfoods and a brochure prepared by the Soyfoods Association and Evans Group were distributed. Soynuts were served but they ran out in the first 2 hours. Messina encouraged USB to have enough good soy-based snacks to last for 3 days for next year's show.

1993 Nov.–*Good News About Soyfoods,* an attractive 16-page booklet, prepared jointly by the Soyfoods Association of America (Ginny Messina) and USB, featuring information about and recipes for soyfoods is mailed to about 3,000 to 5,000 key media contacts.

1994 Feb.–The First International Symposium on the Role of Soy in Preventing and Treating Chronic Disease is held in Mesa, Arizona, organized by Dr. Mark Messina and sponsored by the United Soybean Board as well as soybean growers from Nebraska and Indiana.

1995–The United Soybean Board (USB) begins to sponsor dietitian seminars on the health benefits of soy in 26 cities across the USA. The budget for each seminar is $8,000. Manufacturers can exhibit products at seminars for a fee of $75 per table.

1996 Jan.–The Indiana Soybean Development Board introduces *Soyfoods USA,* the world's first e-mail newsletter

on soyfoods. It is sent monthly to e-mail addresses free of charge. By Feb. 1997 there are 1,200 subscribers.

1996–USB creates and develops the theme "Soybeans–Designed for Life." When someone phones one of the state soybean associations or boards, music with these words plays in the background while he or she is on hold.

1996 Sept.–The Second International Symposium on the Role of Soy in Preventing and Treating Chronic Disease is held in Brussels, Belgium, again organized by Dr. Mark Messina. Sponsors contributing more than $15,000 include: American Soybean Association, Nebraska Soybean Board, United Soybean Board, Ohio Soybean Board, Indiana Soybean Development Council. Other sponsors: Illinois Soybean Association and Illinois Soybean Program Operating Board, Soyfoods Association of America, Minnesota Soybean Research and Promotion Council, Iowa Soybean Promotion Board, and Michigan Soybean Promotion Committee.

1997 Jan.–USB announces 11 more Soy Connection Dietitian Seminars that will be held in major cities across America during 1997, from April 4 to Sept. 12.

1997 Feb. 25–The Illinois Soybean Assoc. (ISA) mails a form letter to all known soyfoods manufacturers in the USA, stating that it has recently teamed up with a number of industry leaders and researchers to examine the feasibility of a cholesterol health claim for soy protein products. The letter asks that each manufacturer send ISA (by March 5) nutritional labels for each soyfood product that it makes or distributes.

2738. Olson, Paul. 1993. Update on Bountiful Bean Soyfoods (Interview). *SoyaScan Notes.* Nov. 17. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Paul created a corporation named Vermont West Inc. which purchased Bountiful Bean Soyfoods from Richard Kraemer and Elizabeth Hanson on 3 Sept. 1993. Richard and Elizabeth will continue working at the company until Feb. 1994, then Richard plans to go back into the ministry.

A follow-up letter (19 Nov. 1993) and leaflet (titled "About Bountiful Bean Soyfoods Products") shows that the company now makes tofu, herb tofu, tasty tofu (marinated and baked herb tofu), tempeh, soymilk, hummus, and taboolie [tabbouleh].

Paul also encloses "Bountiful Bean Soyfoods Newsletter." Issue 1. Nov/Dec. 1993. 4 pages. It includes articles titled "New ownership of Bountiful Bean Soyfoods Announced" (The company currently employs 8 people.) "Who is Paul Olson and what is Vermont West?" (Paul has had 9 years prior experience working in the computer industry with Apple Computer. He is 27 years old and lives near the family farm where he grew up). Address: 620 Main St., P.O. Box 329, Ridgeway, Wisconsin 53582-0329. Phone: 608-924-1703.

2739. Wilson, Don. 1993. The pioneering work of Aqua Agra in Florida with sprouts and soyfoods. Part II (Interview). *SoyaScan Notes.* Nov. 24. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** "When we started talking about making tofu, it became very evident to me that we would need a bigger space, so in about March or April of 1977 we moved over to 100 Highline Dr., Longwood, Florida 32750. We went from 4,000 square feet of floor space to 50,000 square feet. We outgrew our plant on Seminola Blvd. in about 4-5 months." In June 1977 Don's first child, a son, was born. On Highline Drive, Don built rooms to grow the various sprouts and also diversified the company into chopping and packing huge amounts of fresh vegetables; there was a separate packet of sauce (such as teriyaki) in each bag for making stir-fries. All that was needed was some tofu to complete the stir-fry. Don bought his tofu equipment used from Robert and Mary Brooks, whose company Swan Foods in Miami had gone out of business. The purchase became a mess because Robert had failed to inform Don about the liens that were against his equipment due to Robert's unpaid bills. So Don started to make tofu in 1978. He sold it chiefly to the chain stores–first to Albertson's (the smallest group), then to Publix, and then to Winn Dixie (the biggest chain). He did not deal with restaurants or health food stores. At the height of production, Aqua Agra was making at least 25,000 to 30,000 lb/week of tofu. He was the first person to introduce tofu to supermarkets in Florida.

In the summer of 1979 Don attended the second annual Soycrafters Conference at Amherst College in Massachusetts. "I will never forget that as long as I live. Some of the major U.S. food companies, such as General Mills and a few others, sent representatives in 3-piece suits. I was standing in the back of the auditorium where these guys were and I'll never forget listening to their comments as they talked about what a bunch of dingdongs they had been sent to observe, and how this had absolutely no place in the American food chain whatsoever. I can remember walking away from that conference thinking to myself, 'I sure am glad these big guys think this way because all it would take is one big corporation to get involved in this and a lot of small businesses would soon go down the drain.'"

Aqua Agra grew rapidly. Many of his employees were Asian-Americans and they were wonderful workers. the copycats that tried to compete with him couldn't. About 2 years after Aqua Agra started making tofu, the *Sentinel Star* newspaper did a rather nice story on the company in 1980.

In early 1981 Don started making soymilk, which he sold in bulk to the nearby Seventh-day Adventist Florida Hospital–but not to any of the chain stores. He sold about 300 gallons a week.

At about the same time he started making soy yogurt in individual unprinted cups with a pressure sensitive label. Most of his sales were of plain yogurt, but he also sold

strawberry, peach, and blueberry flavors. The yogurt was sold to local health food stores, to Del Champs in Alabama, and to a broker in New York named Marty Grossman, who sold a lot.

In late 1981 Aqua Agra began to make soy tempeh. They sold less than 100 lb/week, and only to a few health food stores in Orlando who had asked for it.

Don and his wife had to close the company in about mid-1982, after 6 years in business. At that time they were making about 75 products. He and his wife were each working 100 hours a week. "The doctor gave me a choice. He said, 'You can either get rid of that business and live, or you can keep it and die! But you're gonna do one of the two.'" Don was so sick and tired of everything at that time that he decided not to even sell the company–just to shut it down and walk away.

Don feels that he was a little bit before his time. "People found it amusing that a sergeant in the United States Marine Corps. was involved in making hippie food." Address: 2321 Virginia Dr., Altamonte Springs, Florida 32714.

2740. Drosihn, Bernd. 1993. Re: New developments with soyfoods in Germany. Letter to William Shurtleff at Soyfoods Center, Nov. 29. 2 p. Typed, with signature on letterhead.
• ***Summary:*** Viana has done a lot of work to improve the design of its labels and packaging. In Germany the soyfoods market is not growing at present, but neither is there a big recession. Germany's biggest soyfoods manufacturer, DE-VAU-GE, stopped production of tofu in early 1993 and now buys its tofu products from Heuschen-Schrouff B.V. in the Netherlands. That should make Heuschen-Schrouff one of the largest tofu manufacturers in the world. DE-VAU-GE plans to stop soymilk production in early 1994.

Some newer, small soyfoods manufacturers have recently started in Germany: Tofuhaus Eisenreich (Steinmetzstrasse 4, 93049 Regensburg, Germany. Owner: Mrs. Eisenreich. Phone: 0941/27 01 27), and Topas GmbH (Bollbergsr. 41, 72116 Moessingen [near Tuebingen], Germany. Owner: Klaus Gaiser. Phone: 07473/25515). Our old friend Klaus Gaiser, once the largest tofu manufacturer in Germany, is trying to make a comeback.

The market for soyfoods in Eastern Europe is developing very quickly. Bernd has had contact with a Polish company named Polsoja. Yesterday a person from Slovenia visited Viana. He wants to make tempeh there and he told Bernd that there are some soyfoods manufacturers in the former Yugoslavia. In Slovenia, which is relatively untouched by the war, there is one existing tofu company and more than 30 natural food stores.

Albert Hess (owner of Das Tofuhaus in Lautersheim) and Bernd are in the process of founding a new company, named Sojarella, which will start to make and sell soy cheeses in early 1994. The address will be the same as Viana. They have developed a method for making soy cheese products that contain no casein. Address: Founder and president, Viana Naturkost GmbH, Willi Graf Str. 88, 33881 Euskirchen-Kuchenheim, Germany. Phone: 02251-56076.

2741. Coward, Lori; Barnes, N.C.; Setchell, K.D.R.; Barnes, S. 1993. Genistein, daidzein and their beta-glycoside conjugates: Antitumor isoflavones in soybean foods from American and Asian diets. *J. of Agricultural and Food Chemistry* 41(11):1961-67. Nov. [31 ref]
• ***Summary:*** This is a very important article. Isoflavones were first extracted with alcohol (80% aqueous methanol) and then the fat was removed from the extract with hexane solvent. Details of the isolation process are given. The results showed that most Asian and American soy products, with the exception of soy sauce, alcohol-extracted soy protein concentrate, and soy protein isolate, have total isoflavone concentrations similar to those in whole soybeans. Asian fermented soyfoods contain mainly isoflavone aglucones, whereas in nonfermented soyfoods of both Asian and American origin isoflavones are present mainly as beta-glycoside conjugates. The estimated daily intake of these isoflavones by Asians is similar on a body weight basis to the isoflavones in soy-containing diets which inhibit mammary tumorigenesis in animal models of breast cancer. Therefore, it is possible that dietary isoflavones are an important factor accounting for the lower incidence and mortality from breast cancer in Asian women.

"The concept of reducing cancer risk by chemoprevention has become an important aspect of current cancer research. It has been suggested that two so-called phytoestrogens, lignans and isoflavones, may play a role in the prevention of estrogen-dependent breast cancer and colon cancer.

Three tables show the isoflavone concentrations in various types of soyfoods. For each food, the content of the following is given: Conjugated genistin, conjugated daidzin, genistein aglucone, daidzein aglucone, total isoflavones, D/G ratio, percentage of genistein aglucones, and percentage of daidzein aglucones. After each food listed below we will show the total concentration "as is" and then (if given) on a dry weight basis.

Table 1 shows isoflavone concentrations (in mg per gram) in basic nonfermented Asian soyfoods: Soymilk (0.252 / 3.256), Tree of Life tofu (0.417 / 2.031), Mori-Nu tofu (0.494 / 3.827), soy flour (1.338), soy powder (1.748), and soy nuts (2.363).

Table 2 shows isoflavone concentrations (in mg per gram) in fermented Asian soyfoods: Tempeh (0.430 / 1.130), miso (0.920 / 1.379), rice miso (0.404 / 0.721), barley miso (0.721 / 1.195), Shiromiso soup mix (0.708), Akamiso soup mix (0.882).

Table 3 shows isoflavone concentrations (in mg per gram) in other soyfoods: Soy sauce (0.023 / 0.090), soy

cheese (0.050 / 0.105), Tofutti soy ice cream (0.032 / 0.092), Ice Bean soy ice cream (0.117 / 0.360).

Although flavonoids are found in many plants, vegetables, and flowers, isoflavones such as genistein and daidzein are found in just a few botanical families. This is because of the limited distribution of the enzyme chalcone isomerase largely to tropical legumes. Partly for this reason, isoflavones are a very minor part of American or British diets. Address: Depts. of Pharmacology and Biochemistry and Comprehensive Cancer Center, Univ. of Alabama at Birmingham, Birmingham, Alabama 35294, Mass Spectrometry Lab., Children's Hospital Medical Center, Cincinnati, Ohio 45229.

2742. Havala, Suzanne; Dwyer, Johanna. 1993. Position of the American Dietetic Association: Vegetarian diets. *J. of the American Dietetic Association* 93(11):1317-21. Nov. [24 ref]
• ***Summary:*** Contents: Introduction. Position statement. Vegetarianism in perspective. Implications for health promotion. Nutrition considerations vegetarians. Groups with special needs. Meal planning.

Introduction: "A considerable body of scientific data suggests positive relationships between vegetarian diets and risk reduction for several chronic degenerative diseases and conditions, including obesity, coronary artery disease, hypertension, diabetes mellitus, and some types of cancer.

"Position statement: It is the position of the American Dietetic Association vegetarian diets are healthful and nutritionally adequate when appropriately planned."

A half-page table titled "Daily food guide for vegetarians" (p. 1318) suggests that 2-3 servings per day come from the "Legumes and other meat substitutes" food group. Serving sizes: 4 oz tofu or tempeh, 8 oz soy milk. Address: 1. MSc, RD; 2. DSc, RD.

2743. Kelley, Hubert W. 1993. Always something new: A cavalcade of scientific discovery. *USDA Agricultural Research Service, Publication* No. 1507. 150 p. Nov.
• ***Summary:*** This book is filled with photos and commemorative stories about the research discoveries and breakthroughs in the field of crop utilization at the four regional USDA's Agricultural Research Service (ARS) labs during the 50 years since they were established.

Chapters include: Introduction. Gambling on science. Penicillin and the war years [World War II]. Midstream changes and corrections. Frozen foods. Soybean oil (p. 85-88). Vegetable oils in Industry (p. 89-91). Food safety (p. 97-104; Aflatoxin, other mycotoxins). Food for Peace (p. 116-18). Fuels from agriculture (p. 118-19). Proteins in milk, grains, and oilseeds (p. 125-20). Peanuts (p. 131). U.S. crops in Asian foods (p. 132-33; Tofu, tempeh, soy sauce, sufu). Microorganisms (p. 134-36; Incl. the ARS culture collection). Focus on the future (p. 147-50; soy oil printing inks).

The most important work of the Northern regional laboratory in Peoria was the development of penicillin starting in June 1941. A brief chronology: 1941 Dec.–Andrew J. Moyer, a chemist at the Northern lab, developed the basis for the industrial process–deep vat fermentation. 1942 March–Only enough penicillin is available to treat a single case. 1942 Dec. 31–Seventeen U.S. pharmaceutical companies are working on penicillin. 1944 June 6–Thanks to the combined efforts of many people, enough penicillin is available in quantity by D-Day (invasion of Normandy, France) to treat wounded allied soldiers. Penicillin was the world's first commercial antibiotic. By the 1950s, hundreds of antibiotics were on the market. Address: Director (retired), Information Staff, USDA Agricultural Research Service (ARS).

2744. Keuth, Sylvia; Bisping, B. 1993. Formation of vitamins by pure cultures of tempe moulds and bacteria during the tempe solid substrate fermentation. *J. of Applied Bacteriology* 75(5):427-34. Nov. [30 ref. Eng]
• ***Summary:*** Describes the synthesis of vitamins B-6, B-12, riboflavin, thiamine, nicotinic acid and nicotinamide by different strains of *Rhizopus stolonifer, R. arrhizus,* and *R. oligosporus.* Also discusses the influence of the presence of bacteria (*Citrobacter freundii, Klebsiella pneumoniae, Pseudomonas fluorescens, Streptococcus sp.* etc.) on the production of vitamins. Isolates of *R. oligosporus* were generally the best vitamin formers. The molds did not produce physiologically active vitamin B-12. But the addition of bacteria, which had been selected in a screening for vitamin B-12 production, resulted in an increase of physiologically active vitamin B-12. *Citrobacter freundii* and *Klebsiella pneumoniae* showed the best formation capabilities.

The influence of *R. oligosporus* on vitamin B-12 formation by *C. freundii* was also studied. The vitamin content of tempeh fermented with a mixed culture of mold and bacteria was three times as high as that in a control fermentation of the beans with *C. freundii* only. In addition, the growth of *C. freundii* in mixed fermentations was tripled. Address: Institut fuer Mikrobiologie, Westfaelische Wilhelms-Universitaet, Muenster, Germany.

2745. Wheatley, Georgia. 1993. An American vegetarian resource directory: Some signposts on the journey towards a healthier, more ethically and environmentally balanced lifestyle. Ferguson, Missouri: WheatSong Press. 94 p. Nov. Index. 22 cm.
• ***Summary:*** Contents: 1. Audio/Visual resources: Audio, video, tape producers/distributors. 2. Cookbooks (248 citations). 3. Electronic resources: Internet sources (America Online, Compuserve, Public Dialup Internet Access List compiled by Peter Kaminski), vegetarian sources accessible from the Internet (rec.food.veg, fat-free, veggie {send

email to the Internet address listserv@gibbs.oit.unc.edu}, granola, world guide to vegetarianism, AR-Talk, AR-News), other electronic vegetarian sources (Genie, Prodigy). 4. Family and children's resources: Audio, activities, books, cookbooks, periodicals, video. 5. Mail order products. 6. Organizations and groups: National, local organizations listed alphabetically by state and city, starting your own group. 7. Periodicals, journals, and newsletters. 8. Publishers/distributors. 9. Radio/television resources: Radio, television. 10. Resource books. 11. Travel resources.

Note 1. This is the earliest document seen (July 2007) that mentions the Internet in connection with soyfoods or vegetarianism. Note 2. A new edition was published in Aug. 1996. Address: P.O. Box 35009, Ferguson, Missouri 63135. Phone: (314) 524-0894.

2746. Demos, Steve. 1993. More on White Wave's early ownership structures, sources of capital, and employees (Interview). *SoyaScan Notes.* Dec. 19. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** Steve started White Wave as a sole proprietorship in a small space on Pearl Street. He hired employees to help make tofu and tofu products. The first employee was Pat Calhoun. The company changed to a partnership after about 1 year at about the time of the move to Walnut Street. "The motivation wasn't money–nobody had any. The motivation was commitment. You can either use sweat equity or you can use money to accomplish the same thing. My intention was to get people equitably involved and committed to the project, and to have them take on responsibility. It is very hard to find people who really understand what that means. It is very important to understand the change to a partnership in the context of the values and mentality of the 1960s and 1970s. I was just trying to take the mentality and apply it to business. The 'small is beautiful, everybody's equal, group decision making process'–all those romantic concepts were very influential. It was the old leftover tribe mentality." The the original partners were all employees at the time the partnership structure was created, and it grew out of discussions among Steve and the employees as to the best way to shift gears. Steve decided that "the philosophically correct position for running a late 1970s company was to get out of sole proprietorship and into a new structure." He conceived of and offered the idea of the partnership, with a commitment of both time and money. During the early years the company was making money–enough money to finance the move to Walnut Street and everything else. It was the third move (to the old ice cream factory) that challenged the profitability of the company. The money was not something the needed for a specific purpose; for example, George Hamel contributed part of his money in the form of an old Honda that the company used as a delivery vehicle. There is absolutely no question about the fact that the money was less important than getting people involved with the company and committed to it.

Chip McIntosh was not one of the partners, but he was the first employee who arrived after the partnership began. "I'll never forget it. He came in with a bandana strapped on top of his head. He looked me in the eye and said: 'I want to learn how to do this, and I'm the right person for your company.' Chip arrived while we were installing equipment at Walnut Street, before White Wave started making tempeh. I believe Chris O'Riley was our first tempeh maker. Chip has always been our 'food man' so to speak. He is now back with White Wave as quality assurance manager; he returned about 6 months ago.

Note: Shurtleff and Aoyagi spoke twice in Boulder. The first program, on 18 or 19 Jan. 1976, was sponsored by Spinning Kitchen [or maybe David Bolduc and Green Mountain Grainery] at the Unitarian or Presbyterian Church located at Spruce and Pine streets. The second program, on 17 May 1980, was in the Boulder Theater, sponsored by White Wave in order to introduced soyfoods and their company to Boulder. In addition, Shurtleff visited Boulder with Wataru Takai in early August 1978, saw the White Wave tofu shop and deli in operation on Pearl Street, and met Steve Demos for the first time. Address: President, White Wave Inc., 1990 North 57th Court, Boulder, Colorado 80301. Phone: 303-443-3470.

2747. Demos, Steve. 1993. New developments at White Wave (Interview). *SoyaScan Notes.* Dec. 19. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** White Wave is about to rent the Boulder Theater for a town party in May 1994 to show the people of Boulder what the company is doing. "We're renaming Boulder 'Tofu Town.'"

Steve recommends that Shurtleff go to Whole Foods Market's store in Berkeley, California, where there is now a White Wave Vegetarian Cuisine Center. They have a "shelf set" developed as the first prototype for the United States. The set is fully integrated into the store's dairy case; it is not a stand-alone unit. In Berkeley, the set is placed in between amazake and tortillas. There may or may not be dividers on both sides. It contains about 46 facings of White Wave products in an organized fashion, in groups such as meat alternatives, dairy alternatives, cheese alternatives, tofu, tempeh, etc. The term "Vegetarian Cuisine," which does not contain the word "soyfoods" or the word "protein," opens the products to a broader category and it elevates the foods to a higher level than just basic proteins. White Wave has had a dozen cartoon characters made up for the set; they deliver the basic information on soyfoods and ecology, soyfoods and cancer, soyfoods and heart disease, etc. There are individual 3 by 5 inch info-cards printed on both sides. Sources of more information are given on each card. White Wave installed their first sets during the first week in November in the 3

Whole Foods stores in the Bay Area–Berkeley, Palo Alto, and Mill Valley. Berkeley is the best of the three. During the first month, the lowest increase in sales was 160% and the highest was 1,000%.

"We are calling this 'category management' or 'category shelf management.' This is what Walmart is. This is the science of merchandising and marketing. Its a whole new game–and so exciting. We spent a year taking photos of natural and health food stores around the United States, and we realized that there was no organizational schematic to the evolution which has taken place as products evolved from tofu to tempeh to soymilk, to second generation soy products, and now a new generation of vegetable protein products in which various proteins are blended/extended–e.g. wheat protein and soy protein, or products resembling milk or ice cream (like Rice Dream) made from rice.

White Wave will soon be coming out with a new line of gluten-based luncheon slices; another company will make some of these products. White Wave may perhaps buy another company.

"Concerning our new shelf set, we're going into natural and health food stores and saying 'We occupy 18 square feet (or that many cubic inches). Our turn rate is X, our profitability factor is Y, and our average sale price is Z. Here's our product mix and her's what we're doing.' You'll see national ads on this in February.

"We'll be ready to go into supermarket chains when they call us and say 'We want your products and you don't have to pay slotting fees.' We will not pay slotting fees. You invest in either a pull or a push. I am against the push mentality. When the chains call you, it means that the market is ready for your products. If you push in, you run the risk of being premature. Legume is a good example of that.

Steve has visited a number of Safeway stores in California and he feels Safeway is very interested in his products and shelf set. Each set costs about $500-$700 per store in time and hardware and logo–not including the food products. So Steve must proceed slowly and carefully in getting into supermarkets. He will probably start with supermarkets in college or university towns. From there he will gather statistics on sales and profitability. He will move very slowly, starting with stores in markets with the right demographics, first down the West Coast, then across the Sun Belt, then over to the East Coast and up. Steve will probably have 3 sizes of sets. The smallest set will contain only the fastest moving items. Steve can get into the dairy case of a supermarket only if he can prove that he can deliver more profit per unit of shelf space. They will take a 30-35% margin, and he hopes to do $60,000 in sales per store per year.

Right now the company is shut down and they are installing all new equipment. The equipment is made by a variety of manufacturers (some from Takai, some American, some German), and it will have a capacity of 1 ton/hour of tofu. They have just installed what is probably the largest curding carousel in the United States. They made tofu on Dec. 16-17 to test the equipment, and Steve is very optimistic that the learning curve will be short. "Wataru Takai is arriving in Boulder today. Tomorrow all the big-time pasteurization and spiral chilling equipment will be installed. I've never seen a soyfoods company that uses this type of equipment. We also have fancy packing machines, a lot of vacuum packing and water packing machines.

"Sales of White Wave's basic seitan, sold in a tub, are increasing rapidly. We are already selling thousands of pounds a week."

White Wave is now right in the middle of their waste-water nightmare. Fortunately the city of Boulder has given us the okay for our new construction and equipment. The plant will be done by the middle of January. The last phase is the solar employee lounge out front. The city has beaten up on us for the last year on environmental issues. Only Pat Calhoun's persistence got us through it by wearing out the city's bureaucracy. One day they threw their hands up and gave us all the permits.

"We are at a critical mass point as of 1 Jan. 1994. We have a new factory (high-output and very sanitary), a new production system, and a new marketing scheme and schematic in place based on reproducible, verifiable numbers. We are ready for takeoff. I'm very excited. We're all dressed up for the party. I now have what we were dreaming about 15 years ago."

Note: In the opinion of Soyfoods Center, White Wave is currently, and has been for at least the past 5 years, the most innovative soyfoods company in America. Address: President, White Wave Inc., 1990 North 57th Court, Boulder, Colorado 80301. Phone: 303-443-3470.

2748. Garcia Hermosilla, J.A.; et al. 1993. Isolation and characterization of hydroxymethylglutanyl coenzyme A reductase inhibitors from fermented soybean extracts. *J. of Clinical Biochemistry and Nutrition* 15:163-74. *
Address: Bonn Univ., Bonn, Germany.

2749. Rehms, Herbert. 1993. Stoffwechsel von □-Galactosiden [Alpha-Galactosiden] und Phytinsäure in Tempe-bildenden Pilzen der Gattung Rhizopus [Metabolism of alpha galactosides and phytic acid in molds of the genus Rhizopus which make tempeh]. PhD thesis Münster (Westfallen) University. 102 leaves. [Ger]*
Address: Germany.

2750. **Product Name:** [Tempeh].
Manufacturer's Name: Sunfood–Milan Dvorak.
Manufacturer's Address: Cs. Odboje 800, CZ-518 01 Dobruska, Czechoslovakia. Phone: 494/629 151.
Date of Introduction: 1993.
Wt/Vol., Packaging, Price: 200 gm.

How Stored: Refrigerated.
New Product–Documentation: Letter from Dr. Kamil Bersky, M.D., for The Macrobiotic Centre of Czechoslovakia, Mlynska 659, 51 801 Dobruska, Czechoslovakia. Phone or fax: 011 + 42 443 21578. 1993. July 30. "We are now producing 5 varieties of seitan, 5 varieties of tempeh, amasake, tofu, and we can offer barley malt.

Label sent by Sjon Welters. 2004. March. Use by 13 March 2003.

Label for Bio-Tempeh (Smoked) sent by Sjon Welters. 2008. March. Use by 28 Feb. 2008.

Label for Sunfood Bio-Tempeh (*Smazeny*) sent by Sjon Welters. 2008. Dec. 26. Use by 5 Dec. 2008. Weight: 210 gm. Price: 42.90.

2751. Atlas, Nava. 1993. Vegetariana: A rich harvest of wit, lore and recipes. Revised and updated. Boston, Massachusetts: Little, Brown and Co. [xii] + 233 p. Illust. by Nava Atlas. 23 cm. [62 ref]
• ***Summary:*** A new and expanded edition of the original 1984 classic vegetarian cookbook with quotes on vegetarianism and historical anecdotes. Featuring over 80 new recipes.

One chapter (p. 117-26) is titled "Tofu and tempeh." Contains 20 recipes that call for tofu, 6 that call for tempeh, and 5 that call for miso. Also contains recipes for adzuki beans, seitan, and soy sauce. Address: Adam Enterprises, 65 Prospect St., New Paltz, New York 12561-1143.

2752. Boots, Gypsy; Arthur, Mike; Hopkins, Jerry. 1993. The Gypsy in me! How to look younger and have more energy as you grow older. Camarillo, California: Golden Boots Co. vi + 102 p. Illust. No index. 22 cm.
• ***Summary:*** Contents: Dedication and thanks. Introduction, by Charlie Fox. 1. Natural beginnings. 2. Living in nature. 3. Love and marriage. 4. Hollywood meets health nut. 5. Semi-stardom with Steve Allen. 6. Never too late to rejuvenate. 7. Exercise is a way to live. 8. Vital foods. 9. Eat and drink to your health. 10. Recipes for a healthier you. 11. Traveling through life.

In Chapter 8, titled "Vital foods," the section on legumes includes soy milk, tofu, tempeh, and texturized vegetable protein. Here Gypsy notes that he has always been a vegetarian. Eggs and dairy products once formed a major part of his diet, but now he rarely eats those foods.

Chapter 10, titled "Recipes for a healthier you," contains the following soy-related recipes: Scrambled tofu. Baked soy bean casserole. Tofu mushroom loaf. Tofu burgers. Soy burgers. Soya-rice flour coffee cake (with soy flour). Shakes (with seed, nut, rice, or soy milk). Many other recipes are seasoned with soy sauce. The Gypsy Boots smoothie (p. 93) calls for: 1 cup fresh apple or orange juice. 1 ripe banana. 1 tablespoon Kyo-Green. 1 date or a few raisins.

Contains many photos, both in black-and-white and color of Gypsy Boots, alone, or with family (p. iii, 19), friends, and celebrities. On the cover is a color photo of Gypsy in short pants standing barefoot on rocks in a stream. Eight unnumbered pages of color photos of Gypsy and friends on glossy paper follow page 70. This book has an unusually commercial tone. Throughout the book, Gypsy discusses the benefits of garlic supplements, wears Wakunaga's Kyolic T-shirts in photos, and plugs Kyolic garlic quite a bit. Address: Camarillo, California.

2753. Bud, Robert. 1993. The uses of life: A history of biotechnology. Cambridge, MA; New York, NY: Cambridge University Press. xvii + 299 p. Illust. Index. 24 cm. [557 ref]
• ***Summary:*** Contents: List of illustrations. Foreword by M.F. Cantley (Concertation Unit for Biotechnology in Europe {CUBE}). Acknowledgements. Introduction. 1. The origins of zymotechnology: Introduction, the chemical roots of zymotechnology, from zymotechnology to organic chemistry, the biological alternative, agriculture, brewing, zymotechnics as trademark (zymotechnology, fermentation, the Zymotechnic Institute of Chicago [Illinois]). 2. From zymotechnology to biotechnology. 3. The engineering of nature. 4. Institutional reality. 5. The chemical engineering front. 6. Biotechnology–the green technology. 7. From professional to policy category. 8. The wedding with genetics. 9. The 1980s: between life and commerce. Epilogue. Notes. Sources.

Chapter 1, a fascinating history of the early days of biotechnology, discusses: Emil Christian Hansen, Berlin's *Institut für Gaerungsgewerbe,* Louis Pasteur (p. 6-7), the German father of chemistry and Prussian court physician Georg Ernst Stahl (1659-1734), his interest in phlogiston, zymotechnics and practical teaching of brewing, in 1762 the word *zymotechnie* entered the exclusive dictionary of the Académie Française (p. 8-9), Mary Shelley and her novel *Frankenstein* (published in 1817; Frankenstein's teacher, Professor Walden, admired the results of chemistry), the 1928 synthesis of urea by Friedrich Woehler caused the distinction between natural and chemical products to blur and almost disappear, the implications were explored by his friend, the brilliant chemist, teacher, and publicist Justus Liebig who shared Stahl's faith in practical applications, Liebig came to be increasingly identified with the chemistry of agriculture and physiology, and organic chemistry, his pupils August Hofmann and James Muspratt, Adolf Baeyer who was Liebig's successor at Munich created a school based on the study of natural products (p. 10-11), Emil Fischer, Baeyer's greatest pupil, explored the carbohydrates and proteins, competition in Germany between organic chemistry and biochemistry, German Professor Julius Wiesner and his book *Raw Materials of the Plant World* (*Die Rohstoffe des Pflanzenreiches*) (p. 12-13).

"In 1857, Pasteur demonstrated that lactic acid

fermentation was the result of the action of live microbes. Through the next decade, he debated increasingly hotly with Liebig who insisted on the purely chemical origins of fermentation phenomena. Pasteur constructed a new scientific discipline based on his understanding of microbes, 'microb-iology'. Where chemistry was characterized by the balance, the new science had its own central instrument, the microscope" (p. 14).

The 19th century in Europe saw the rise of major cities such as Paris and London, and the expansion of the industrial revolution in Britain. "Academic leaders argued that they should play their part in helping a development of the society that would avoid the division into a declining agricultural sector and an impoverished industrial proletariat.

"The first German agricultural college was established in the year of Prussia's humiliation at the hands of the French, 1806, by a practical agriculturalist much impressed by British achievements, A.E. Thaer. His academy at Möglin was combined with the newly established University of Berlin in 1810. Largely inspired by Thaer's example, twenty agricultural colleges were founded in German-speaking lands between 1818 and 1858. The development of trades traditionally closely associated with agricultural development would also enable organic change."

"So far the emphasis was on teaching. However, all over Europe research followed.

"In France, Boussingault founded his private agricultural research laboratory at Bechelbronn in 1835, and Lawes and Gilbert established their laboratory at Rothamsted near London in 1842. These initiatives inspired, in Germany, the foundation of a research laboratory at Möckern (Moeckern), in 1851. Two years later, another followed in Chemnitz. By 1863, there were seventeen and, by 1877, fifty-nine so-called research stations in Germany. In the United States, the Morrill Act of 1863 and the Hatch Act of 1887 sustained the development of land grant colleges and associated agricultural research stations [sic, experiment stations] (p. 16-17)."

Brewing was an agricultural industry and increasingly big business in Germany and Britain, the foundation of the world's first major chemical association, the Chemical Society of London in 1841 was driven by the energies of Robert Warington, German leaders were J.J. Steinmann (1799-1833) and Carl Balling–who espoused the term *Zymotechnik* in the 4th volume of his classic text on brewing (*Account of the Progress of the Zymotechnic Arts and Sciences*). "Just as agricultural centres had moved from a purely educational role to a greater influence on research, so this process could be observed in the special case of brewing. The first great centre, established in 1872, was at the school at Weihenstephan near Munich where brewing had been taught for more than twenty years. Its formation was driven by the entrepreneurial pharmaceutical chemist Carl Lintner, who within three years of arriving at Weihenstephan in 1863 had founded his journal, *Bayerische Bierbrauer*. In the first volume, Lintner ran a series of historical articles about the life of Balling, as the first of the founders of zymotechnics 'for future cultural historians' (p. 18-19)."

Emil Christian Hansen and the damaging effects of wild yeasts, Balling identified the role of yeast in brewing before Pasteur, debate over use of the words zymotechnology vs. Pasteur's microbiologie (p. 20-21). Alfred Jorgensen popularized the word "zymotechnics," John Ewald Siebel started a journal titled *Zymotechnic Magazine* in Chicago and in 1901 he founded the Zymotechnic Institute. "Siebel was widely respected and sufficiently renowned to be the focus of a 1933 *History of Brewing in America.*

Chapter 2 (p. 48-49) discusses William J. Hale, Henry Ford, and the rise of Chemurgy in America. "Hale did not distinguish too fastidiously between the boundaries of chemistry and used his word rather as others had employed 'zymotechnology.'" A photo shows "Henry Ford demonstrating the strength of a car body made from soya bean-based plastic in 1941."

Chapter 5 (p. 106-09) discusses Japan as the dominant center of the fermentation industry by the 1960s, and the koji mold. "In Japan, the development of microbiology was closely related to agricultural development and found an institutional home in the Agricultural Chemistry Society established in 1924. So, for all the special features of Japanese culture, the concept of a microbiology harnessed to agriculture closely paralleled chemurgy in the United States. There is a strange irony in this, since the promoters of chemurgy were strongly nationalistic and particularly anti-Japanese.

In 1936, the key appointment of Kin-ichiro Sakaguchi as professor of agricultural chemistry at the University of Tokyo established the reputation of the nation's premier department of industrial microbiology."

The Danish firm of Novo Industri emerged as the world's largest enzyme manufacturer. Not until 1974 did Novo and Gist Brocades in the Netherlands develop cheap and effective methods for using enzymes to convert the glucose in corn to fructose (glucose isomerase). Otto Röhm (Roehm) patented an enzyme preparation for washing in 1913, and his company Röhm & Haas marketed their presoak product 'Burnus' for about 50 years.

The subsection titled "Biogas and gasohol" (p. 132-33) notes that in 1974, a sugar magnate in Brazil, Urbano Stumpf, persuaded the country's president that alcohol made from sugar could by itself power all Brazil's cars, replacing petroleum. Brazil committed great resources to this program and by 1980 was seen as a model to the world. America, too, was interested in reviving what Hale had called "agri-crude" and what was coming to be called "gasohol."

The subsection on "single-cell protein" (p. 133) discusses chlorella, tempeh, soya texturized to make an artificial meat, and growing microorganisms on petroleum

for food. Max Delbrueck had called yeast an "edible mushroom."

Monsanto and the Plant Variety Protection Act of 1970 (p. 195). Address: The Science Museum, London, U.K.

2754. Escano, Crisanto R.; Gaddi, Virgilio Q. 1993. Country report 11–Philippines. In: N. Chomchalow & P. Narong, eds. 1993. Soybean in Asia: Proceedings of the Planning Workshop for the Establishment of the Asian Component of a Global Network on Tropical and Subtropical Soybeans. Bangkok, Thailand: FAO Regional Office for Asia and the Pacific. viii + 218 p. See p. 92-108. RAPA Publication (FAO), No. 1993/6. [12 ref]

• ***Summary:*** Contents: (1) Introduction. (2) Production: Status, major growing seasons and cropping systems, constraints, resolving constraints. (3) Processing, utilization and marketing: Status, supply and demand, exportation of soybean products, constraints, resolving constraints.

Figures: (1) Trend in soybean production, Philippines, 1980-90. (2) Soybean area harvested, Philippines, 1980-90. (3) Trend in the soybean yield, Philippines, 1980-90. (4) Regional shares of total production, Philippines, 1990. (5) Soybean and soybean product shares in importation, Philippines, 1990. (6) Country of origin, soybean meal import, Philippines, 1990. (7) Country of destination, soysauce export, Philippines, 1990.

Tables: (1) List of soybean-based food products popularly used in the Philippines. (2) Volume and value of soybean imports, 1980-90.

Soybean production increased from about 9,800 tonnes (metric tons) in 1980 to a peak of 11,466 tonnes in 1982, then decreased to 5,614 tonnes in 1990. Area planted to soybeans increased from about 10,000 ha in 1980 to a peak of about 11,00 ha in 1982, then decreased to about 7,000 ha in 1990. The average yield for the period 1980-1990 was 920 kg/ha, but has generally been falling since 1983. Southern Mindanao has been the single most important soybean producing region in the Philippines for more than a decade, accounting for about 67% of total Philippine soybean production in 1990; Central Mindanao comes next with about 23%.

A brief history of soybean production in the Philippines from 1983 to 1990 appears on pages 99-10. Popular soyfoods products in the Philippines include: A. Fermented products: Soy sauce (toyo), fermented soybean curd (tausi [sic, salted, fermented black soybeans]), tempeh (tempe), soybean paste (miso), soft fermented soybean curd (tahuri). B. Non-fermented products: Soybean sprouts (toge, tauge), soybean cheese [curds] (tokwa), Geerlings cheese (taho [tofu]), soybean milk (soymilk), and roasted soybean powder (soy coffee).

Philippine imports of soybeans and soybean products have increased rapidly since 1980, yet 93% of these imports in 1990 were soybean meal, of which 38% comes from India, 33% comes from the USA, 22% from China, and 7% from others.

In April 1991 the General Milling Corporation's soybean solvent extraction plant began operation in Tabango, Batangas. It is expected to reduce the country's imports of soybean meal but increase the imports of raw soybeans. Address: 1. Scientist III; 2. Subject Matter Specialist. All: PCARRD, Los Baños, Laguna, Philippines.

2755. **Product Name:** Tempeh Delites [Cutlets (Regular, or Spicy), Sticks (Regular, or Spicy), or Nuggets (Regular, or Spicy)].
Manufacturer's Name: Harvest Earth Foods.
Manufacturer's Address: P.O. Box 816, Sterling Heights, MI 48316. Phone: 810-469-1730.
Date of Introduction: 1993. January.
How Stored: Frozen.
New Product–Documentation: Talk with Charles J. Leonardi, owner. 2001. May 18. Harvest Earth Foods is now located at P.O. Box 816, Sterling Heights, Michigan 48316. Phone: 810-469-1730. Charles bought the company from Dr. Jerry Skrocki, the founder, in 1993. The plant has never moved. The company was making Tempeh Nuggets when Charles bought it, but he does not know when the nuggets were introduced. They make six tempeh SKUs.

2756. Pitchford, Paul. 1993. Healing with whole foods: Oriental traditions and modern nutrition. Berkeley, California: North Atlantic Books. xxii + 656 p. Illust. Index. 26 cm. [536 ref]

• ***Summary:*** Contents: 1. Origins. Part I: The roots of diagnosis and treatment. 2. Yin-yang and beyond. 3. Qi vitality. The six divisions of yin and yang: 4. Heat/cold–The thermal nature of food and people. 5. Exterior/interior: Building immunity. 6. Excess and deficiency.

Part II: Essentials of nutrition. 7. Dietary transition. 8. Water. 9. Protein and vitamin B-12. 10. Oils and fats. 11. Sweeteners. 12. Salt. 23. Condiments, caffeine, and spices. 14. Vitamins and supplements. 15. Calcium. 16. Green food products. 17. Survival simplified. 18. Enjoyment of food. 19. Food combinations. 20. Fasting and purification. 21. Food and children.

Part III: The five element and organ system. 22. Five elements: Seasonal attunement and the organs in harmony and disease. 23. Therapeutic use of the five flavors. 24. Wood element. 25. Fire element. 26. Earth element. 27. Metal element. 28. Water element.

Part IV: Diseases and their dietary treatment. 29. Blood sugar imbalance [diabetes]. 30. The stomach and intestines. 31. Blood disorders. 32. Cancer and regeneration diets. 33. Other degenerative disorders.

Part V: Recipes and properties of vegetal foods. 34. Vibrational cooking. 35. Grains. 36. Breads. 37. Legumes–Peas, beans, and lentils: Healing properties of legumes,

improving the digestibility of legumes, techniques for cooking legumes, miso, tempeh, tofu. 38. Nuts and seeds. 39. Vegetables. 40. Sprouts. 41. Salads. 42. Seaweeds: Agar-agar, dulse, hijiki and arame, kombu and kelp, nori, wakame, Irish moss and Corsican (*Alsidium helminthocorton;* it is sold as a tea and discharges worms. 43. Soups. 44. Sauces. 45. Condiments: Chutneys and relishes. 46. Spreads and patés. 47. Pickles. 48. Grain and seed milks (incl. sesame seed milk, almond milk, almond milk shake, sprouted grain milk {oats, rice, millet, barley}, cooked grain milk). 49. Rejuvelac and yogurt. 50. Fruit. 51. Desserts. Appendixes: Recipe locator. Bibliography (180 references, mostly alternative; Oriental philosophy. Chinese medicine: Theory and foundations. Chinese dietary therapy. Ayurvedic and Tibetan medicine. Western approach to nutrition. Healing the spirit and mind. Chinese herbology. Western herbology. Healing with food. Green foods. Amaranth. Seaweeds. Vegetarian, macrobiotic, vegan. Children. Ecology, politics, and ethics of food. Degenerative diseases and immunity. Toxins and radiation. Cookbooks. Food catalogs, guides, and references. Sources of data for tables, charts, and nutritional statistics). References and notes (356 refs, mostly scientific). Resources index (Incl. Soyfoods Center).

The following are listed in the index (f = most important pages): Acid-forming foods (p. 235f, 240). Aduki [azuki] beans (p. 26, 34, 50, 60, 68, 77, 178, 273, 305, 307, 319, 362, 467f). Amaranth (lots, 419-20f). Amasake (p. 98, 152-53, 155, 160, 163, 275, 287, 592f). Animal products (lots). Aspergillus oryzae (p. 592). Ayurveda (lots). Black sesame seed (lots, 492f). Black soybean (60, 68, 288, 317, 324, 327, 468). Bran (p. 332) and its role in relieving constipation (345-46). Buckwheat (lots, 422f). Buddha. Calcium (lots). Cancer. Cheese (lots). Cholesterol. Cigarette smoking. Coldness, bodily. Dampness, bodily. Deficiency. Five elements system. Free radicals. Gerson, max and cancer therapy (p. 41, 126, 162, 365-66, 381). Goiter. Gomasio (sic, gomashio; sesame salt, p. 272, 566f). Heart / Heart/ mind. Heat (lots). Hijiki. Ice cream (p. 291, 305). Job's tears (p. 381, 383). Kasha (buckwheat, p. 422). Kelp. Kloss, Jethro (p. 366, 381). Koji (p. 479). Kudzu (p. 22, 25, 29, 60, 289, 299, 309, 317, 414f). Lecithin (lots, p. 127, 470, 414f). Legumes (lots, p. 466-471f). Macrobiotics (p. 3-4). Marijuana (lots). Menopause. Microwave cooking (p. 20). Milk). Mind, Chinese Zen concept of. Miso (p. 33-34, 60, 72-74, 78, 81, 90, 92, 98, 101, 105-06, 150, 159, 164, 195, 221-22, 272, 275, 315, 376, 479-82f; natto miso p. 482). Mochi (p. 436-37f). Mother's milk–to increase. Mucus. Nails, dry and brittle (p. 285). Oils (incl. soy oil, p. 138-41) Omega-3 fatty acids. Nori. Protein (lots). Qi [chi, p. 16-17]. Quinoa. Rice syrup. Schweitzer, Albert (365). Sea palm (p. 541). Seaweed (lots, p. 540-55f–see also Agar, alaria, arame, bladderwrack, Corsican, dulse, hijiki, Irish moss, kelp, kombu, nori, ocean ribbon, sea lettuce, sea palm, wakame). Seitan (p. 446-47). Sesame butter (p. 81, 492). Sesame seed (lots, 492f). Soybean (p. 52, 56, 60, 105, 124, 161, 178, 232, 235n, 250, 300, 466, 470f; children and soy products 253-54; soy sprouts p. 22, 34, 122, 470f; see also miso, soy sauce, tempeh, tofu). Soy sauce (p. 34, 78, 81, 98, 105-06, 150, 159, 164, 195, 222, 272, 277, 315, 414f, 480). Spirulina. Sprouting (p. 232-33). Sprouts (lots, p. 528-30f). Steiner, Rudolf (p. 19-20, 504). Stomach (beneficial foods, stomach/ duodenal heat and, strengthening food). Stress. Sugar (lots). Superoxide dismutase (SOD). Sweating–night sweats (p. 24, 117, 441). Sweeteners. Sweet rice (p. 433f). Tahini (sesame, p. 106, 225, 493). Tempeh (p. 22, 34, 56, 60, 96, 99, 105, 124, 216, 221, 242, 250, 290, 307, 310, 482-86f; vitamin B-12 and p. 98). Thirst. Tobacco. Tofu (p. 22, 25, 34, 55-56, 60, 68, 81, 105, 124, 242, 250, 290, 300, 303, 307, 310, 317, 327, 486-89f). Tomato. Tongue coating and digestion (p. 399). Umeboshi plums (p. 78, 159, 222, 272, 307, 414, 583f). Umeboshi vinegar (p. 414). Urinary incontinence and deficiency of kidney qi (p. 318-19). Urination, frequent, from kidney qi and yang deficiencies (p. 318). Valerian root. Vegan (p. 5, 95, 137, 261, 389, 502). Vegetarianism (p. 81-82, 95). Vitamin B-12. Vitamin E. Vitamin K. Wakame. Warming foods (p. 18-20, 26-27). Warts. Watermelon. Wind, bodily (foods which quell, 286-89; incl. black soybean, p. 468). Yang. Yin.

Talk with Heartwood Institute. 1997. Nov. 12. This is basically a massage school that also offers retreats. Paul's background is in the martial arts and massage. He graduated from a college after 4 years but the name of the college is not available. He also did 2 years of graduate work at an institution whose name is not available. The Institute sent their catalog/brochure. Address: Director, Heartwood Inst. Wellness Clinic and Oriental Healing Arts Program, 220 Harmony Lane, Garberville, California 95542. Phone: 707-923-5000.

2757. Saks, Anne; Stone, Faith. 1993. The Shoshoni cookbook. Summertown, Tennessee: The Book Publishing Co. 208 p. *

• ***Summary:*** This is a vegan cookbook written by the Buddhist cooks of the Shoshoni Yoga Retreat in Colorado. It is not a native American cookbook. Address: Summertown, Tennessee.

2758. *SoyaScan Notes.* 1993. Terms related to tempeh: Library of Congress subject headings and call numbers (Overview). Compiled by William Shurtleff of Soyfoods Center. [1 ref]

• ***Summary:*** The 16th edition (LCSH 16) of the *Library of Congress Subject Headings* (published in 1993) lists the following subject headings and call numbers related to tempeh.

Tempe. USE Tempeh. Tempeh (May Subd Geog) [TX558.T39]. UF Bongkrek, Tempe. BT Fermented soyfoods. RT Cookery (Tempeh).

Abbreviations: [ ] = Call number. UF = Use for. BT = Broader terms. RT = Related terms. May Subd Geog = May subdivide geographically.

2759. Vaidehi, M.P. 1993. Tempe: A unique food for nutrition and health benefits. Hebbal, Bangalore, India: University of Agricultural Sciences. 21 p. 25 cm. Series: Biotechnology in Foods Serial No. 1. [4 ref]
• ***Summary:*** Contents: Tempe–A unique food for nutrition and health benefits. A protective food for heart disease. An appetizing children's food. Tempe for prevention of diarrhoea [diarrhea] as super oralite mixture with therapy and nourishment combined. Tempe for supplementary nutrition program. Traditional method of tempe preparation with soya beans. Different types of tempe and their ready-to-eat and ready-to-prepare products. Recipes with tempe. Contains 4 flow charts and 3 tables. Note: The author is also a Fellow of the United Nations University. Address: Dr., Prof. and Head, Dep. of Rural Home Science, Univ. of Agricultural Sciences, Hebbal Campus, Bangalore–560 024, India.

2760. Zapf, Regina. 1993. Untersuchung der Lipid- und Aminosaeurezusammensetzung verschiedener Tempeproben aus Indonesien im Vergleich zu unfermentierten Sojabohnen [Investigation of the lipid- and amino-acid composition of various tempeh samples from Indonesia compared with unfermented soybeans]. Thesis, Bonn University, Germany. 112 p. Illust. 21 cm. [Ger]*
Address: Bonn, Germany.

2761. *SoyaScan Notes.* 1994. Keywords used with more than 1,000 documents in the SoyaScan database, as of 1 January 1994 (Overview). Jan. 1. Compiled by William Shurtleff of Soyfoods Center.
• ***Summary:*** 1. USA 24,636. 2. Commercial soy products 6,565. 3. Japan 5,948. 4. Tofu 5,122. 5. Soymilk 3,884. 6. Illinois 3,642. 7. Soy sauce 3,387. 8. California 3,129. 9. Historical (documents published from 1900 to 1923) 3,013. 10. Soy flour 2,822. 11. History 2,730. 12. Soy oil 2,648. 13. Germany 2,447. 14. Miso 2,324. 15. Vegetarianism 2,319. 16. United Kingdom (England, Scotland, Wales, N. Ireland) 2,134. 17. China 1,554. 18. Soybean meal 2,019. 19. Cookery 2,017. 20. Soybean production: Cultural practices and agronomy 1,996. 21. France 1847. 22. Tempeh 1,844 23. Soybean production (General): 1,825. 24. U.S. Department of Agriculture 1,744. 25. New York 1,665. 24. Nutrition (General) 1,471. 25. Historical (documents published before 1900) 1,460. 26. India 1,397. 27. International trade in soybeans, soy oil, and/or soybean meal 1,225. 28. Canada 1,204. 29. Soy protein isolates 1,204. 30. Michigan 1,146. 31. Meatlike commercial products 1,145. 32. USDA state agricultural experiment stations in the USA 1,120. 33. Soybean production: Marketing 1,098. 34. Ohio 1,095. 35. Soybean production: Variety development 1,083. 36. Indonesia 1,063. 37. Tofu used as an ingredient in second generation commercial food products 1,062. 38. Bibliographies and literature reviews 1,049. 39. Massachusetts 1,029. 40. Macrobiotics 1,022. 41. Soy ice cream 1,014.

2762. Wijaya, S. 1994. Jonathan, Sarjana Inggris penjual tempe [Jonathan, the British graduate who sells tempeh]. *Kompas newspaper* (*Jakarta*). Oct. 24. p. 20. [Ind]*

2763. O'Brien, Jim. 1994. Can tofu stop cancer? Research shows soy foods cut risk of breast, prostate cancers *Your Health.* Jan. 25. p. 21-22. [1 ref]
• ***Summary:*** Mark Messina, PhD, a nutritionist and former researcher at the National Cancer Institute for 5 years, states that "There's strong evidence to indicate that soy can lower cancer risk, especially of the breast and prostate." Messina says that "soy may contain 'anti-estrogens,' compounds that perform many of the necessary and beneficial functions of real estrogen, but not the harmful stuff (for example estrogen is vital for reproductive health, but researchers believe it may spur growth of many breast cancers).

In Japan, where the diet is rich in soy [and much lower in fat], the breast cancer rate is much lower than in the USA. Every year in Japan roughly 7 women per 100,000 die of breast cancer and 28 per 100,000 are diagnosed with the disease; the corresponding figures for U.S. women are 27 and 105.

Japanese men also have low rates of prostate cancer. 3.5 per 100,000 Japanese men die of this disease every year but it kills 15.7 per 100,000 American men–also nearly a fourfold difference.

2764. **Product Name:** Soy Tempeh with Lupin.
Manufacturer's Name: Lean Green Foods.
Manufacturer's Address: P.O. Box 10562, Hilo, Island of Hawaii, HI 96721-562. Phone: (808) 985-8563.
Date of Introduction: 1994. January.
Ingredients: Certified organic soybeans (grown in accordance with sec. 26569.11 of the California Health and Safety Code), sweet white lupin, cider vinegar, tempeh culture.
Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated or frozen.
New Product–Documentation: Letter and Label sent by Benjamin Hills. 1994. Jan. 26. "Lean Green Foods became official with the state of Hawaii in August 1993. Production got rolling this week and the product bag with label are enclosed." He is making two products: Soy Tempeh with Lupin and plain soy tempeh for the local Indonesian people. His business card reads: "Lean Green Foods–Hilo, Hawai'i. Protein for the Future. Benjamin Hills, P.O. Box 10562, Hilo, Hawai'i 96721-5562. Phone: (808) 985-8563."

Label. Plastic bag printed with green ink. 5¼ by 7

inches. Illustrations of the Island of Hawaii with a 5-pointed green leaf (resembling a marijuana leaf) at the center, palm fronds, and a "Made in Hawai'i" logo. "Sweet white lupin is a recently developed legume increasingly grown by Native Hawaiian peoples. It has higher protein content and dietary fiber than soybeans, making it firmer than traditional all-soy tempeh." On the back of the bag is a large recipe for Tempeh with Barbecue Sauce. "Black spots may appear, but are safe to eat. They are mature spores and do not indicate spoilage."

2765. Plenty International. 1994. A guide to growing and using soybeans for food. Davis, California. 37 p. Jan. Illust. 22 cm.
• ***Summary:*** Contents: Foreword. Introduction. Growing soybeans: Planning, land preparation, planting, plant growth, field sanitation, insect and disease control, harvest, threshing, storage, vacuum packing for seed storage, calculating growing costs. Home preparation of soybeans: Cooking soybeans, soy flour, soy coffee and nuts, ingredients for making soy milk, tofu and tokara, kitchen tools, soy milk, tokara (tofu with the okara still in it), tofu, tempeh, storing soybean foods, costs of processing soybeans for market, expected yields of primary soybean foods, recipes. Nutritional information. Resources and contacts. Acknowledgments.

Businesses Plenty has worked with that make fresh soyfoods and are listed on pages 30-32 include: Alimentos San Bartolo (San Bartolo, Guatemala). Survival Foods and Nature Island Foods (Roseau, Dominica, West Indies). Natural Cafe and Health Plaza (Castries, St. Lucia, West Indies). Kay Cuisine (Kingstown, St. Vincent, West Indies). Country Farmhouse Soy Products (Kingston, Jamaica). Deagbo Industries (Ibadan, Nigeria). Address: P.O. Box 2306, Davis, California 95617. Phone: (916) 753-0731.

2766. Shurtleff, William; Aoyagi, Akiko. comps. 1994. Soyfoods industry and market–Bibliography and sourcebook, 1985 to 1993. Lafayette, California: Soyfoods Center. 361 p. Subject/geographical index. Author/company index. Language index. Printed 11 Jan. 1994. Published Jan. 1995. 28 cm. [985 ref]
• ***Summary:*** This is the second of the two most comprehensive books ever published on the soyfoods industry and market worldwide.

In May 1982 the first study of the burgeoning soyfoods industry in the Western world was compiled by Shurtleff and Aoyagi, and published by Soyfoods Center. In April 1985 the fifth edition of that book, titled *Soyfoods Industry and Market: Directory and Databook* (220 pages), was published. It contained statistics through 1984, the market size and growth rate for each soyfood type, rankings of leading soyfoods manufacturers of each soyfood type and the amount each produced, analyses, trends, and projections. This book is published to update the 1985 market study.

In the decade since 1984 the soyfoods market has continued to grow at a very healthy rate, with some soyfood types (such as soymilk) growing at a truly astonishing sustained rate–in both the USA and western Europe–as the statistics in this book show so vividly. In 1975 only 75 new commercial soyfood products were introduced in the USA, yet that number skyrocketed to 217 in 1979, reaching an amazing 422 new products in 1987.

During the decade from 1984 to 1994, Soyfoods Center has invested most of its time and resources in the production of SoyaScan, the world's largest computerized database on soyfoods, which contains more than 44,500 records as of Jan. 1994. This database also includes a wealth of carefully researched statistics and analyses of the soyfoods market; those from the start of 1985 to the end of 1993 are contained in this book. Its scope includes all known information on this subject, worldwide. Its focus, however, is statistics, analyses, and trends concerning the soyfoods industry and market in the United States and Europe.

In May 1990 Soyfoods Center conducted an in-depth study of the tofu market in Europe (137 pages), and in July 1990 of the soymilk market in Europe (261 pages). All original interviews and published records from both of these market studies, plus a summary of each study, are included in the present book.

The SoyaScan database is composed of individual records. One record might be an original interview with the head of the largest soymilk company in Europe, on the size and growth of the soymilk market in Europe, and new trends in that market, conducted by William Shurtleff of Soyfoods Center. Another might be a published article or an unpublished document concerning the growth of the market for soy yogurts or soy sauce in America.

This book documents the growth of each product category in every country worldwide. The book contains three extensive and easy-to-use indexes: A subject/geographical index, an author/company index, and a language index. These allow you to find the exact information you need on the soyfoods industry and market quickly and easily. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549. Phone: 510-283-2991.

2767. United Soybean Board; Nebraska Soybean Program. 1994. Designed for life: A closer look at the versatile soybean's contribution to human health (Brochure). Lincoln, Nebraska. 12 panels. 23 x 10 cm each. [1 ref]
• ***Summary:*** Contents: Soybean fiber. Soybean protein (in soy flour, isolates, concentrates). Soybeans: The newest and oldest of designer foods. Finding and using soybeans: Miso, tofu, natto, tempeh, full fat flour, soymilk, soynuts, soy sauce. Soybean oil: 85% unsaturated fat, no cholesterol, high in polyunsaturates, hydrogenation and *trans* fatty acids. Once upon a time ("circa 1500 BC, Yu Xi-ong and Gong Gang-shi, who were either bandits or warlords depending on your

perspective...” discovered the soybean. Note: This story has no basis in historical fact). The soybean: Health insurance in a pod.

Photos show: Two hands holding up a large Chinese bowl of miso soup containing squares of tofu. A table set with dishes of various East Asian soyfoods. Charts: Bar charts showing percentage of saturated, monounsaturated, and polyunsaturated fatty acids in soybean oil and other oils and fats. Nutritional analysis of 1 cup of cooked soybeans.

Note: This brochure was developed for the United Soybean Board (USB) by the Evans Group in Seattle, Washington. It was mailed mostly to food manufacturers. Address: Lincoln, Nebraska.

2768. United Soybean Board. 1994. Soybeans: Unlocking the secret to good nutrition. Healthcare guide. St. Louis, Missouri. 8 p. 28 cm. [5 ref]

• ***Summary:*** Contents: A critical food source from the dawn of history. The only vegetable that contains complete protein. World soybean production (1992/93, bar chart). The most versatile food on earth. Health benefits of soy foods (discusses only soybean oil!). Nutritional analysis of soybeans, kidney beans, and peanuts. Bar chart showing the fatty acid composition of soybean oil and other oils and fats (soybean oil is “the balanced oil”). Hydrogenation and health. Cis and *trans* fatty acids. Soybean oil’s place in the diet. Whole soybeans foods: Tofu, tempeh, miso, natto, soy sauce, full fat soy flour, soy “nuts” and soymilk. Soybean fiber (the outer hull). Soy protein products: Defatted soy flours, soy isolates, soy concentrates. Isoflavones (incl. Genistein). Soybeans, the “All American” legume. For more information call 1-800-Talk-Soy.

Note: This brochure was developed for USB by the Evans Group in Seattle, Washington. It was mailed mostly to dietitians, nutritionists, and members of the food industry. It focused more on soy oil than on soy protein. Address: St. Louis, Missouri.

2769. Asbridge, David D. 1994. Agricultural importance of soybeans. In: Mark Messina, ed. 1994. First International Symposium on the Role of Soy in Preventing and Treating Chronic Disease: Abstracts. Chesterfield, Missouri: United Soybean Board. 27 p. See p. 6. Held 20-23 Feb. 1994 at Mesa, Arizona.

• ***Summary:*** “Soybeans are omnipresent in American life... Last year, the average American consumed only four pounds of soyfoods in the form of soy protein products, tofu, soymilk, tempeh, miso, soy sauce, and soynuts. They consumed over 40 pounds of soybean oil in the form of margarine, salad dressings, cooking oils, and shortening. They consumed 204 pounds of meat, poultry, and eggs. Soybean meal, the most widely used processed feed ingredient in the U.S., is the leading source of protein for meat and poultry animals. To meet this huge demand for soybeans, vast resources are needed. In 1992, 440,000 U.S. farmers planted 59 million acres of soybeans. That’s enough to nearly cover the entire state of Arizona. The farm value of the 2.2 billion bushel crop was more that $12 billion dollars. Once farmers sold the 1992 crop, the majority of the soybeans were either crushed into meal and oil, or exported. The meal and oil were valued at $6 billion and $3 billion, respectively. Exports, which historically make up one-third of the U.S. soybean crop, directly reduced the U.S. trade deficit by almost $4.5 billion dollars and indirectly employed 126,600 people. It has been estimated that since 1975, the value of the soybean crop has been about $275 billion in nominal terms. The multiplier affect brings the total impact to the US economy of soybean production to $800 billion.” Address: American Soybean Assoc., 540 Maryville Centre Drive, Suite 390, P.O. Box 27300, St. Louis, Missouri 63141-1700.

2770. Badani, Bernard. 1994. Edible soybean mission report, Indonesia, Taiwan, Korea, February 1994. Ottawa, Ontario, Canada: Agriculture and Agri-Food Canada. 23 p. 28 cm. Spiral bound.

• ***Summary:*** Contents: Foreword: Mission objective, countries visited, main goals, conclusion. Acknowledgments. Names of the 8 mission members. Visit to Indonesia (Jakarta): Background, visits (Nestle soymilk plant in Surabaya, BULOG), conclusions, market potential (short, medium, and long term). Visit to Taiwan (Taipei, Taichung, Tainan, Kaohsiung): Background (the pro-American soybean lobby), visits (Taiwan Tofu Manufacturers Assoc., Tet Union Corp., Great Wall Enterprises, Herng Yih), conclusions, market potential (short and medium term). Visit to Korea (Seoul): Background, visits (Hyosung Corp., AFMC, Korean and Seoul Tofu Manufacturing Co-operatives, conclusions, market potential (short and medium term). List of contacts by country (photocopies of business cards). Note: Mr. Badanai works for this federal organization in Ottawa.

This mission, whose coordinator was Michael Loh, took place between Feb. 25 and March 10, 1994; it was organized by OSGMB with assistance from the Canadian Embassies in Jakarta and Seoul, and the Canadian Trade Office in Taipei. The overall objective of the mission was to open these 3 markets to the sale of Special Quality White Hilum (SQWH) soybeans from Canada for use by their soy food industries.

Indonesia imports about 700,000 tonnes of soybeans each year, mostly grade #1 from the USA, to supplement its local production of about 1.3 million tonnes. About 250,000 tonnes of the imports are used to make soyfoods such as tempeh (which accounts for about 80% of the total), tofu, taucho (Indonesian miso), and soybean milk. The majority of their domestically grown soybeans are also used to make soyfoods. All Indonesian soybean imports are handled by BULOG, a government agency which determines yearly requirements and allocates the resulting imports to

various companies under a complex price structure formula apparently designed to maintain the competitiveness and full utilization of the domestic crop whose internal prices are very high by international standards. Sarpindo is the largest Indonesian soybean crusher. Nestle operates a soymilk plant in Surabaya that makes 12,000 tonnes/year and is completing a second one of 20,000 tonnes capacity in Jakarta. Much of Nestle's production, especially for the new Jakarta plant, is oriented toward the export market, with the Philippines as their top priority.

Taiwan grows only 12,000 tonnes of soybeans domestically, but they import 2,400,000 tonnes per year. Their main suppliers are the USA (1,938,000 tonnes, 80.8% of the total), China, 297,000 tonnes), and Argentina (6,000 tonnes). Imports are handled mostly by a small number of major crushers, which then select a portion of the #2 soybeans imported, bag them, and sell them to Taiwanese soyfood manufacturers. About 8% of the total imports (200,000 tonnes) are handled in this way. Tofu is by far the most important soyfood in Taiwan, with consumption of 49.79 kg/capita/year. Most tofu is made by very small companies. The main problem facing Canadian exporters is the almost total control that the pro-American soybean lobby has shown so far in Taiwan. This lobby includes the main local crushers/importers of U.S. soybeans (which have a strong interest in maintaining the present import and distribution systems that make local tofu manufacturers dependant on them), and the American Soybean Association (ASA) office (with a staff of 15) in Taipei. Tet (Ttet) Union Corp. in Tainan is the largest crusher in Taiwan. Fwusow (Fwu Sow) is a large edible oil company. Taiwan's largest tofu manufacturer is Herng Yih Food Industrial Co. of Kaohsiung. The 13 year old company has two plants, 14 minutes drive apart.

Korea imports between 1 and 1.1 million tonnes of soybeans a year to supplement domestic production of about 200,000 tonnes. Approximately 200,000 tonnes of the total imports and 20,000 tonnes of domestically grown soybeans are used to make soyfoods, mostly tofu. All soybeans destined for this purpose are purchased by AFMC, the Agricultural and Fisheries Marketing Corporation, a state-owned corporation and government monopoly under the Ministry of Agriculture. that resells soybeans to food processors according to their needs, charging a very high markup over the import purchase price. This markup, in turn, allows AFMC to subsidize purchases of domestic soybeans which it buys at prices close to 5 times the international price but which it resells to tofu manufacturers at the same price as the imported soybeans. It is expected that AFMC will loose its importing monopoly on food grade soybeans by 1997 due to the GATT agreement. An immediate market potential for Canadian soybeans seems to exist for sprouting soybeans, of which Korea purchases about 6,000 tonnes a year. Address: Grains and Oilseeds Div., International Markets Bureau, Agriculture and Agri-Food Canada, Ottawa.

2771. *Toyo Shinpo* (*Soyfoods News*).1994. Ajia no nattô–sono genryû o saguru. Biruma, Nepaaru nado e kuruma de tôsa. Ajinomoto Shohu (hin) no Bunka Fooramu no josei de. Tenpe-ken Watanabe zen kaichô ra 3 shi. 6 gatsu ni kenkyû seika happyô [Trying to find the roots of natto in Asia. Three researchers went to Burma and Nepal by car in search, helped by Ajinomoto Food Company's Cultural Forum. Among them was Tadao Watanabe, former head of the Tempeh Research Society. They are planning to present their results in June]. March 21. p. 1. [Jap]
• ***Summary:*** Photos show the three researchers who went on the trip: Tadao Watanabe, Yoshiko Yoshida, and Toshiie Maeda.

2772. Minnesota Soybean Growers Association; Minnesota Soybean Research & Promotion Council. 1994. Cooking with soy. North Mankato, Minnesota. 45 p. March.
• ***Summary:*** Talk with Christie Metzger of the MSRPC. 1996. Jan. 4. The first edition of this book was published in March 1994. Some of the recipes came from the winners of a contest. Address: 360 Pierce Ave., Suite 110, North Mankato, Minnesota 56003. Phone: 507-388-1635.

2773. *Palawija News* (*Bogor, Indonesia*).1994. International Soyfoods Fair and the Third Asian Symposium on Non-Salted Soybean Fermentation: June 4-6, 1994, Akita City, Japan. 11(1):16. March.
• ***Summary:*** For further information contact: Symposium Executive Committee Director, Seihan Yamada, c/o Akita International Association Aidex Bldg., 8F, 2-1-60 Sanno, Akita, Japan 010.

Note: This symposium took place, but the symposium proceedings were apparently never published.

2774. **Product Name:** Superfresh Baked Tempeh [Sandwich].
Manufacturer's Name: Superfresh Foods!
Manufacturer's Address: P.O. Box 883551, San Francisco, CA 94188. Phone: (415) 282-4438.
Date of Introduction: 1994. March.
Ingredients: Incl. tempeh.
How Stored: Refrigerated.
New Product–Documentation: Talk with lady from Superfresh. 1995. March 16. This product was introduced in about March 1994.

2775. Althoff, Susanne. 1994. Meatless muscle: Vegetarian bodybuilders bulk up just fine without the beef. *Vegetarian Times*. April. p. 69-70, 72, 74-75.
• ***Summary:*** Vegetarian bodybuilders include Andreas Cahling ("Mr. International," weighs 210 lb, from Cardiff by the Sea, California) and Bill Pearl (four time "Mr. Universe."

He was a vegetarian when he won his titles in 1967 and 1971), Spice Williams (vegan actress and stuntwoman), and Beth M. Ley.

"'Twenty-five years ago there were virtually no professional bodybuilders who were vegetarian,' says James E. Wright, at editor at Muscle & Fitness magazine (Woodland Hills, California). 'Now there are several."

A table gives typical daily menus for Bill Pearl, Andreas Cahling (incl. Tofu Burrito and Rice pudding made with soymilk), Spice Williams (10 oz. shake with soymilk, water, and soy protein powder, 8 oz. tempeh burger, 2 cups cooked TVP (textured vegetable protein)).

Pearl, age 63, is still a vegetarian but no longer competes. "Spice Williams turned vegetarian as part of a program to get her life back on track after overdosing on drugs."

Photos show the muscled bodies of (1) Bill Pearl. (2) Spice Williams. (3) Andreas Cahling.

2776. Kath. Gemeinden St. Johann und St. Joseph. 1994. Soja fuer Ghana [Soya for Ghana]. Duisburg-Hamborn, Germany. 24 p. Illust. 21 cm. [Ger]
• ***Summary:*** Each year this group of German Catholics has one development-help project in Ghana. In 1991 and 1992 it was trees for Ghana. In 1993 it was soya for Ghana. Contents: Development help? by Gottfried O. Praem. Africa's need (incl. population growth, demographics, per capita GNP, and infant mortality). Our new project: Soya for Ghana. Why soya? Yields a variety of foods, healthy, ethical (in relation to eating animals and protecting the environment), good for agriculture. History of the soybean plant. Food products from the soybean: Soymilk, tofu, soy protein, soy sauce, miso, tempeh, soy oil, soy sprouts. Cultivation of soybeans in northern Ghana. Planting and harvest. Ghana–the land and its agricultural products. Teaching hygiene in Ghanaian. Dear money: Where does it come from and how is it spent? Past projects in Ghana and the 1993 Soya for Ghana project. The Bole mission station in northern Ghana (90,000 inhabitants of which 4,000 are Christian). Recipes. A talk with Brother Rudolf, age 62, during his visit to Hamburg in Sept. 1993. Address: Duisburg-Hamborn, Germany.

2777. Bean Supreme Ltd. 1994. Wholesale price list. P.O. Box 12082, 140 Hugo Johnson Dr., Penrose, Auckland, New Zealand. 2 p. May 1. 28 cm.
• ***Summary:*** The company sells the following soyfoods: Tofu (firm bulk and vacuum pack), Tofu Luncheon (3 flavors), Soysage, Tempeh (vacuum pack), Soymilk (Nice 'n' Healthy), Lite Licks Non-Dairy Frozen Dessert (6 flavors in 2 liter size, 3 of those flavors in 475 ml size, and bulk packs of 9 liters and 16 liters).

It also sells the following non-soy foods: Biofarm organic yoghurts (3 flavors), Malabar goat yoghurt, Cyclops acidophilus yoghurt (5 flavors), Koromiko cheeses (10 flavors), Olive grove Middle Eastern foods (falafel mix, hoummus, Middle Eastern sauce, tahini), herbal teas (3 flavors), and Pacific Harvest sea vegetables (Karengo fronds, flakes, and shaker, and kelp shaker). Address: Penrose, Auckland, New Zealand.

2778. Elliott, Tom. 1994. Update on The Farm Soy Dairy (Interview). *SoyaScan Notes.* May 1.
• ***Summary:*** Tom, who has lived on The Farm for almost 20 years, and his wife Barbara, purchased this company in July 1991 from Michael Lee. Michael was going to simply close the company and he had let it run down. Tom's background is in the excavating business and his wife is a nurse. He has not introduced any new products since he bought the company, but he did change the company name to FarmSoy Company. The company's main product is pasteurized tofu; they produce 1,500 to 1,600 lb once a week. They also make a little soy yogurt, soymilk, and tempeh, which is sold mostly to people living on The Farm. The company has 2 adult employees and has a positive cash flow.

People on The Farm no longer all get together like they used to when it was run communally. Stephen no longer to talks like he used to.

Update on the change of company name: Talk with Tom. 1998. July 8. Tom and Barbara incorporated their company on 2 March 1994 in the state of Tennessee. At that time they changed the company name to FarmSoy Company from The Farm Soy Dairy. Tom and Barbara are the only shareholders in the corporation. Address: 156 Drakes Lane (P.O. Box 96), Summertown, Tennessee 38483. Phone: 615-964-2411.

2779. Alonso, Jean-Luc. 1994. Re: History of his pioneering work with tempeh in France. Letter to William Shurtleff at Soyfoods Center, May 16. 4 p. Handwritten. [Fre]
• ***Summary:*** "Mr. Sakaguchi has forwarded to me the letter which you sent him on 15 Aug. 1993. You were asking him for information about the first producers of tempeh in France. You mentioned the existence of a woman. In fact, she and I were associates. Her name at the time was Anita Dupuy. We began producing tempeh in September 1981 in Paris. [Note: Soyfoods Center records indicate that this company did not start production until about May or June of 1982].

Since then Anita was divorced and has remarried to a Dutchman; she lives in Holland, and goes by a different name. I do not know her address. She is teaching French, which is what she was doing before she left France.

A brief history: While staying in the United States for the purpose of studying at the Kushi Institute of Boston [Massachusetts], I came up with the idea of producing tempeh in France. Upon returning to France, I began experimenting with its production and began looking for material and a place to produce it. Mutual friends introduced me to Anita Dupuy who also wanted to make tempeh. Thus

we became associates for this adventure. We rented an old butcher shop. The small business was named *Traditions du Grain.* We were producing 100 to 200 cakes of tempeh (each weighing 300 gm) per week. Anita was in charge of the business while I took care of making the tempeh. Except for fried tempeh and sandwiches, we did not make any second generation products. This may explain our lack of success. For two years we did not receive a salary. In addition, understanding between Anita and me went downhill for several reasons.

After two years, I quit the business. Anita continued for a while, then sold the company to another person, who continued for a year or two and then finally stopped.

In 1985, another business in Montpellier named Athanor started producing tempeh, plus a pâté with tempeh and amasake as the main ingredients. This company was not much more successful than Traditions du Grain–It closed its doors in 1987. I do not know the names of the owners of this business.

In 1989, a new attempt was made by the firm named Renaitre (meaning "to be reborn") close to Cahors. Another failure. One year later the business closed its doors.

During that time, in 1987, a company named Soleil de Lalise (meaning "the sun of Lalise"), located near Agen, also began to make tempeh and tofu. These products are still sold by this firm. Their address is: Domaine de Galise, 32260 Tachares, France. Phone: 62.65.35.63.

"As for myself, I produced tempeh at the communal level from 1987 to 1989, within the framework of a macrobiotic center. Then the center closed down. I continued alone for a small local micromarket (friends and acquaintances). In late 1989 and early 1990 I was in contact with you. I was planning to make tempeh on a large scale. I almost bought the business Renaitre that I mentioned earlier.

"The most amusing aspect is that while visiting the Renaitre plant, I recognized equipment or material that I had purchased for Traditions du Grain. Renaitre had bought it when Traditions du Grain closed down. In the end, the deal did not go through. In the meantime, my wife [Rachel] and I moved to a new location.

"In October 1992 we began producing Essene bread and other baked goods. This business [Gaia, in Graulhet] is going very well.

"In France, tempeh did not meet with large success because nobody invested energy and money in *information.* For now we are dedicating ourselves to making Essene bread but we have not given up on the idea of producing tempeh. We are just waiting until we have the means to do things seriously." Address: Gaia, 7, rue du Mail, 81300 Graulhet, France. Phone: 63 42 16 03.

2780. Keuth, Sylvia; Bisping, Bernward. 1994. Vitamin B-12 production by *Citrobacter freundii* or *Klebsiella pneumoniae* during tempeh fermentation and proof of enterotoxin absence by PCR. *Applied and Environmental Microbiology* 60(5):1495-99. May. [34 ref. Eng]
• ***Summary:*** "A decrease in fermentation temperature from 32 to 24ºC led to a decrease in vitamin B-12 formation." This study "supports the suggested use of these two strains to form vitamin B-12 during tempeh fermentation in Indonesia." Address: Institut fuer Mikrobiologie, Westfaelische Wilhelms-Universitaet, Muenster, Germany.

2781. Melina, Vesanto; Davis, Brenda; Harrison, Victoria. 1994. Becoming vegetarian: A complete guide to adopting a healthy vegetarian diet. Toronto, Canada: Macmillan Canada. x + 262 p. Foreword by Louise Lambert-Lagacé. Index. 26 cm. [20 ref]
• ***Summary:*** An excellent vegan sourcebook and cookbook by three registered dietitians. For the Contents and details, see the 1995 revised American edition.

Talk with Vesanto Melina. 1996. July 22. This book has presently sold about 25,000 copies in Canada alone. A revised U.S. edition was published in Nov. 1995 by The Book Publishing Co. in Summertown, Tennessee. Address: Canada.

2782. Kushi, Aveline. 1994. Early work with tempeh (Interview). *SoyaScan Notes.* June 11. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Her first son, Norio, was born on 15 Dec. 1954. Her youngest son, Hisao, was born in 1965. Then she and Michio moved from Wellsley to Boston, Massachusetts, and started Erewhon in April 1966. In Aug. 1969 Aveline moved to Los Angeles (California), where her youngest son, Hisao, underwent traditional Japanese treatment for a bone problem. After about 2 years she and her son returned to the Boston area. At about this time, she and Michio took their first or second trip to Europe. During a visit to Amsterdam, Netherlands, she was with Adelbert Nelissen (who was a student of macrobiotics and is now running a Kushi Institute there), who took her and Michio, after a seminar, to an Indonesian restaurant. There she tasted tempeh for the first time, realized it was made from soybeans, and liked it very much–in fact much better than natto. She also realized that most Americans would like tempeh better than natto–another fermented soyfood. She told Adelbert: "You must learn how to make tempeh." After returning to America, she sent an American man to Amsterdam to learn how to make tempeh. She also brought back tempeh and started to show it to people, and to use it, in her cooking classes in Boston. Everybody liked it. And it was easy to make. Address: 62 Buckminster Rd., Brookline, Massachusetts 02146. Phone: 617-232-6869.

2783. **Product Name:** Tempeh.
Manufacturer's Name: Stanley Darby.
Manufacturer's Address: P.O. Box 7248, Agat, Guam

96928. Phone: 671 565-2059.
Date of Introduction: 1994. June.
New Product–Documentation: Talk with Stanley Darby of Guam. 1995. June 14. He is a Seventh-day Adventist, who has been making tempeh by hand for about one year and selling it to Seventh-day Adventists who have a large get-together each Saturday after church. He has brought tempeh starter culture back from Indonesia several times.

Stanley calls again from Guam. His address is now P.O. Box 8389. He still makes tempeh for SDAs and still has no company name.

2784. Traugot, Michael. 1994. A short history of The Farm [of Summertown, Tennessee]. Summertown, Tennessee: Self published. 78 p. No index. 30 cm.
• ***Summary:*** Contents: Early roots: Stephen Gaskin. Monday night class: Attention equals energy, Holy Man Jam. The Caravan: Busted, we give up acid (LSD), back to Tennessee. The Martin Farm: Ina May Gaskin, the first garden, busted again. The Farm (Lewis County, Tennessee): The Black Swan Ranch, family and sex, households, sex and reproduction, natural birth control, gender roles, health care and home birth, the farm economy, vow of poverty, work, income, the spiritual aspect of economy, meetings and services, government, diet–you are what you eat (vegetarian diet, soybeans, tofu, tempeh–p. 37-38), appropriate technology, education–The Farm school, the pony crew, recruiting, the Gate, other Farms. Plenty: Guatemala, the Soy Project (p. 48). Agriculture on The Farm: Florida Farm. Changes: Stephen goes to jail, changes in government, *mazing Tales of Real Life,* causes of the crisis. The changeover (from communal living arrangements). Political activity: Ragweed Day, the FBI file. The Farm today: Stephen and Ina May, business and projects on today's farm, Martin Farm 2–the sequel, alumni and networking. Community and society: The Farm–Success or failure? The Farm children. Names and addresses for contacting Farm organizations. Address: 84 The Farm, Summertown, Tennessee 38483. Phone: 931-964-2587.

2785. Bianchini, Gilberto. 1994. Re: Early history of tofu and seitan in Italy. Letter to William Shurtleff at Soyfoods Center, July 16–in reply to inquiry. 3 p. Typed. [Eng]
• ***Summary:*** "I started to make tofu and sell it officially in October 1979 in Rimini, Italy, at Via Cuoco 9 (Community Food). I first learned how to make tofu in London at the Community Health Foundation, Old Street 98, in 1976 or 1977. Then I gained additional experience in making Japanese-style nigari tofu from Centers and individuals in France and Belgium. I first visited the United States in late 1978 and early 1979. On 9 Feb. 1979 I visited you [William Shurtleff and Akiko Aoyagi] at New-Age Foods Study Center in Lafayette, California, having a good impulse in tofu pioneering, to talk about making tofu in Italy.

"In 1980 I visited a friend, Mr. Franco Pagliano, in Milan; that city had many Chinese restaurants. Mr. Pagliano had learned how to make tofu from Mr. Roland di Centa. was supplying these Chinese restaurants with a small quantity of tofu (he made it the Chinese way, with calcium sulfate), but he was soon forced to stop production because he had difficulties producing, unofficially without the proper permits, in his apartment. It was a really good experience for me to get to know Chinese and Japanese people; Franco was very skillful and shared many secrets with me. Then after several months he called me to say that he was going to stop tofu production and that he could introduce me to his clients–which he did, including a Japanese restaurant, Suntory Italia, which had not previously accepted his Chinese-style tofu. I had contacts in Milan and met Mrs. Giovanna Mazzieri at a conference in Milan, where tofu was presented to the public and the press, together with the Italian Chefs' Association. I remember that on that occasion I first had a large number of tofu kits sold through Mrs. Mazzieri.

"I survived financially making tofu for the first couple of years. I sold my tofu to the Chinese restaurants of Milan, driving there once a week from Rimini in my small refrigerated car (280 km each way). I soon got tired of the trip, but actually I was motivated and satisfied and full of curiosity for the Chinese and Japanese atmosphere. Meanwhile, I was stopping to deliver my tofu at all of the macrobiotic and natural food shops and restaurants along the way (in Cesena, Forlì [Forli], Faenza, Bologna, Modena, Reggio Emilia, Parma, etc.). During those years I did promotion for soyfoods, including cooking classes.

"In July 1982 I attended the Soyfoods Conference in Seattle, Washington (we met again) because of my interest in large-scale production and in making a report on soyfoods, together with a lady dietitian from Bologna (I forget her name) supported by the University of Bologna. She continued introducing the many good qualities of soyfoods to those in her field, medical doctors and nutritionists. For more information on this, contact the Sunsoy Food company in Bologna.

"After my 1982 trip to the USA (now having with me color slides, literature, and information), I developed contacts with the largest food distributing company in Italy, Coop Italia, but the people in charge believed that it was too early to distribute tofu widely in Italy–the market was not yet ready... maybe in the future. Even though they were open to innovative ideas, the negative answer was disappointing.

"I remember there was a time in 1983 when I had the luck of meeting a Japanese girl, Fusako Aoki, who was just passing through Rimini–a very rare occasion. She helped me in tofu-making classes for about 3 months, in Rimini and other cities. Meanwhile many people visited me to learn about making and selling tofu (future competitors)!

"I had enough technical skills to develop and build (mostly by myself) a stainless steel continuous open-air

steam cooker (not pressurized! a secret for good tofu), a second-hand Weston (from the USA) vibrating screen, a good stainless steel hammer mill. This was really good equipment for those times, the only equipment of its kind in Italy that I knew of.

"I was in charge of everything–production, sale, promotion, and new product development. Unfortunately I was not able to grow from the individual to the team aspect of the work. I exhausted myself, ending production in June 1988. In that year I was supplying centers in cities like Rome, Firenze [Florence], Torino [Turin], Bologna, Treviso, and Ravenna–mostly in northern and central Italy. The demand was growing and it reached the point that in places like Florence, Rome, and Torino people started companies to make soyfoods. At that point, I could survive only by diversifying products, improving packaging, moving into a larger factory at a new location, and expanding the company and the number of employees.

"I could not do this, and after a project of moving in Toscana near Florence, to live and work there, I had to discontinue my activities. The other reason was that my family was growing rapidly; I had 2 children in 1985 and 1987, and I did not want to jeopardize or endanger my family's personal financial situation. Looking back, I think I made the right choice, but I feel good when someone remembers me for my good tofu. I sold my equipment at a low price to a company named Food for All in Verona, then helped them with my knowledge of making and selling tofu. They are connected to the Ananda Marga Society, are supporting activities in India, and are really nice people.

"While in business, I was producing: Tofu (vacuum packaged or in bulk), tofu spreads (various flavors), tofu burgers, tofu mayo (fresh or long-life, in glass jars), seitan, seitan burgers, spreads, soymilk (sometimes, and only fresh), and various tofu desserts (fresh and perishable). I only made small batches of tempeh, for personal use and experimentation (not sold commercially) using cultures from the USA. Near the end of my activities, I produced 400 kg (and up to 600 kg) of tofu (base product); officially I had only one (maximum two) part time workers, with good help from my relatives.

"The only company (apart from the person of Mr. Pagliano) I know that made tofu before I did was the Poporoya company in Rome, which produced and sold it at his branch in Milan, the Poporoya-shop, a Japanese shop.

"People introducing soyfoods in Italy were the macrobiotic centers: Mr. Ferro Ledvinka from Rome, Mr. Alois Grassany from Bologna, and Mr. Roberto Marocchesi from Torino.

"I still see an opportunity in the future for making and selling tofu and tofu products in Rimini; this would be for me and my friends, but it would work only if it was connected with a larger project of a vegetarian cultural center. Who knows? Now I am a 'natural wood' carpenter." Address: Via Cuoco 9, 47037 Rimini, Italy.

2786. Harron, Hallie. 1994. Timeless tempeh: A chef returns to Indonesia to bring us the delights of a vegetarian staple. *Vegetarian Times.* July. p. 48-54.
• ***Summary:*** The writer, a consultant for Minneapolis' only Indonesian restaurant, has a professional interest in tempeh; each year she journeys to the islands of Java and Bali for 3 weeks to learn more about it. On Bali, she rides on the back of her Balinese guide's motorbike to visit a small family-run tempeh plant in a village above Ubud. At night, in the city of Jogjakarta / Yogyajarta, Java, she goes out after the street merchants have gone home to enjoy special and favorite tempeh dishes.

Recipes: Gado-gado. Spring rolls with lime-mustard sauce. Spicy citrus broiled tempeh. White chili with tempeh. Hot and tangy peanut sauce. Saté tempeh with sambal tomat. Sweet and sour tempeh stew. Tempeh tumis bunchis.

Photos show: Various tempeh recipes. A stone statue of a seated Buddha, hands in a mudra, at Borobudur, near Jogjakarta. Address: Food writer, cookbook author, and executive chef of Premier Crew Restaurant Services, Minneapolis, Minnesota, a restaurant consulting, management and real estate company.

2787. **Product Name:** [Tofu, Tempeh, Soymilk, Okara Croquette, Soy Ice Cream].
Manufacturer's Name: Nutrem Soy Shop.
Manufacturer's Address: Managua, Nicaragua.
Date of Introduction: 1994. July.
New Product–Documentation: John Gabriel. 1995. Plenty Bulletin (Summertown, Tennessee). 11(3):4. Fall. "A Plenty volunteer in Nicaragua writes."

Chuck Haren. 1995. Nov. 8. SoyaScan Notes. "Soyfoods, Soynica, and Nutrem Soy Shop in Nicaragua" (Interview).

Note: This is the earliest known commercial soy product made in Nicaragua.

2788. *Soyafoods* (*ASA, Europe*).1994. U.S. soyfoods consumption predicted to grow. 5(2):3. Summer.
• ***Summary:*** A U.S. study titled *An economic analysis of the use of soybeans as human food* predicts that domestic increases in consumption of soyfoods could use an additional 100 to 240 million bushels of soybeans each year. The study was conducted for the North Central Soybean Research Program by researchers at Agricultural Education and Consulting in Savoy, Illinois (Phone: 217-352-1190).

The study found that the following food categories which have the greatest potential to use soya as an ingredient (listed in descending order of projected use levels): (1) Flour products–bread, bakery products, pasta, and pizza dough. 2. Meat products–ground beef and processed meats. 3. Dairy products–liquid milk replacements, processed cheeses

and yogurt. 4. Snack foods–crisps, extruded snacks, snack nuts and meat snacks. 5. Soyfoods–tofu, soymilk, tempeh, soy sauce, and miso. 6. Fresh vegetables–green vegetable soybeans.

However there will be tradeoffs. For example, increased use of soya to make meatlike products will ultimately lead to less need for soybean meal to feed livestock animals. But overall, the researchers believe that net crop income, at least for the North Central Region of the United States, will rise from nearly 8% to over 30%.

2789. Dovgan, Alexander; Dovgan, Tamara. 1994. Re: Interest in making tofu and tempeh in Russia. Letters to William Shurtleff at Soyfoods Center, Aug. 18-22. 3 p. Handwritten. [Eng]

• ***Summary:*** Alexander and his family (wife Tamara and daughter Sasha) are Russian Canadians who came to Canada almost 5 years ago. "First of all, thank you for your books and we learnt a lot with them and they helped us to survive with a very small amount of money! We plan to return to the Soviet Union and we have a dream to start our own tofu-tempeh business, as it would help so many to regain their health and save animals, the environment, etc. We were very unhealthy as we had very poor nutrition in Moscow partly because of total ignorance as the grains and legumes were widely available but nobody knew anything about sprouting, combining, etc.

"We always make our own tofu, and now we are trying to make tempeh and to bake okara breads using whey, etc."

Tamara is a professional pianist, who works in the Opera Theater and in the Yamaha School of Music. Alexander is a photographer. They are both lucky to have jobs now.

Bill Shurtleff of Soyfoods Center suggests that they talk with Jon Cloud, which they do, and meet Alexander Podobedov. He sends them photocopies of articles about the SoyaCow in Russia.

Letter No. 2. Alexander is concerned that soyabeans are not available in Russia "as they were used only to make chocolate and oil." They have saved some money in Canada but they have no place to live in Moscow since their family moved to the USA. "That's why we're thinking about starting in St. Petersbourg, as its cheaper and its one of the most beautiful cities... Sasha makes Russian tofu at home (it's hard and cheeselike with herbs) as Russians wouldn't eat traditional plain tofu. But all our Russian and Canadian friends like it, so we'd be happy to be pioneers in that field in our native land."

Letter No. 3. Sasha plans to go to Moscow soon to find out everything about soybeans. Their 6-month-old son, Daniel, likes tofu very much. Address: 2350 Dundas West #2813, Toronto, ON M6P 4B1, Canada. Phone: (416) 534 8896.

2790. *Provender Journal* (*Eugene, Oregon*).1994. Member news. 11(2):7. Summer.

• ***Summary:*** "Turtle Island Foods, Hood River, Oregon, says, 'One year after introducing them, Superburgers are our #1 selling product!... Look for Son of Superburger later this year. We now also private label manufacture all tempeh products in the Wildwood Natural Foods line.'"

Tofu Palace Products has a new address and a toll-free phone number: Box 50085, Eugene, Oregon 97405. Phone: 1-800-600-TOFU.

2791. Wang, Huei-ju; Murphy, Patricia A. 1994. Isoflavone content in commercial soybean foods. *J. of Agricultural and Food Chemistry* 42(8):1666-73. Aug. [28 ref]

• ***Summary:*** Isoflavones are one class of phytochemicals and are found in soybeans in large amounts. Twelve isomers of isoflavones were quantified: three aglycons and nine glucosides. Soybeans contain two major isoflavone aglycons, genistein and daidzein, and a minor one, glycitein. In the seed, the isoflavones are present primarily as beta-glucosides. The nine glucosides are: daidzin, genistin, glycitin; 6"-O-acetyldaidzin, -genistin, or -glycitin; and 6"-O-malonyldaidzin, -genistin, or -glycitin.

This paper gives data on the concentration and distribution of isoflavones in 29 commercial soybean foods, grouped into three types: Soy ingredients, traditional East Asian soy foods, and second-generation soyfoods. Four values are given for each product in micrograms per gram, on an "as is" basis: daidzein, genistein, glycitein, and total isoflavones.

(1) Soy ingredients: Vinton 81 90: 600, 954, 82, 1636. Vinton 8191: 240, 648, 107, 995. Green vegetable soybeans: 546, 729, 79, 1354. Soy flour: 226, 810, 88, 1124. TVP #1: 473, 707, 202, 1382. TVP #1: 484, 702, 156, 1342. Soy isolate #1: 77, 273, 115, 466. Soy isolate #2: 115, 392, 102, 610. Soy isolate #3: 122, 393, 99, 615. Soy concentrate: trace, 13, 42, 56.

(2) Traditional soy foods: Roasted soybeans: 563, 869, 193, 1625. Instant soy beverage #1: 311, 617, 109, 1037. Instant soy beverage #4: 407, 665, 111, 1183. Tofu (73% moisture): 146, 162, 29, 337. Tempeh: 273, 320, 32, 625. Bean paste (ko chu jang in Korea): 272, 245, 77, 593. Fermented tofu: 143, 224, 23, 390. Honzukuri miso (rice and soybeans): 79, 177, 38, 294.

(3) Second generation soyfoods: Soy hot dog: 34, 82, 34, 150. Soy bacon: 28, 69, 24, 122. Tempeh burger: 64, 196, 30, 289. Tofu yogurt: 57, 94, 12, 164. Soy Parmesan: 15, 8, 41, 65. Soy Cheddar cheese #1: 2, 5, 27, 34. Soy Cheddar cheese #1: 34, 40, 35, 109. Soy mozzarella cheese: 11, 36, 30, 76. Flat soy noodle: 9, 37, 39, 85.

Some manufacturers use ethyl alcohol extraction to prepare soy protein concentrates; this process removes a substantial portion of the isoflavones. The products examined for this paper which had the lowest content of isoflavones (all less than 100 micrograms per gram) were: soy cheddar

cheese A 34, soy protein concentrate 56, soy Parmesan 65, soy mozzarella cheese 76, flat noodle 85.

"Proposed anticarcinogenic doses of soybean isoflavones range from 1.5 to 2.0 mg per kg of body weight per day (Hendrick et al, 1994). There are a number of soy food choices that will fit this dose requirement without the need to consume unusual amounts of these soy foods."

Isoflavone standards and extraction of isoflavones: Authentic standards of daidzein and genistein were obtained from commercial sources (ICN Pharmaceuticals, Plainview, New York, and Calbiochem Corp., San Diego, California). Daidzein and genistein were from previous work in the laboratory (Murphy 1981). The starting material for extracting isoflavones was defatted soybean flour. It was, in turn, extracted with acetonitrile (ACN) and 0.1 N HCl [hydrochloric acid] (1:5:1 w/v/v) according to the procedure of Murphy 1981. Address: Food Science and Human Nutrition, 2312 Food Sciences Building, Iowa State Univ., Ames, Iowa 50011.

2792. Gabriel, John. 1994. Current work with soya in Nicaragua (Interview). *SoyaScan Notes.* Sept. 12. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** John and his wife, Charlotte, just returned from Nicaragua where they helped to establish the country's first commercial shop that manufactures tofu, tempeh, and soft-serve soy ice cream (made from soymilk). The shop is located in Managua (in a district named Las Mercedes, near the airport). Lucy Morren of Soynica is in charge of the new company. The tofu was introduced in August 1994, and $400 worth of tofu was sold that month. Chuck Haren is writing an article about the new company to appear in the next issue of *Plenty Newsletter.* Address: 11668 Blackberry Place, Nevada City, California 95959. Phone: 916-265-5100.

2793. Kisling, Matthew. 1994. New developments at Jerusalem Tofu in Israel. Also tempeh in Israel (Interview). *SoyaScan Notes.* Sept. 16. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Matthew, age 26, is the son of Susan Ergas who owns and runs Jerusalem Tofu, Israel's largest tofu manufacturer. He is looking for sources of organic soybeans in America. The business is flourishing and Susan wants Matthew to play the lead role in expanding the company. He has been working there, making tofu, recently. He would estimate they make over 600 kg/week. He plans to go back and work as production manager so Susan can take a vacation and maybe retire. The company recently moved to Moshav Aminadav from Moshav Orah (which is nearby in Jerusalem). The tofu company is now in a large building that was formerly a chicken laying factory. The phone number is now 434-830. Karen Freedland is no longer with Jerusalem Tofu; she is back in the USA.

The other big tofu company in Israel is Mikor Hateva located just outside Tel Aviv, about 45 minutes drive from Jerusalem. It is run by "Black Jews," black Americans who moved to Israel. This company is Jerusalem Tofu's biggest competitor, though they are smaller. They also make tofu ice cream. They have been around for a long time, but they recently changed their name to Mikor Hateva. and recently started making tofu. They now have an Israeli partner. The Macrobiotic Center in Tel Aviv also makes some tofu, but mostly for people at the center.

There is now a commercial tempeh shop in Israel, in Beersheba [Be'er Sheva] (Israel's 4th largest city), run by Roxanne, an America woman from Colorado. Tivol [Tivall] is also doing a lot with soy in meatlike products; they are the big boys on the block. Address: Binghamton, New York.

2794. Mann, Sue. 1994. Tempeh, tofu, and soymilk in Ecuador (Interview). *SoyaScan Notes.* Sept. 23. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Sue, who has lived in Quito for 6 years, is interested in making tempeh commercially in Ecuador, South America. She went to Ecuador originally as a teacher in an American school. Some people at Ambato Votec College [a Vocational-Technical College about 3 hours bus ride from Quito] in Ecuador are making quinoa tempeh, supposedly on a commercial scale; they sell it mostly in Quito.

Also some Chinese or Korean people make tofu in Quito and sell it at one stall of an outdoor Oriental foods market. They make the tofu somewhere else and sell it twice a week fresh, from a bathtub, at the stall. They also make a pressed tofu. A lot of the health food stores in Quito occasionally sell fresh tofu; she has never asked where it is made.

She also knows a Baha'i person who makes soymilk in Ecuador. Address: c/o Donna Lewen, Cassilla 17-12-578, Quito, Ecuador. Phone: 593 2-570-600.

2795. Business Trend Analysts, Inc. 1994. The health and natural food market: Past performance, current trends, and opportunities for growth. 2171 Jericho Turnpike #342, Commack, NY 11725. 325 p. Sept. Price $995.00. *
• ***Summary:*** Chapter 3 of this report, the first of seven chapters that discuss individual product categories, is titled "The Market for Soy Foods: An in-depth analysis of historical, current, and projected sales. Trends in the U.S. market for soy foods. Manufacturers' total sales of soy foods. Manufacturers' sales of soy foods, by distribution channel. Total retail sales of soy foods. Retail sales of soy foods, by distribution channel. Retail sales of soy foods, by type: Soy sauce, tofu, second generation, soymilk, miso, soynuts, tempeh. Worldwide soybean production, total and per capita. U.S. production of soybean oil. New product introductions in the market for soy and vegetarian foods, including names of manufacturers, brand names, and product descriptions.

Under "Report Highlights and Special Features" we read that after the 3-year recession, most product categories

posted strong gains, but "several segments failed to cash in on the growth bonanza. Manufacturers' sales of soyfoods were up a meager 2½%, while the market for frozen health foods declined slightly... One-third of consumers under the age of 35 feel it is extremely important that the food products they purchase are natural; the percentage is even higher among older consumers. Over 40% of adults believe they will contract heart disease or cancer." Today 68% of adults are overweight, up from only 58% a decade ago.

Overall report Contents: 1. Executive summary. 2. Overall market dynamics (including Soyfoods). 3. The market for soy foods. 4. The market for herbal teas. 5. The market for dairy foods. 6. The market for grains and cereals. 7. The market for frozen foods. 8. The market for snack foods. 9. The market for groceries. 10. The health food consumer. 11. The health/natural food store industry. 12. Competitor profiles. 13. Industry directory. Address: Commack, New York. Phone: 516-462-2410.

2796. Haren, Chuck. 1994. Alimentos San Bartolo. *Plenty Bulletin* (*Summertown, Tennessee*) 10(3):1-3. Fall.
• ***Summary:*** "Tempeh, tofu, flavored [soy] milk cicles, [soy] ice cream, soy milk, and toasted soy flour are sold daily from this village processing facility. It was great to see that since last year ASB had built a small room to cook the tempeh (a cultured soy food). The quality of tempeh they were making had improved considerably."

Photos show: (1) Two Guatemalan young people in traditional Mayan dress, holding two soy ice cream cones each, and standing outside the window of Alimentos San Bartolo (ASB–San Bartolo Foods). Caption: "Soy ice cream has been enjoyed in San Bartolo since 1979." (2) Three Mayan staff people in traditional dress at ASB package tofu for market.

2797. **Product Name:** Tempeh.
Manufacturer's Name: Kafri-Bari Mashak-Wyler.
Manufacturer's Address: Tal-Shachar 96, 76805, Israel. Phone: 972-8-349-263.
Date of Introduction: 1994. September.
New Product–Documentation: Form filled out by David Wyler, the person in charge at Kafri-Bari. 1995. July 26. The company began making tempeh in Sept. 1994. They now make 40-80 lb/month of tempeh.

2798. Parks, Thomas R.; Bindon, J.N.; Bowles, A.J.G.; Golbitz, P.; Lampi, R.A.; Marquardt, R.F. 1994. Methodologies for processing plant material into acceptable food on a small scale, phase II. Moffett Field, California: National Aeronautics and Space Administration, Ames Research Center. x + 219 + 21 p. Sept. Illust. No index. 28 cm. Technical Report. NASA CR-177647, A-94130. Govt. Doc. No.: NAS 1.26:177647. [10 ref]
• ***Summary:*** A study of simple processing equipment for the foods to be used by NASA in closed ecological life support systems (CELSS) on a space station under micro-/zero-gravity conditions. Most nutrient requirements can be met by four crops, which were studied: Soybeans, wheat, white potatoes, and sweet potatoes.

The section titled Soyfoods (p. 171-96) has the following contents: Introduction (composition of dried soybeans, best foods for CELSS, processing equipment), soymilk, tofu, okara, tempeh, edamame (immature green soybeans), soy sprouts, processing by extrusion/expelling (oil), expeller pressed soy oil, whole fat soy flour, soymilk beverages, tofu-based meat replacers, tempe-based meat replacers, soy yogurt (fermented), frozen desserts, textured soy flour, extrusion impact on functional properties, materials balance. The production of wheat gluten from wheat, and the biomass culture of mushrooms are also discussed (p. 160).

Tables and figures show: (T7) Soyfoods–Composition and nutrient content (based on USDA Handbook No. 8-16, full page). (F78) Chart of modern soyfoods, divided into: Soya-based dairy alternatives and Soya-based prepared foods. (F79) Four methods of soymilk production: Traditional, Cornell, Illinois, ProSoya. (F80) Modified ProSoya system with pressure plate and centrifugal basket for okara removal. (F81) Flow chart for regular tofu production. (F82) Flow chart for tempeh production. (F83) Flow chart for soybean processing by extrusion/expelling. (F84) Flow chart for soymilk yogurt. (F85) Flow chart for soymilk ice cream. (F86) Processing soybeans for primary soyfood products with extruder. Address: Food and AgroSystems, Inc., 1289 Mandarin Dr., Sunnyvale, California 94087.

2799. Demos, Steve. 1994. How White Wave selects soybeans to make tofu, tempeh, and soy yogurt, and to create value-added products (Interview). *SoyaScan Notes.* Oct. 15. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** White Wave now uses 3 varieties of soybeans: A blend of two varieties for making tofu, and one different variety for tempeh. Steve selected these varieties over a number of years by a trial and error process–but he would like to be able to select them in a more scientific way. For making soy yogurt, Steve is looking for a new variety, which must have a low flavor profile (i.e. little beany flavor). Within the last year, he began talking with a soybean breeder who approached Steve saying that he had one soybean with a low lipoxygenase content (which is thought to give soymilk with little beany flavor), and another with a low fat content. Steve is looking for better flavor and lower calories because he is trying to develop value-added products out of former commodities for his Vegetarian Cuisine line. The key to doing this is developing products that taste better.

For many years, soyfoods consumers were willing to sacrifice taste for ideology or price. Tofu and tempeh have traditionally been bought and sold as commodities,

so manufacturers of these foods have traditionally paid more attention to yield and functional properties than to flavor–since the flavor quickly gets lost in the surrounding water. "Most tofu makers won't use only Vinton soybeans because they are too expensive and that added expense cannot be passed on to the consumer. Yet everyone knows that vegetable-type soybeans produce a superior product–bigger, glossier curds, meatier texture. Vintons also give a superior tofu yield–but Steve does not know why and he would be very interested in knowing the science and theory behind this phenomenon. Is more of the protein in the bean extracted in the soymilk? Does it have a higher nitrogen solubility index? Do the curds trap more water? I think U.S. tofu makers totally disregard flavor when buying soybeans for tofu; they are concerned mostly with the quality and texture of the curd–the size, firmness, and elasticity of the curd. The majority of consumers believe that tofu has no taste anyway." But value-added products are judged in a totally different way than commodities; consumers demand good taste. White Wave's way of making soyfoods is capital intensive; therefore he would prefer to sell value-added products rather than commodities. So Steve is now studying how to transform his commodities into value-added products that command a premium price and have consumer loyalty. White Wave's low-fat tofu is sold as a value-added product, and it has recently become the company's best-selling tofu product. It allows him to "add a couple of higher gross margin points to his profit." Adding *Bifidus* also adds value. A major opportunity is to associate soyfoods with medical benefits [as by showing that eating soyfoods reduces ones risk of a major disease, or by adding genistein–which Steve had not heard of].

The main factor moving White Wave in this direction is the "organic problem" that is emerging in America; high prices and limited supplies. For a number of years, Steve has contracted for his soybeans with a broker (also called a consolidator) at a certain time of year each year; the name of the broker and the time of year are confidential. Steve contracts for specified amounts of certain identity-preserved soybean varieties at a specified price, to be delivered over a specified period of time. He also specifies the maximum moisture content, foreign material, etc. The broker then contracts with soybean growers and the broker stores the soybeans after harvest until delivery. The broker takes the risks associated with reduced yield or crop failure. It is much easier to contract with farmers if they are located nearby; but the farmers who end up growing Steve's soybeans are all far away. It would be hard (and too much trouble) for him to keep in touch with weather conditions far away, and to visit the farmers from time to time. The organic business used to be based on affidavits issued by the farmer; now it is changing to third-party certification, and that change should be finished after about one year. Having soybeans certified by a third party raises their cost to the manufacturer by about 25%. It is virtually impossible to pass that on to the tofu consumer, since tofu is seen as a commodity. The federal organic law may be different in particulars from the California organic law–which has been the standard. All the tofu Steve now produces is made from organically grown soybeans, but soon he will offer both a low-cost regular (non-organic) tofu, and a certified organic tofu that retails for about $0.15 per pound more. Then the consumer will have a choice. This has never really been done before.

In the future, Steve would like to work much more closely with soybean breeders and seed companies to help solve his problems, improve the flavor of his products, develop new products, and learn more about the theory and science that connects soybeans and soyfoods. In addition he is planning to set up an in-house R&D department; White Wave already has a test kitchen and a food technologist on staff. A key function of the R&D department will be to develop value-added products. White Wave is already conducting in-house taste panels but is selecting soybeans "from a grab-bag mentality rather than from an organized, scientific project mentality... There is absolutely no question that the long-term strategic development of soyfoods requires this approach." The timing is perfect and Steve would like to establish such a relationship with a seed company as soon as possible. White Wave is now in the process of strategic planning for the next 5-7 years. But a company must be big enough (as White Wave now is) to devote the focused mind time and invest the resources to follow through for the seed companies this way. As a company gets larger it has a greater need and ability to base its choice of raw materials on a solid scientific foundation. Smaller companies might agree to work with seed companies but it would be hard for them to do it properly over the long term.

In the past, White Wave has chosen one or two soybean varieties and then stopped looking for better ones for several years. But that will change as soon as the new R&D department begins operation. Address: President, White Wave Inc., 1990 North 57th Court, Boulder, Colorado 80301. Phone: 303-443-3470.

2800. Joachim, David. 1994. The joy of soy: Welcome to the kitchen of Dorothy Bates–soyfoods pioneer. *Vegetarian Gourmet* (*Montrose, Pennsylvania*) No. 11. Autumn. p. 28-33.

• ***Summary:*** Dorothy, age 73, graduated from Iowa State University with a degree in food, nutrition, and journalism. Then she began her career as a home economist for Swift & Company, a Chicago-based food company. In 1945 she married and moved to Hawaii, where her two children were born. In 1968 [actually about 1973 or 1974] her daughter-in-law Cynthia prepared a few simple dishes at Dorothy's home in Connecticut using tofu, tempeh, soy sauce, and textured vegetable protein. This had a profound effect on the direction of Dorothy's life. Sensing a story, Dorothy called the food

editor from the local newspaper [Elizabeth Squires of the Wilton Bulletin in Wilton, Connecticut] to photograph the dishes and write about soy products. Now age 50, and a lover of the rich desserts of French cuisine, Dorothy had little idea that she would eventually be writing vegetarian cookbooks–such as The Tempeh Cookbook, and The TVP Cookbook.

Contains 9 soyfoods recipes, including: Super-easy chocolate mousse (with silken tofu), and Whipped topping (with firm tofu).

A sidebar (p. 31-32) discusses soybeans, diet, disease prevention, and genistein.

2801. **Product Name:** Tempeh.
Manufacturer's Name: M/S Ng Keng Huat.
Manufacturer's Address: Block 6018, Bedok Industrial Park C #01-1890, Singapore 1647. Phone: 242-0053.
Date of Introduction: 1994. October.
New Product–Documentation: Form filled out by Mr. Ng Pang Hua. 1994. Oct. This company began making tempeh in October 1995. They now produce 15,525 lb/month. Note: This makes the company one of the largest tempeh manufacturers in the world.

2802. INTSOY. 1994. Soybean processing and utilization. May 17-June 15, 1995. An international training program (Brochure). Urbana, Illinois. 12 panels. Each 22 x 10 cm.
• ***Summary:*** Contents: Basic topics to be presented in the 1995 course: Basic processing concepts, nutrition and functionality, oil extraction, extrusion technology, soymilk and dairy analogs, Oriental soybean foods (tofu, tempeh, etc.), animal feed applications, quality control, global overview of the soybean industry, economics and marketing of soy products. Professional opportunities. Cost and travel information (the course costs $3,900 plus an estimated $1,900 for room, board, and other local living expenses. INTSOY is unable to offer scholarships).

The course time consists of 35% lectures, 45% hands-on exercises, and 20% industry visits. This is the 15th offering of the training program. Some 155 persons from 26 countries have attended the course. Danny Erickson is the training officer in charge. Facilities at the University of Illinois include the largest public university library in the United States, the nation's largest supercomputer complex, and the National Soybean Research Laboratory. Address: International Soybean Program, Univ. of Illinois, 169 Environmental and Agricultural Sciences Building, 1101 West Peabody Drive, Urbana, Illinois 61801. Phone: (217) 333-6422.

2803. **Product Name:** Hempeh Burger (Soy Tempeh Burger With Hemp Seeds).
Manufacturer's Name: Sharon's Finest (Product Developer-Marketer).
Manufacturer's Address: Sharon's Finest, P.O. Box 5020 (616 Davis St.), Santa Rosa, California 95402-5020. Phone: 707-576-7050.
Date of Introduction: 1994. November.
Ingredients: Organic soybeans, water, organic brown rice, hemp seeds, onion, vinegar, Rhizopus culture. Marinade: Water, pineapple juice, soy sauce, ginger, garlic, roasted sesame oil, black pepper, spice.
Wt/Vol., Packaging, Price: 6 oz. (2 patties).
New Product–Documentation: Sample label mechanical sent by Richard Rose, CEO of Sharon's Finest. 1994. Oct. 27. Richard conceived of and has developed this unique product. "Barely legal. No THC, but hemp seeds do have essential fatty acids. Contains 10% legal hemp seeds. 5% of profits go to N.O.R.M.L. Yes, we're the HempRella "cheese" folks. To prepare: Cook it up on the grill, broiler, or pan 'till happy... Or use like meat!"

Leaflet from Natural Products Expo West at Anaheim, California. 1995. March. "Hemp Food: As legal as Coca-Cola, as American as apple pie." A good overview of the value of hemp as a crop. Hempeh Burger, which is a soybean and rice tempeh burger, contains 10% whole hemp seeds.

Ad (p. 18) and spot (p. 56) in Natural Foods Merchandiser. 1995. Sept. Spot: "Sharon's Finest introduces Hempeh Burger, made from soy/rice tempeh with 10% legal hemp seeds added. Hempeh Burger is high in essential fatty acids and GLA,... is 100% vegan, and is drug free." Ad: "Absolutely no drugs here, just wholesome, nutritious food from seeds that have been in the human diet (including Buddha's) for centuries." For more information: Sharon's Finest. (707) 576-5070. hemp@rella.com.

Talk with Seth Tibbott of Turtle Island Foods. 2001. May 15. The Hempeh Burger is now starting to sell well.

2804. Hills, Benjamin. 1994. Re: New developments at Lean Green Foods on the Big Island of Hawaii. Letter to William Shurtleff at Soyfoods Center, Dec. 1 p.
• ***Summary:*** "Holiday Greetings! What a year! It has seen the birth and infancy of a soyfood company determined to make a difference in the protein supply of the Pacific Rim. So far it is quite local, with color pictures of ginger teriyaki tempeh burger popping up all over restaurant tables of the Big Island to sold out accounts on Kauai. Soon I will be consulting to soy operations in the Philippines, Siberia, Italy, and India, and traveling to those places. Also exploring export possibilities to Australia and New Zealand.

"It has been a tremendous amount of work, but with daily rewards from the enthusiasm of satisfied customers. Mine are truly products to believe in...

"I have been blessed further by the presence of a soy angel, the original in my life, Susan Wallace, from Oregon... Her ever-resent enthusiasm and support for Lean Green Foods has helped immensely in the development of my life in soy."

Update: 1997. Dec. 8. Talk with Rosie Siscon, who (with

a friend) recently visited Benjamin at his shop in Hilo. 1998. Dec. 8. His location is beautiful, right next to the ocean, with lagoons and waterfalls nearby. He made them some delicious tempeh dishes from his freshly-made tempeh. Address: Lean Green Foods, P.O. Box 534, Volcano, Hawaii 96785. Phone: 808-985-8563.

2805. **Product Name:** Ginger Teriyaki Tempeh Burger.
Manufacturer's Name: Lean Green Foods.
Manufacturer's Address: P.O. Box 534, Volcano, Island of Hawaii, HI 96785. Phone: (808) 985-8563.
Date of Introduction: 1994. December.
Ingredients: 1998/12: Certified organic soybeans (grown in accordance with sec. 26569.11 of the California Health and Safety Code), ginger juice, soy sauce (water, wheat gluten, soybeans), mustard, lemon juice, vinegar, fructose, sesame oil, guar gum, tempeh culture.
Wt/Vol., Packaging, Price: 6 oz. (170 gm) vacuum pack.
How Stored: Frozen.
New Product–Documentation: Christmas letter sent by Benjamin Hills. 1994. Dec. Lean Green Foods is now making a ginger teriyaki tempeh burger. Color pictures of it are "popping up all over restaurant tables of the Big Island to sold out accounts on Kauai." One secret to the flavor is the 24-hour soak in cold marinade–not hot!

Label brought by Benjamin Hills. 1998. Dec. 21. 3.5 inches diameter. Self adhesive. Green on white. Logo says "Made in Hawaii." "100% vegetarian. 2 patties–Keep frozen. Try our tempeh chili. To cook: This precooked burger may be grilled, fried or microwaved." Address is now: P.O. Box 10562, Hilo, Hawaii 96721.

2806. Brata-Arbai, Arsiniati M. 1994. Efek tempe dari formula AS5 terhadap lipid penderita dyslipidemia [The effect of tempe formula on blood lipids in dyslipidemia sufferers]. *
Address: Indonesia.

2807. Heskamp, Marie-Luise. 1994. Proteasen aus Rhizopus-Arten: Charakterisierung und Expression beim Abbau von Sojabohnenprotein und bei der Tempefermentation [Proteases from various *Rhizopus* mold species: Characterization and expression in the decomposition of soya protein and in the tempeh fermentation]. PhD thesis Münster (Westfallen) University. 160 leaves. Illust. 30 cm. [Ger]*
Address: Germany.

2808. Okubo, Kazuyoshi; Kudou, Shigemitsu; Uchida, Teiji; et al. 1994. Soybean saponin and isoflavonoids: Structure and antiviral activity against human immunodeficiency virus in vitro. *ACS Symposium Series* 546:330-39. Chap. 26. Food Phytochemicals for Cancer Prevention. *
Address: 1. Dep. of Applied Biological Chemistry, Faculty of Agriculture, Tohoku Univ., 1-1- Tsutsumidori Amamiyamachi, Aoba-ku, Sendai, Miyagi 981.

2809. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Oy Soya Ab.
Manufacturer's Address: Lokfôraregatan 4, Karis, Finland.
Date of Introduction: 1994.
New Product–Documentation: Form filled out by Stig Westerlund of Oy Soya Ab. 1994. April 22. The company now makes about 50 lb/month of tempeh. It is very unknown in Finland. He does not say when they started to make tempeh. Their address is now Backagatan 36, SF-10940 Hango, Finland.

2810. Wiesel, Iris. 1994. Stoffbildung durch Mischkulturen aus Bakterien und Pilzen während der Tempefermentation [Material formation through mixed cultures of bacteria and molds during tempeh fermentation]. PhD thesis Münster (Westfallen) University. 196 leaves. [Ger]*
Address: Germany.

2811. Fryer, Anne-Marie; Fryer, Wil. 1994. Das kleine Buch ueber Huelsenfruechte, Tempeh, Tofu und Seitan: Ost-West Naturkostfuehrer. Bd. 2 [The little book about legumes, tempeh, tofu and seitan: East-West natural foods guide, No. 2]. Voelklingen, Germany: Ost-West-Bund Verlag. 79 p. Illust. No index. 15 cm. [9 ref. Ger]
• ***Summary:*** This is number 2 in a series of 10 volumes. Contents: Introduction. Proteins. Food combining. Nutritional requirements. Table of nutrients in beans and bean products. Beans and other legumes. Preparation of beans. Tempeh. Tofu. Seitan.

2812. Garcia Hermosilla, Jorge André. 1994. Aufklaerung der lipidsenkenden Wirkung von alpha-Liponsaeure im Organismus und der antioxidativen Wirkung von alpha-Liponsaeure und Dihydroliponsaeure auf die Oxidation von LDL: Identifizierung von Inhibitoren der HMG-CoA-Reduktase aus dem Nahrungsmittel Tempeh [Clarification of the lipid-lowering effect of alpha-lipoic acid in the organism and the antioxidative effect of alpha-lipoic acid and dihydro alpha-lipoic acid on the oxidation of LDL: Identification of the inhibitors of HMG-CoA-reductase from the food tempeh]. Thesis, Bonn University, Germany. 103 p. [Ger]*
Address: Bonn, Germany.

2813. Karyadi, Darwin. 1994. The tempe overview: What's old and what's new. Paper presented at: Third Asian Symposium on Non-Salted Soybean Fermentation. Held 4-6 June 1994 at Akita City, Japan. [Eng]*
Address: Indonesia.

2814. Kolvenbach, Michael. 1994. Isoflavonoid-Inhaltsstoffe der fermentierten Sojabohne (Tempeh) [Isoflavonoid

constituents of fermented soybeans (tempeh)]. Thesis, Bonn University, Germany. 103 leaves. Illust. 30 cm. [Ger]* Address: Bonn, Germany.

2815. LeShane, Patricia. 1994. Vegetarian cookery for people with diabetes. Summertown, Tennessee: The Book Publishing Co. 143 p. Index. 21 cm.
• ***Summary:*** This is a vegan cookbook. Approximately 12 million Americans have diabetes, but only about 50% of them are currently aware that they have it. The index contains 21 entries for tofu, 2 for soybeans (p. 106, 107), 1 for soy yogurt, and lots for soymilk.

2816. Ontario Soybean Growers' Marketing Board. 1994. New uses for soybeans (Leaflet). Ontario, Canada. 2 p. Undated. 28 cm.
• ***Summary:*** Contents: Soy diesel. Premium building materials (such as Environ). Industrial solvents. Anti-chronic disease agent (isoflavones and protease inhibitors from tofu, miso, and tempeh). Road dust suppressants. Asphalt and concrete release agents. Lubricants and hydraulic fluids. Biodegradable plastic utensils. Soy oil based inks. Soy textile fibres (can be used for erosion control on landscape projects, for peat pots, fishing nets, and "soy silk" in clothing). Soy adhesives (for plywood products and composites). Address: Box 1199, Chatham, ONT N7M 5L8, Canada. Phone: 519-352-7730.

2817. Stepaniak, Joanne. 1994. The uncheese cookbook: Creating amazing dairy-free cheese substitutes and classic "uncheese" dishes. Summertown, Tennessee: The Book Publishing Co. 192 p. Index. 21 x 18 cm. [16 ref]
• ***Summary:*** This is an excellent, very creative cookbook with a poor index, developed especially for people who, due to choice or chance, have eliminated cheese from their diet. The recipes are well designed to satisfy any compelling cheese fantasies you may have.

Contents: Introduction. Cheezes, spreads & dips. Soups and chowders. Fondues & rarebits. Sauces. pestos & dressings. Pizzas, polentas & breads. Quiches, casseroles & entrées. Sweets. Glossary. Mail order suppliers of natural foods.

Tofu is used as a major ingredient throughout this cookbook. For example: Muenster cheese (p. 23). Chunky Roquefort dip & dressing (p. 24). Tofu cottage cheese (p. 27). Tofu ricotta (p. 27). Betta feta (p. 28). Brie (p. 31). Liptauer käse (p. 32). Boursin cheese (p. 33). Tofu cream cheeze–rich or light (p. 34-35). Kefir cheeze (p. 36). Garbanatto (p. 39). Hot Parmesan artichoke dip (p. 41). Pecan cheese (p. 42). Egg-free (vegan) mayonnaise (p. 89). Tofu sour cream (p. 90). Calzones (p. 100-10). Tofu tetrazzini (p. 122) Tofu devonshires (p. 140). Mattar paneer (p. 146). Tofu cheezecakes & cream pies (ten varieties, p. 164-74). Tofu whipped topping (p. 172).

Many other recipes also call for "low-fat, dairy-free (vegan) milk" which is defined (p. 183) as "a generic term which refers to any creamy beverage such as soymilk, nut milk, or rice milk that is produced from non-animal products.

Interesting products in the glossary (p. 180-184) include: Agar, barley malt syrup, brown rice syrup, liquid aminos, mirin, miso, seitan, tahini, tamari, tempeh, toasted sesame oil, tofu, umeboshi plum paste, vegan milk, yeast–nutritional (*Saccharomyces cerevisiae*).

2818. Rosas, Juan Carlos; Young, Roberto A. 1994? El cultivo de la soya. Quinta edición [The cultivation of soya. 5th ed.]. *Departamento de Agronomía* (*Zamorano, Honduras*), *Publication* No. AG-9603. 68 p. Undated. [Spa]
• ***Summary:*** Contents: 1. Overview: Economic importance, chemical composition, history, taxonomy. 2. Morphology of the soybean plant. 3. Physiology of the growth and development of the soybean plant: Stages of development. 4. Environmental factors that affect the cultivation of soya: Soil, water, irrigation, light / photoperiod, temperature, period of growth. 5. Practical cultivation: Preparation of the soil, time of planting, density of planting, quantity of seeds, systems of cultivation, control of weeds (methods of weed control, chemical control). 6. Mineral nutrition of soybeans (and inoculation). 7. Diseases that affect the cultivation of soybeans and their management: Bacterial, fungal, viral, other, seed treatment. 7. Insects that attack soybeans. 8. Harvest and storing. 10. Improvement of soybeans. 11. Processing and utilization: Industrial processing (extraction of oil, soy flours, soy protein concentrates {*concentrados proteícos de soya*}, soybean cake). Direct consumption: In the Far East, the soybean is consumed in the form of fermented and non-fermented foods. Fermented foods include shoyu, miso, mato [sic, natto], and tempeh, while non-fermented foods include soymilk (*la leche de soya*), tofu, yuba (*juba*), and kinako. 12. The cultivation of soya in Honduras (history).

In 1972, the Ministry of Natural Resources (*Ministerio de Recursos Naturales*) reported the initiation of commercial soybean production on a small scale in various departments of the country (Olancho, El Paraíso and Comayagua). Three varieties were used at that time: Biloxi, Hardee and Jupiter. However, before these reports were made, at the Panamerican Agricultural School (*la Escuela Agrícola Panamerican* (*EAP*)), some hectares had already been planted with the varieties Jupiter and Pelican. Discusses additional developments in 1974, 1982, 1986, 1987, and 1988. Address: 1. PhD; 2. PhD.

2819. Oates, Bill. 1995. History of The Good Life, and Llama, Toucan & Crow (Interview). *SoyaScan Notes.* Jan. 25. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** It was Bill's idea to start The Good Life, which opened in March 1971 as a natural food retail store at 80

Main Street in Brattleboro, Vermont. Brattleboro was a very active center of the counterculture in the late 1960s and 1970s. In 1964-65 he had lived in Indonesia, where he was doing research for his PhD dissertation on a peasant revolt in West Java, and he grew to be very fond of tempeh. Back in the USA, he entered academia at Lyndon State College in Lyndon, Vermont, teaching Chinese and Southeast Asian History during the Vietnam War. Bill was partners in The Good Life with Peter Strong and Patricia Perry. Bill and Peter were hippies at the time. Peter, who had been a student of Bill's, had worked with David Hatch, who owned and ran Hatch's, in Saint Johnsbury, Vermont. Hatch's may have been the earliest natural food store in Vermont; they did not carry supplements. For a while Peter Strong ran Hatch's.

When the three partners opened The Good Life in March 1971 they sort of used Hatch's as a model. Many of their original employees came from the Total Loss Farm Commune at Packer's Corners in Halifax, Vermont. The commune still exists (they used to make many baked goods for The Good Life), and a book was written about the group. There were some problems in getting good quality natural foods. The Good Life didn't carry vitamins or supplements. Like Hatch's, they would buy some foods from Erewhon in Boston, Massachusetts (Paul Hawken served as a wise advisor for them), and they would also drive a van farther south to New York City, where they would buy from Richter Brothers, Bazzini Nut Co. and others. In New York they would go to Chinatown and buy tofu from a Chinese manufacturer on Mott St. [probably Fong-On]. Prices of some goods were lower in New York City, Erewhon didn't carry everything, and "frankly they were very disorganized as a business. Paul Hawken was more of a thinker than a manager–a fascinating person." They were buying hard red winter wheat (organically grown) from Ted Whitmer in Montana. They would pay 8-9 cents a pound for the wheat plus 7 cents a pound to have it shipped to Vermont. Ted Whitmer said that if they bought a truckload of 40,000 lb, they could have it shipped on a back-shipment under an exemption for agricultural products; the ICC was still setting rates for freight shipments. So The Good Life took the plunge and in June or July of 1971 bought a 40,000 lb shipment of winter wheat from Whitmer, and paid only 2¼ cents per pound to have it shipped to Brattleboro. So the cost delivered to their store was about 11¼ cents per pound–a great price, compared with the 19-20 cents per pound they would have to pay for Deaf Smith organic wheat from Erewhon [purchased by Erewhon from Arrowhead Mills in Texas]. Ted Whitmer gave The Good Life his list of all his wheat customers (about 25, including a nunnery and some co-ops) in the New England area to help his customers reduce freight costs. So The Good Life contacted all of Ted's customers and started selling their organic wheat to other food stores and groups for 14-15 cents per pound. Most of the stores picked up the orders of wheat at The Good Life, but some of it was delivered to the stores. All the wheat was sold within a month. The origin of Llama, Toucan & Crow can be traced directly to this shipment of wheat. Bob Swanson joined The Good Life as an employee after the first big shipment of wheat, and he used to do a lot of the driving. By the second year, the Good Life contracted with Ted Whitmer to buy 500,000 lb of his wheat, with payment in advance.

Since The Good Life was selling wheat to a growing number of stores, they wanted to buy other foods as well. They drove to New York and picked up several thousand pounds of food each week at special discounted prices, as the retail store thrived. They began to sell some of this food from New York at wholesale prices to customers who purchased wholesale wheat. So they soon found themselves in the wholesale business, and by early 1972 they were delivering foods at wholesale to more than 5 accounts. Then they discovered that the commodities law that enabled them to ship large amounts wheat inexpensively from Montana, would also allow them to ship other foods, such as dried fruits from California, at ridiculously low prices. So they put together a 40,000 lb shipment of dried fruits from California, consisting mostly of dried organic dates, then used organic raisins and other fruits to make a total of 40,000 lb. Now they were really in the wholesale business. Bob Swanson's job expanded from just delivering the food to taking the orders and ordering the food. By the end of 1972, The Good Life found itself with a thriving wholesale business, doing about $3,000 to $4,000 a week–about the same as the retail store. They were making two delivery runs a week, one north to Vermont and New Hampshire, and one south to Connecticut and Massachusetts. And people still came to The Good Life to pick up their supplies–at excellent prices. The tail was now wagging the dog. By this time Peter had gone off to Nepal–to discover himself. Patricia and Bill were running the retail store, which had always carried, in addition to natural foods, imported cheese and wines. They sold no vitamins until many years later. Bill and Patricia decided that, as from the outset, they wanted to be in the retail store business, so they said to Bob Swanson, "If you want this wholesale business, its yours, free of charge." Why free of charge? "It was right, and it was the right thing to do. You've got to remember, this was the early 1970s."

Bob accepted their offer, and in Jan. 1971 he began running the business out of the cellar of The Good Life for several months, until he located a very tumble-down warehouse facility for his new company in Brattleboro, at 21 Frost Street. The building has since been demolished. It had been owned by DeWitt Beverage Company, a beer distributor, and Swanson's business occupied only one floor of about 5 floors. Swanson operated out of this location for about 8-9 months, then he moved the company down to Greenfield.

Bill has no idea how to contact Bob Swanson now;

later Bob went to his home town in Woodbury, Connecticut, where he helped a friend run a natural food store. Then he may have moved to Colorado. Peter Strong, who is now somewhere in Texas, might know how to reach Swanson.

When Barclay McFadden purchased Llama, Toucan & Crow, he had no background in the natural food business. Bill thinks that he was in the military, perhaps either a career officer or he may have been a graduate of West Point.

Bill and his wife now have a consulting company that works with country inns and bed-and-breakfasts in Vermont–mainly helping them to get started or to buy. Address: Box 1162, Brattleboro, Vermont 05302. Phone: 802-254-5931.

2820. Drosihn, Bernd. 1995. The soyfoods market in Germany. New developments at Viana Naturkost (Interview). *SoyaScan Notes.* Jan. 30. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Bernd's company, Viana, is now one of the two largest tofu manufacturers and soyfoods marketers in Germany. The other large company is Life Food in Freiburg. Their brand name is Taifun, and they have been growing rapidly for the last two years.

The tempeh market is very small in Germany. There are only two manufacturers: Hamburger Tofu Manufaktur (Christian Nagel, in Hamburg) and Viana. There is now only one real miso manufacturer in Germany: Kanta Kozaki GmbH in Urbach near Stuttgart. Viana stopped making miso 2 years ago, however Viana sells miso made by Kanta Kozaki in glass jars under the Viana label. A Japanese man (Hiroshi Kozaki) and a German man (Karl Selgmann) run the company together. They have been making miso for 3-4 years. Viana also sometimes makes koji for Kanta Kozaki.

Bernd and Albert Hess are planning to attend the Natural Products Expo West in Anaheim, California, March 10-12, 1995. Address: Founder and president, Viana Naturkost GmbH, Willi Graf Str. 88, 53881 Euskirchen-Kuchenheim, Germany. Phone: 02251-56076.

2821. De Reu, Johan C. 1995. Solid-substrate fermentation of soya beans to tempe: Process innovations and product characteristics. PhD thesis, University of Wageningen Agricultural University, Netherlands. 155 p. Illust. No index. 24 cm. [227 ref. Eng; dut]
• ***Summary:*** This is a bound and published PhD thesis. On the cover is an illustration (line drawing) of a rotating drum reactor. The directors of his research were F.M. Rombouts and M.J.R. Nout. Contents: Abstract. General introduction. Temperature control in substrate fermentation through discontinuous rotation. A model for solid-substrate fermentation of *Rhizopus oligosporus* in a packed-bed reactor. The influence of acidity and initial substrate temperature on germination of *Rhizopus oligosporus* sporangiospores during tempe manufacture. The effect of oxygen and carbon dioxide on the germination and growth of *Rhizopus oligosporus* on model media and soya beans. Changes in soya bean lipids during tempe fermentation. Protein hydrolysis during the soya bean tempe fermentation with *Rhizopus oligosporus.* Consistency, polysaccharidase and non-starch polysaccharides content of soya beans during tempe fermentation. General discussion. Summary. Samenvatting. Curriculum vitae. Address: Wageningen, Netherlands.

2822. Mindell, Earl. 1995. Earl Mindell's soy miracle. New York, NY: Simon & Schuster. A Fireside Book. 256 p. Index. 22 cm. [97 ref]
• ***Summary:*** Contents. Part I: Soy–The miracle food. 1. The soy story: explaining the miracle. 2. Soy by any other name. 3. Does soy prevent cancer? 4. Heart and soy. Part II: Soy for special needs. 5. Just for women: Rx for menopause and osteoporosis. 6. Just for men: Rx for prostate problems. 7. Kids, cancer, and heart disease. 8. Tips for vegetarians. Part III: Not by soy alone. 9. Thirty-seven miracle foods from the Pacific Rim. Earl's pearls: A guide to vitamins and minerals. Part IV: Get more soy in your life. 11. Savvy substitutions. 12. Cooking with soy. 13. Breakfast the soy way. Part V: Seventy super soy recipes (p. 149-230). Glossary. Resources. Selected bibliography.

Pages 12-13 note that soybeans are an abundant source of many different types of phytochemicals, including isoflavones, genistein, protease inhibitors, and phytic acids.

Chapter 2 describes the different types of soy foods. Traditional soy foods: Soy milk, tofu (firm tofu, silken tofu, yakidofu, koyodofu [sic, koya-dofu]), okara, natto, tempeh, miso, soy sauce, kinnoko [sic, kinnako] flour. Soy protein products: Soy protein concentrates, soy protein isolate, soy flour, texturized soy protein, meat analogs. Other soy products: Soy fiber, soybean oil, lecithin. Questions about soy foods. Page 33 asks the question: "If phytochemicals in soybeans are so healthy, why can't they be extracted from food and made into a pill like a vitamin?" Answer: Researchers are not yet certain which phytochemicals are the most important. "There may even be other beneficial compounds in soy that have yet to be identified. Your best bet is to eat the real food." A section titled "Soy's top ten benefits" (p. 36-38) discusses: 1. Antioxidant. 2. Breast cancer. 3. Cholesterol lowering. 4. Colon cancer. 5. Hip fracture. 6. Hot flashes. 7. Immunity. 8. Kidney disease. 9. Lung cancer. 10. Prostate cancer.

Chapter 3, titled "Does soy prevent cancer?" discusses six compounds which cancer researchers believe may be effective in cancer prevention: Isoflavones, genistein, daidzein, protease inhibitors, phytic acid, and saponins. A long section later in the chapter discusses each of these, with special emphasis on genistein.

Note: The author has also written *Earl Mindell's Herb Bible* and *Earl Mindell's Food as Medicine.* He is a newcomer to this field. This book may appeal to those who

are looking for miracles from the foods they eat. Most of the information contained in this book can be found in Mark and Virginia Messina's outstanding *The Simple Soybean and Your Health* (1994), and the *First International Symposium on the Role of Soy in Preventing and Treating Chronic Disease: Proceedings from a symposium held in Mesa, Arizona, on February 20-23, 1994,* published in full in *The Journal of Nutrition* Vol. 125, No. 3S, March 1995 Supplement. It was from this symposium and the outline published before the symposium that Mindell got his idea for this popular book.

Dr. Mindell is an R.Ph. (Registered Pharmacist) with a PhD in Nutrition from Pacific Western College in Renton, Washington.

According to a review of *Earl Mindell's New and Revised Vitamin Bible,* by James A. Lowell, PhD. (Nutrition Forum, June 1986) "Mindell claims to hold valid credentials in nutrition. Although he does have a bachelor's degree in pharmacy from the University of North Dakota, his Ph.D. is from the University of Beverly Hills, an unaccredited school which lacks a campus or laboratory facilities." Mindell helped to found the Great Earth chain of vitamin and health food stores, numbering about 200 in 1986, America's second largest such chain. Address: R.Ph, PhD, registered pharmacist and Prof. of Nutrition at Pacific Western Univ. in Los Angeles. He lives in Beverly Hills, California.

2823. Minnesota Soybean Growers Association; Minnesota Soybean Research & Promotion Council. 1995. Cooking with soy. Revised 2nd ed. North Mankato, Minnesota. 48 p. Jan. 22 cm.
• ***Summary:*** Contents: Introduction. Tofu facts. Soy milk facts. Soy flour facts. Miso facts. Tempeh facts. Texturized soy protein facts. Meat analog facts. Soy oil facts. Whole (dry) soybean facts. Whole (green) soybean facts. How to cook whole soybeans.

Recipes: Appetizers & snacks. Dips & dressings. Beverages. Salads & soups. Breads. Main entrees. Cakes, cookies & desserts. Substitutions.

Talk with Christie Metzger of the MSRPC. 1996. Jan. 4. The revised edition of this book was published in Jan. 1995; the first edition was published in March 1994. Address: 360 Pierce Ave., Suite 110, North Mankato, Minnesota 56003. Phone: 507-388-1635.

2824. Rana, Nita. 1995. Comparative studies on the soyabean-tempeh and tempeh like products using Bengalgramdal and groundnut by using *Rhizopus oligosporus* (Abstract). In: Proceedings of the Eighty Second Session of the Indian Science Congress–Calcutta, Jan. 1995. Part IV (late abstracts). Section of Biochemistry, Biophysics & Molecular Biology. See p. 50.
• ***Summary:*** Tempeh-like products can be made using locally available beans and nuts, such as Bengalgramdal and groundnut. The proximate analyses were conducted. Tempeh made from groundnuts had a higher PER than raw groundnuts, but tempeh made from Bengalgramdal had about the same PER as raw Bengalgramdal. The specific activity of aminotransferases (GPT and GOT) from rat liver showed increases in all three cases. Address: Biochemistry Dep., M.S. Univ. of Baroda, Baroda, Gujarat, India.

2825. *Voice of the Turtle* (*Hood River, Oregon*).1995. Wildwood Natural Foods and Turtle Island join forces. Jan. p. 1.
• ***Summary:*** "Since January 1, 1994 Turtle Island has been manufacturing all tempeh sold under the Wildwood label in the San Francisco, California, market area... We now manufacture Wildwood's Soy Rice, Onion Herb, Tempeh of the Sea, Temptations and bulk tempeh." Wildwood distributes Turtle Island's SuperBurgers. Address: P.O. Box 176, Hood River, Oregon 97031. Phone: (503) 386-7766.

2826. Wildwood Natural Foods. 1995. Price list–January 9, 1995. Fairfax, California. 5 p.
• ***Summary:*** Wildwood's own product lines include: Sandwiches (7 products, incl. burritos and sushi), salads (17), tofu and tofu products (13), soymilk (2), hot dogs (1), tempeh (4).

Wildwood also distributes products made by other companies: Red Wood Foods (16 products), Mrs. Wiggles Rocket Juice (12), Grainaissance (17; amazake, pudding, and mochi), Sonoma Salsa (7), Yves Veggie Cuisine (9), Lightlife Foods (13), Turtle Island Foods (1), NuTofu soy cheese (3), Señor Felix's (8), Heart & Soul (5, Trim Slices), Natures Babies (10, baby foods). Address: 135 Bolinas Rd., Fairfax, California 94930. Phone: (415) 459-3919.

2827. Wildwood Natural Foods. 1995. WildWood Natural Foods: Responding to your needs for high quality, nutritious, ready to eat foods... Naturally! (Leaflet). Santa Cruz, California. 6 panels.
• ***Summary:*** Contents: Introduction (to the company, soybeans, and soyfoods). About tofu. What is tempeh. Nutritional information about tofu. Partial list if Wildwood Natural Foods Products: Ready to eat. Our purpose. Our mission. Our core values and beliefs. Address: 1560 Mansfield St., Santa Cruz, California 95062. Phone: (408) 476-4448.

2828. Mann, Sue. 1995. Re: Tempeh, tofu, and miso in Ecuador. Letter to William Shurtleff at Soyfoods Center, Feb. 4. 4 p. Typed, with signature, and handwritten.
• ***Summary:*** A woman, who is about to get some kind of degree in soyfoods/nutrition and who is Quito's top macrobiotic teacher/cook/storeowner, already makes her own tofu and miso, and is interested in tempeh. Sue will be talking with her soon.

"I have been making tempeh for friends, and in about

3 weeks will start moving toward commercial production. With three restaurants waiting and friends no longer willing to take it without paying, prospects are good." She orders a copy of the book *Tempeh Production,* by Shurtleff & Aoyagi, to be sent to Andrew McCallum in Rochester, New York. On a sparate handwritten sheet she gives details on 3 commercial soy products from Ecuador and Colombia. Address: c/o Donna Lewen, Cassilla 17-12-578, Quito, Ecuador. Phone: 593 2-570-600.

2829. Arnold, Kathryn. 1995. The joy of soy. *Delicious!* (*Boulder, Colorado*). Feb. p. 34-36. [3 ref]
• ***Summary:*** The soybean "has long been revered by vegetarians as a nutritional powerhouse. However, the real secret is that soyfoods may help prevent disease." They are cancer fighters and good for the heart. A table (p. 36) lists 12 different types of soyfoods and their uses: Tofu, tempeh, okara, miso, natto, TVP, soymilk, soy grits, soy flour, soy cheese, soy sauce, soy yogurt.

Note: This periodical, which began publication in about 1983, is published for natural products consumers by New Hope Communications in Boulder, Colorado. As of March 1998 some 425,000 copies of Delicious! are distributed each month to over 900 health food retail stores throughout the United States.

2830. Messina, Mark; Messina, Virginia. 1995. Soybeans linked to health benefits. *Vegetarian Voice* (*Dolgeville, New York*) 20(4):10-11. Winter.
• ***Summary:*** Contents: Introduction. Soy and heart disease. Soy and cancer. Other roles for soy. What if you can't tolerate soy. The whole diet approach.

A table shows the isoflavone content of selected foods: Soymilk (1 cup) 40 mg. Tofu (½ cup) 40 mg. Tempeh (½ cup) 40 mg. Miso (½ cup) 40 mg. TVP, cooked (½ cup) 35 mg. Soy flour (½ cup) 50 mg. Soybeans, cooked (½ cup) 35 mg. Soy nuts (1 ounce) 40 mg. Isoflavones (unlike vitamins) are not destroyed in conventional cooking methods.

2831. *Tufts University Diet and Nutrition Newsletter.*1995. Scientists spotlight phytoestrogens for better health. 12(2):3-6. Feb.
• ***Summary:*** This article, which discusses the health benefits of phytoestrogens in detail and portrays soy in a very favorable light, contains a 3/4- page sidebar titled "Is there soy in your future?" Breast cancer is the number two killer of women in America and prostate cancer is the number two killer of men. Some scientists now believe that both men and women can take the same step to reduce their risk of succumbing to these diseases–change their diets to include phytoestrogens. This change of diet will probably also have a profound effect on menopausal symptoms such as hot flashes and mood swings. There are several classes of phytoestrogens: Isoflavones (which "are especially prominent in soy–apparently the most potent food in terms of its estrogen-like effects on the body"), coumestans, and lignans.

"Understanding the hypothesis behind the protective effects of the phytoestrogens in soy and other foods can be a bit tricky, especially when it comes to women, because it relies on seemingly contradictory concepts that have to do with whether a woman is pre- or postmenopausal."

The sidebar on soy discusses tofu, tempeh, and miso.

2832. White Wave, Inc. 1995. White Wave mission statement, company overview, list of products currently sold, and product fact sheets (News release). 1990 N. 57th Court, Boulder, CO 80301. 12 p. Feb.
• ***Summary:*** "White Wave's mission is to creatively lead the full integration of healthy, natural, vegetarian foods into the average American diet. Our interest is in promoting the use of foods we consider the world better off with, rather than without."

"What do you call a man who started a company in a bucket 17 years ago and grew it into an $8 million business?" White Wave employs over 60 people and has the capacity to produce 13 million pounds of tofu per year.

White Wave has nine product lines: Tofu (4 products), baked tofu (7), tempeh (5), veggie burgers (5, four made from tempeh), Dairyless soy yogurt (8), prepared foods–meat substitutes (8), seitan (3), heat and serve (1), and Soya A Melt soy cheese (6 flavors). Address: Boulder, Colorado. Phone: 303-443-3470.

2833. Conklin, Rebecca. 1995. Top dog in meatless market: Litelife's growth has been steady. Success with vegetarian fare has swept Lightlife Foods into mainstream. *Boston Globe.* March 1.
• ***Summary:*** Lightlife Foods of Greenfield, Massachusetts, has a growing line of meat alternatives which are now starting to be sold to mainstream consumers in supermarkets. What began in 1979 as a hippie food business operated out of a former car wash building has developed into a thriving vegetarian food company with 25 products and 50 employees. Company sales reached $4.1 million in 1994, up 37% from $3 million in 1993. And revenues are projected to be $5.5 million in 1995. Also in 1994 Lightlife sold 1.6 million meatless hot dogs.

"Lightlife has managed to reconcile two seemingly opposite interests–the concern for healthy eating and the popularity of the All-American hot dog. President Michael Cohen and vice president Chia Collins, who are partners in life and business, see no end to the growing demand for meatless products." Lightlife markets its products as low in fat, and free of cholesterol, additives, and preservatives. They are all-natural tasty alternatives to meat. Cohen is a vegetarian and he has focused his company on vegetarian fare. "His and Collins admittedly lofty philosophical goals

are to teach people healthy eating, to protect the animal world and, ultimately, to help end world hunger. Cohen summed up the goals in a simple sales pitch: 'You can eat these foods and feel good.'"

Lightlife products are beginning to elbow their way onto grocery stores, where they usually end up right next to the real thing in the meat and deli sections. Two years ago when Lightlife moved into about 600 New York and New Jersey supermarkets, their Smart Dogs were sold in the meat sections. Stop & Shop sells Lightlife's Wonderdogs (hot dogs for kids) next to regular hot dogs.

Lightlife's financial history has been a series of trips to the well. Cohen and a friend started the company (named Tempeh Works) in 1979, making only tempeh. Collins joined the company a year later. Neither she nor Cohen have formal business training nor college degrees. By 1984 Tempeh Works had outgrown the car wash building but had no cash to buy real estate. Cohen and Collins persuaded the owner of a small building near Route 2 to lease the property for a year with an option to buy. They then spent the year raising $270,000 in loans guaranteed by the Small Business Administration and a low-interest loan from a federal community development block grant. At the same time they decided to produce more than just tempeh–focusing on familiar alternatives to meat. In 1985 Tempeh Works changed its name to Lightlife Foods and introduced Tofu Pups, a tofu hot dog, made by another company using Lightlife's formula. The product took off and in 3 years Lightlife had to return to the well for expansion funding. This time five private and public lenders put together a $750,000 package. Lightlife used the funds to add a hot dog factory to its building, enabling the company to make Tofu Pups in-house. As soon as this factory began operation, the company started to be profitable.

Within 3 months after Smart Dogs were launched in June 1992, they were outselling Tofu Pups, which had been the company's first major success. A second boom had started. A $1.2 million SBA-guaranteed loan from Greenfield Savings Bank in 1993 funded Lightlife's latest expansion, which nearly tripled the size of the building from 11,000 to 30,000 square feet. Wonderdogs were launched in 1994 with a mild flavor, cartoon superhero mascot, and 1 gram of fat per serving; they are designed to appeal to kids' taste buds, imagination, and nutritional needs.

A photo shows Michael Cohen and Chia Collins.

2834. Krizstan, Jan. 1995. Re: Work with seitan and soyfoods in Slovenia. Letter to William Shurtleff at Soyfoods Center, March 1. 2 p. Typed, with signature.

• ***Summary:*** Jan phoned on 6 January 1995, then wrote a long letter dated March 1. His first name is pronounced "Yan." He was born in 1967 in Ljubljana, the capital of Slovenia, where he now lives. He worked for two years on Slovenian television, then in 1992 he quit because of unhealthy working conditions. He had already been a vegetarian for 2 years and he knew that many people are looking for and need healthy food, but they don't know how to get it. So he started a small private company named "Izvor" ("The Source") and in Sept. 1992 started (together with friends) to publish a magazine in Slovenian titled *Bio Novice* ("Bio News") that would connect these people. The main subjects were growing plant foods in accordance with Nature, healthy diets, ecology, alternative medicine, and the culture of peace and non-violence. "It was very difficult, because we started with almost no money, but we published 15 issues of *Bio News.* In December 1994 we had to stop publishing because of big financial problems.

"One of my friends [Vesna Crnivec] translated some paragraphs from *The Book of Tofu* about preparing home made tofu and made an article. We published her translation, a summary of the Introduction, and some of Akiko's illustrations in one of the first issues of *Bio News* (See issue 5/6, letnik 1993, p. 40-44). Some readers (especially women) showed great interest in it! Later I translated some paragraphs from *The Book of Tofu* and published them (together with Akiko's good illustrations) in issues 14 and 15 of *Bio News.* At the end of the article I gave the address of Soyfoods Center for all people interested in ordering your books.

"Last year I was attracted to making seitan and tofu from organic wheat and soybeans. Mr. Mirko Trampus is my very good friend. He has an organic farm in Metlika (1 km from the border with Croatia, in southeastern Slovenia). He has been growing wheat, soybeans, and daikon organically for the last 6 years with very good results. We decided to make a kitchen in his house for transforming Mr. Trampus' soybeans, wheat and daikon into tofu, tempeh, natto, soymilk, seitan and pickled daikon.

"A few days before New Year 1995 I visited all Ljubljana's bookshops, because I wanted to find some information about tofu and seitan. What a surprise! There was your *Book of Tofu.* I found it once again and bought a copy. I was so happy. Not far away I found the book *Cooking with Seitan* by Barbara and Leonard Jacobs, with a foreword by Aveline Kushi.

"Now (at the end of February 1995) we are making about 50 kg of seitan per week by hand. We sell it in some 20 healthy food shops all over Slovenia." He would like to start making tofu, soymilk, natto, and tempeh, Later he would like to make miso too. "Our aim is preparing 100% vegetarian foods of the highest possible quality, made from organically grown soybeans, wheat, and daikon. Now we need more information. Presently Mr. Trampus grows about 12,000 kg of wheat and 9,000 kg of soybeans per year. Prof. Spanring is our good friend. He helped Mr. Trampus to choose the best varieties of soybeans for making tofu and the wheat with the highest gluten content for seitan. Now we use hard winter wheat. We mill it into flour in our own mill with stones.

From 100 kg of wheat flour we get about 23 kg of very dark brown seitan.

"Up until now, all of the starch has been rinsed by hand, but we have constructed an automatic rinsing machine which will be prepared for use very soon. We presently rinse using only warm water at about 30ºC. We discard all the starch (putting it on compost heaps on the fields), but later we will use it as an ingredient in cooked soymilk puddings."

Jan would like to order *The Book of Tempeh.* He is looking for a source of tempeh starter. Tempeh is largely unknown in Slovenia, but he would like to introduce it because it is a healthy food and tastes very good. Address: Mestni trg 22/1, 68330 Metlika, Republic of Slovenia. Phone: (386) 068 59 481.

2835. Gruenwald, R. Jay. 1995. Update on The Simple Soyman, The Bountiful Bean, Long Life Foods in Minnesota, and Kyoto Food Corp. (Terre Haute, Indiana) (Interview). *SoyaScan Notes.* March 13. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Jay has been with The Simple Soyman for 12 years. On 23 Sept. 1994 The Simple Soyman bought The Bountiful Bean, moved it from Ridgeway to Milwaukee, and merged it into The Simple Soyman. In Dec. 1994 he moved the new larger company to a new address: 3901 North 35th St. (P.O. Box 16677), Milwaukee, Wisconsin 53216. Phone: 414-444-TOFU. Simple Soyman still produces Hummus and Taboolie [both contain tofu], tempeh, and tofu under the Bountiful Bean brand. The Simple Soyman will continue to make its Deepockets (Calzone-style [Italian] and Empanada-style [Mexican]; both contain frozen tofu), dips, spreads, etc. Most are made with soy. The company does a lot with frozen tofu, using it in place of TVP, which causes intestinal gas. The business is still struggling, "but hopefully with the addition of The Bountiful Bean business and distribution in Madison, we'll get going. Being in this for 12 years now, we've got to start making a living at it pretty soon. Basic tofu is still not very profitable. We started working out of the Magic Bean's kitchen with one product. When they went bankrupt we basically bought their equipment and moved to 4877 N. Green Bay Ave., Milwaukee, Wisconsin. The building we are in now is 4,500 square feet. The factory is nicely laid out."

R. Jay has heard from a packaging company that a new tofu company named Long Life Foods is scheduled to start in Perham, Minnesota. They are said to be using a special type of package (not water pack) which gives the tofu a very long shelf life.

Kyoto Food Corp. (KFC) in Terre Haute, Indiana, declared bankruptcy in about May or June 1994. He heard that KFC had a verbal agreement from a big chain like Kroger to carry their tofu, then Azumaya, which was the brand Kroger was carrying, lowered their price. So Kroger stayed with Azumaya and that dealt the death blow to KFC [not true; see March 1995 interview with William Roach]. They were trying to sell their building and plant (which they owned and designed to make tofu) for about $1.3 million. He thinks that the company was run by a couple, an American man and a Japanese woman [William and Toni Roach]. Bruce Rose is thinking of buying the company. Address: Owner, The Simple Soyman, 3901 North 35th St. (P.O. Box 16677), Milwaukee, Wisconsin 53216. Phone: 414-444-8638.

2836. Gokavi, Sumangala S.; Vaidehi, M.P. 1995. Acceptability of assorted tempe based products. *Beverage & Food World* (*Bombay*) 22(2):10-12. March. [14 ref]
• ***Summary:*** This study was conducted to introduce various types of tempeh and their products to India so they can be adopted by Indian housewives; they were evaluated by a trained panel of judges. Soy combined well with maize, jowar, wheat. Well accepted made from maize-soy were: Chips, toffees, beverage, biscuit, chapati, laddoo, porridge. From jowar-soy: Toffees, curry. From wheat-soy: Biscuit. From: Rice-greengram-carrot: Chips, toffees, beverage, biscuit, laddoo, porridge. Address: Dep. of Rural Home Science, Univ. of Agricultural Sciences, Hebbal Campus, Bangalore 560 024, India.

2837. Golbitz, Peter. 1995. Traditional soyfoods: Processing and products. *J. of Nutrition* 125(3S):570S-572S. March. Supplement. First International Symposium on the Role of Soy in Preventing and Treating Chronic Disease. [9 ref]
• ***Summary:*** Contents: Introduction. Soymilk. Tofu. Tempeh. Miso. Soy sauce. Address: Soyatech, Inc., Bar Harbor, Maine 04609. Phone: 360-379-9544.

2838. Hutchins, A.M.; Slavin, J.L.; Lampe, J.W. 1995. Soybean feeding and urinary isoflavonoid phytoestrogen and lignan excretion in healthy men (Abstract). *J. of Nutrition* 125(3S):802S. March. Supplement. First International Symposium on the Role of Soy in Preventing and Treating Chronic Disease.
• ***Summary:*** Urinary isoflavonoids (genistein, daidzein, O-desmethylangolensin [ODMA] and equol) were greater and urinary lignans (enterodiol and enterolactone) were lower in soy-supplemented diets. However isoflavonoid and lignan excretion were similar between diets in which a fermented soy product (tempeh) and unfermented soybean pieces were fed. Thus fermentation of soybeans apparently does not effect these excretions. This research was supported by the Minnesota Soybean Research and Promotion Council. Address: Dep. of Food Science and Nutrition, Univ. of Minnesota, St. Paul, MN 55108.

2839. Rose, Richard. 1995. Sharon's Finest is moving towards hemp products (Interview). *SoyaScan Notes.* April 3. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** Richard first introduced the idea of using hempseed protein in natural food products in America. His is still the only company making such products, and demand for them is growing rapidly. "Our business is moving toward hemp." He recently published a brochure titled "Hemp Food," that explains the many benefits of growing hemp. Many people still do not realize that hemp is not the same as marijuana; they are different plants.

Sharon's Finest now makes HempRella (a non-dairy cheese alternative containing 5% milled hemp seeds) and Hempeh Burger (a soybean and rice tempeh burger containing 10% whole hemp seeds). The future of Hemp Foods lies in sprouting hemp seeds then processing them to make milk (similar to making soymilk from the soybean), yogurt, ice cream, tofu, cheese, meat alternatives, and the like. Address: President, Sharon's Finest, P.O. Box 5020 (616 Davis St.), Santa Rosa, California 95402-5020. Phone: 707-576-7050.

2840. Krizstan, Jan; Trampus, Mirko. 1995. Re: Update on work with seitan and soyfoods in Slovenia. Letter (fax) to William Shurtleff at Soyfoods Center, April 28. 3 p.
• ***Summary:*** "The Slovenian people are really very happy to be out from under the oppressive rule of Yugoslavia and Belgrade now.

"Mirko was very busy during March and April mounting ceramic tiles all over our tofu and seitan kitchen walls, preparing the soil for soybeans, and experimenting with an interesting sort of spring wheat. He's almost finished now. The gas line and outdoor gas tank are already installed. Next week he will be mounting tiles on the floor. Our new kitchen (5 by 6 meters, formerly a garage) is attached to the old one (3.5 by 5 meters), which we still use for making seitan. We hope to put all equipment in our new kitchen and go to Austria to buy natural nigari at the end of next week." They will use the old kitchen for storing soybeans and wheat.

Jan and Mirko would like to buy tofu and soymilk equipment from Wally Rogers of Bean Machines but it is too expensive for them. In the new kitchen they plan to have: one caldron for cooking seitan, two pressure cookers for making tofu, some stainless steel working tables, a semi-automatic machine for rinsing starch out of wheat dough for seitan production, 2 chambers for cooling pressed tofu, a curding barrel, and vacuum packaging machine–all of them second hand, except the rinsing machine which Jan designed.

Jan first made seitan in August 1993 on a very small scale and by hand at his home kitchen. "It was sold 'wild' on the market–only in healthy food shops in Ljubljana, whose owners dared to sell it without legal permission." For details on this history and development of this seitan product see Izvor 1993.

"I was strongly interested in macrobiotics for some time. I first heard about it a a macrobiotics course organized by a middle-aged woman, who became one of my best friends. But I've always been very curious. So I asked myself: 'Is there any better way of eating and living than macrobiotics?' I tried a vegetarian diet without milk, fish, eggs, or honey, and with a lot of fresh fruits, nuts and wholesome bread (all organically grown) for a while. It was even better than macrobiotics and it took less time for food preparation." Now Jan eats only fruits and nuts, and sometimes seitan or tofu. Address: Mestni trg 22/1, 68330 Metlika, Republic of Slovenia. Phone: (386) 068 59 481.

2841. Messina, Mark. 1995. Fiber, soyfoods, and health. *Soy Connection* (*The*) (*Chesterfield, Missouri–United Soybean Board*) 3(2):1-2. Spring. [3 ref]
• ***Summary:*** "Fiber has been extensively studied in connection with the risk of chronic disease, particularly diseases related to the colon. Americans currently consume about 10-12 grams of fiber per day, far less than the recommended 20-35 grams per day... Populations consuming plant-based diets often consume 50 grams or more of fiber per day." People in traditional societies consuming such a diet often have little or no intestinal disease.

Dr. Denis Burkitt, a pioneer in studying the role of fiber in disease prevention, considered diverticulitis to be a deficiency disease of Western civilization. Research supports the role of fiber in preventing diverticulitis. Dr. Burkitt coined the phrase "the bigger the stools the smaller the hospital."

"Although there is some disagreement, evidence suggests fiber intake is inversely related to risk of colon cancer. Data also suggests fiber decreases breast cancer risk, perhaps by binding estrogens in the intestine and thereby preventing their re-absorption.

It is safer to get one's fiber from whole foods rather than from fiber supplements. "First, there are many different types of fiber in the foods we eat. Each can have a different physiological function and there are examples of different fibers [such as wheat bran and psyllium] acting synergistically to reduce risk of disease. Fiber supplements are often limited to one type of fiber.

"Second, in many cases it is not clear whether it is the fiber per se in foods, or some fraction/component closely associated with the fiber that is responsible for the reported beneficial effects. In some instances it is probably a combination of both. Although tofu and soymilk are low in fiber, two good sources of fiber are whole beans and tempeh." Address: PhD.

2842. Walker, Morton. 1995. Concentrated soybean phytochemicals. *Healthy & Natural Journal* 2(2):58-60. April. [12 ref]
• ***Summary:*** Contents: Introduction (Designer Foods Symposium III). Cancer inhibitors in soybeans. Prostate cancer cured by fermented soybean drink (Haelan 851). The therapeutic characteristics of Haelan 851. Note: The address,

phone number, and fax number of Haelan Products Inc. in Metairie, Louisiana, is given.

Soybeans contain five different types of anti-cancer agents: protease inhibitors, phytate, phytosterols, saponins, and isoflavones. The latter are plant estrogens with strong inhibiting effects in hormone-related malignancies such as prostate, ovarian, cervical, and breast cancers. Isoflavones are found in a variety of soy foods, including soy milk, tofu, tempeh, miso, textured vegetable protein, soy flour, soy nuts, and soybeans. "The isoflavone component which most excites the medical research community is genistein. It's an overpowering suppressor of the oncogene enzymes that ordinarily stimulate pathological cell growth." Address: Medical Journalist, 484 High Ridge Road, Stamford, Connecticut 06905-3020.

2843. Hutchins, Andrea M.; Slavin, J.L.; Lampe, J.W. 1995. Urinary isoflavonoid phytoestrogen and lignan excretion after consumption of fermented and unfermented soy products. *J. of the American Dietetic Association* 95(5):545-51. May. [57 ref]

• ***Summary:*** Healthy men were fed diets containing either tempeh or pieces of unfermented whole dry soybeans for 9 days. Urine samples were analyzed for isoflavonoid and lignan content. Although fermentation of soybeans led to a loss of isoflavones, the isoflavones in tempeh appeared to be more available to humans than did the isoflavones in unfermented soybeans. This discovery suggests that fermentation increases the availability of isoflavones in soy.

Gives the content of daidzein, genistein, daidzin, genistin. Address: 1-2. Dep. of Food Science and Nutrition, Univ. of Minnesota, St. Paul, MN 55180; 3. Assoc. in cancer prevention, Div. of Public Health Services, Fred Hutchinson Cancer Research Center, 1124 Columbia St., MP702, Seattle, Washington 98104.

2844. Liu, Keshun; Orthoefer, Frank; Thompson, Keith. 1995. The case for food-grade soybean varieties. *INFORM* (*AOCS*) 6(5):593-96, 598-99. May. [10 ref]

• ***Summary:*** Contents: Introduction. Food beans vs. oil beans. Traditional soyfoods: Soymilk, tofu, toasted full-fat soy flour [kinako], soy sprouts, soy sauce, miso, tempeh, natto. Soy protein ingredients: Soy grits and flour, soy protein concentrates, soy protein isolates. Soyfood nutrition. Current size of food bean market. Breeding of food beans. Conclusions.

"Oil/meal beans include all the commonly produced soybeans." The oil is typically used for food and the meal for livestock feed. However the "new varieties of food soybeans" are generally exported to countries in East Asia for preparation of Oriental soyfoods. Table 3 compares the attributes of food beans vs. oil beans. Seed size: Large vs. small to large. Seed uniformity: High vs. no preference. Hull color: White-yellow vs. yellow. Hull quality: Thin, firm vs. no preference. Hilum color: Clear to buff vs. clear to blank. Protein content: High vs. medium to high. Oil content: Low to high vs. high. Cleanliness: U.S. Grade 1 or better vs. any grade. Major applications: Tofu, soymilk vs. oil, defatted meal.

In addition to their use in making traditional soyfoods, the "new food-grade varieties," especially those with high protein content, have been marketed for preparation of toasted full-fat soy flour, defatted soy flour, and soy protein concentrates and isolates.

Photos show: (1) Keshun Liu, Frank Orthoefer, and Keith Thompson. (2) Color and size comparison of soybeans for food use and those intended for crushing (color). The "food beans" are larger than the "oil beans."

Note: This is the earliest English-language document seen (July 2001) that contains the term "oil beans" or the term "oil/meal beans," both used in contrast to "food beans" or "food soybeans." This is also the earliest English-language document seen (July 2001) with the term "food-grade" (or "food grade") used in the title to refer to soybeans or soybean varieties. Address: 1. Project Leader, Soyfood Lab., Jacob Hartz Seed Co. Inc., 901 N. Park Ave., Stuttgart, Arkansas 72160; 2. Vice President for research and development, Riceland Foods Inc., P.O. Box 927, Stuttgart, AR 72160; 3. Vice president, International Soyfood Sales, Jacob Hartz Seed Co.

2845. Packaged Facts. 1995. The meat and dairy alternatives market. New York, NY: Packaged Facts. xii+ 162 + 42 + 6 p. May. 28 cm.

• ***Summary:*** In 1994 retail sales of these products reached an all-time high of $286 million, and these sales are projected to top $660 million in 1999. This very interesting report can be ordered from Packaged Facts, 625 Avenue of the Americas, New York, NY 10011. Phone: 212-627-3228. Price: $2,150. The authors were Sarah and Peter Starr, though their names do not appear in the report. The product director was David Lumis.

Contents: Part I: The products. Scope of the report (Vegetarian products sold as meat or dairy alternatives, products not covered), history of the industry (an emerging market, part of the vegetarian movement, soybeans–an ancient food of Asia, soybeans arrive in the new world in the 18th century, Kellogg family starts health foods industry, makes first meat analogs, Seventh-day Adventists and others produce tofu and meat alternatives in the 1920s, Henry Ford early proponent of soybeans, meat analogs commercially developed in the United States in the 1940s, non-dairy beverages, growth of "Americanized" meat and dairy analogs booming), product definition (foods used to replace meat or dairy products, description of ingredients–tofu, tempeh, soymilk, okara, soy protein concentrates and isolates, textured vegetable protein, wheat gluten and seitan), product categories (three main categories of meat and dairy

alternative products, meat alternatives, dairy alternatives, prepared meals), government regulations (the FDA and FTC, NLEA labeling considerations {went into effect in May 1994, making the USA the world's first country to have mandatory nutrition labeling}, soy protein allowed in meat products without special labeling, bovine growth hormone), industry associations (the Soyfoods Association of America, the American Soybean Association, the Vegetarian Awareness Network).

Part II: The Market. Introduction (Retail sales of meat and dairy alternative products by category–1989-94–graph, retail sales of dairy alternatives products by segment–1989-94–graph), market size and growth (market is difficult to monitor, 1994 retail sales estimated at $286 million, dairy alternatives surpass $142 million, meat alternatives soar to $132 million, prepared meals grow steadily to over $12 million, estimated retail sales of meat and dairy alternative products by category–1989-1994–table, growth in milk substitutes segment leveling off but still in double digits, cheese alternatives segment also experiences slight slow-down in 1994, non-dairy desserts–a slow-growth segment, estimated retail sales of dairy alternative products by segment–1989-1994–table), factors in market growth–overall market (maturing population and interest in nutrition, new dietary guidelines, medical community accepts plant-based diet, studies show vegetarian diet equals a healthier–longer life, soy might help to prevent heart disease and cancer, consumers now approve of vegetarian diets, increased demand for vegetarian foods, youth adopts meatless meals, exposure through foodservice, mass market begins to support meat and dairy alternatives, products in wider distribution, innovative new products, improved technology equals better taste, increased funding for soyfoods through foreign capital, pricing continues to limit market, image–taste and texture still a problem), factors in market growth–meat alternatives (concern about health hazards of meat, fat calories targeted by labeling law, an alternative to chicken and fish, ecological and social considerations will propel meatless meals, meatless meals difficult to handle by foodservice), factors in market growth–dairy alternatives (milk substitutes enter dairy case, awareness of lactose intolerance on the rise, taste profile limits acceptance, cheese alternatives–are they healthier?, projected retail sales of meat and dairy alternative products by category–1994-1999–graph {p. 34}, projected retail sales of dairy alternative products by segment–1994-1999–graph {p. 35}), projected market growth (overall market to reach $662 million in 1999, meat alternatives and prepared meals to lead growth, projected retail sales of meat and dairy alternative products by category–1994-1999–table, growth of milk substitutes and other dairy alternatives expected to slow somewhat by 1999, projected retail sales of dairy alternative products by segment–1994-1999–table), market composition (meat alternatives will outsell dairy alternatives, share of sales by product category–meat and dairy alternatives–graph, soy-based ingredients most frequently used in meat-like products, protein ingredients used in meat-like products by number of products made with ingredient–1990-1992–table, bulk of dairy alternative sales from milk substitutes, share of sales by product segment–1989 vs. 1994–graph, sales by retail outlet, share of sales by retail outlet–meat and dairy alternatives–1994–graph).

Part III: The marketers. The marketers (About 30 significant marketers–most small, major companies move into the market, meat alternatives–other mass-market players, meat alternatives–natural foods players, the leaders in milk substitutes, cheese alternative market leaders, the leaders in non-dairy desserts, prepared meals market leaders, selected marketers and brands of meat and dairy alternative products–chart), market and brand shares (mass-market leader Worthington Foods challenged by ADM/Pillsbury Green Giant Harvest Burger, wholesome and hearty growing fast, Boca Burger boogies by the Bystanders, marketer and brand shares of meat alternative products sold through supermarkets–1993 vs. 1994–table, natural foods sales of meat alternatives more fragmented, Worthington is leader in natural foods stores, White Wave and Lightlife hold second and third place, estimated marketer and brand shares of meat alternative products sold through natural foods stores–1994–table, many small regional players capture local markets, Eden Foods leads in milk substitutes, estimated marketer and brand shares of milk substitute products mass-market and natural foods stores–1994–table, Imagine Foods' Rice Dream is leading rice beverage, other vegetable beverages, Tree of Life's Soya Kaas holds leading share of cheese alternatives market, estimated marketer and brand shares of cheese alternative products sold through natural foods stores–1994–table, Tofutti holds top market share in frozen desserts, Fairmont Foods establishes lead in supermarkets, marketer and brand shares of prepared meals sold through supermarkets–1994–table, natural foods prepared meals–many brands and no one leader), competitive situation–overall market (marketers compete primarily through new product introductions, growth through mergers and acquisitions). Continued.

2846. Packaged Facts. 1995. The meat and dairy alternatives market (Continued–Document part II). New York, NY: Packaged Facts. xii+ 162 + 42 + 6 p. May. 28 cm.
• ***Summary:*** Contents: Continued from p. vi. Part III: The Marketers. Competitive situation–meat alternatives (Worthington pioneers Seventh-day Adventist vegetarian market, Miles Laboratories acquires Worthington–places Morningstar Farms in mass market, tofu drives natural foods market, soy frank marketers exploit tofu opportunities, tempeh–another meat alternative ingredient gains interest, wheat-based alternative seitan expands presence, Worthington places tofu patties in natural foods

stores–changes hands again, Wholesome and Hearty develops foodservice distribution, meatless burger market heats up, pattie competition fierce in natural foods arena, ADM/Pillsbury alliance brings soy burgers to mass market, Worthington fights back, category differentiates in the early 1990s, soy attacked by soy-free burger companies, meat alternative marketers cut the fat, low-fat sausages and franks, tightly targeted vegetarian fun foods and snacks, mass-market companies introduce ground meat analogs, natural product companies follow suit, Wholesome and Hearty seeks retail growth, others seek lucrative foodservice market), competitive situation–milk substitutes (early market limited to ethnic community, Edensoy a big hit–Vitasoy responds, new lines introduced, competition–domestic manufacturing and larger containers bring down soy beverage prices, flavors and packaging distinguish early products, Westbrae introduces first low-fat soymilk, fortification has become key selling point, Eden's fortified product suits strict vegetarians, new package sizes expand market, re-closable–easy to pour, rice beverages–line extensions grab shelf space, Wholesome and Hearty's almond beverage, 100% organic products, a fresh–new market–some products shift to dairy case, mass-market interest), competitive situation–cheese alternatives (Seventh-day Adventists start category, first natural foods cheese alternative not dairy-free, handful of marketers compete on price in natural foods arena, new products parallel dairy-based mass market, a move toward lower fat and fat-free, seeking the most melt-able cheese, Sharon's finest finds innovative ingredients, marketers target vegan market), competitive situation–non-dairy desserts (Toffutti dominates, dairy-free puddings–one major player, non-dairy yogurt has yet to catch on), competitive situation–prepared meals (flavored tofu and seitan expanded into meals, Legume is early innovator, cheese alternatives in prepared meals, other companies dive into prepared meals, action has been in natural foods, supermarket products have not succeeded), competitive profiles (The Archer Daniels Midland Co.–Grand Metropolitan PLC–Pillsbury division partnership, Amy's Kitchen Inc., A&A Amazing Foods Inc., Boca Burger Co.–Sun Foods, Eden Foods Inc., Fairmont Foods of Minnesota Inc., Fantastic Foods Inc., The Hain Food Group Inc., Imagine Foods Inc., Lightlife Foods Inc., Sharon's Finest, Tofutti Brands Inc., Vestro Natural Foods Inc., Vitasoy–USA Inc., White Wave Inc., Wholesome and Hearty Foods Inc., Worthington Foods Inc., Yves Veggie Cuisine Inc.), marketing trends (updated packaging, burger market segmenting into natural and mass market, Worthington–a master at working both markets, hamburger look-alikes crossing back into natural foods, veggie patties crossing into mass market, nostalgia–creating brand loyalty, marketers expanding into other categories, moving into the frozen breakfast section, retail displays, pushing into new distribution channels), new product trends (new–improved packaging, light and healthy, product names emphasize healthy, fat-reversal–mass-market burger-substitutes gaining fat, ground meat alternatives, new flavors and varieties–many gourmet and upscale, ethnic–especially Mexican and Southwestern, convenience, technology produces better mimics, mixing soy with grains and other ingredients, mainstreaming health foods, natural ingredients preferred–organic even better, selected new product introductions–meat and dairy alternatives–1994-March 1995–chart), advertising expenditures (most advertising not measured, specialty magazines are preferred medium, radio is another alternative, little consumer advertising, Worthington outspends competition, ADM-Pillsbury spends millions to launch Harvest Burger in 1994, Edens Foods targets mass market, Fantastic Foods' first major spending), advertising positioning (good health is overlying theme, and fat is prime concern, vegetables are a solution to a bad diet, milk substitutes advertised to lactose-intolerant market, highlighting a sense of the familiar, foods children love, traditional burger images used to woo mass market, vegetarian appeal used for meatless patties, organic is important feature in natural foods, examples of consumer advertising), consumer advertising (consumer promotions not heavily used, money-off coupons from several companies, new lines offer more generous rebates, recipes and books educate consumers, in-store promotions–the White Wave Center, marketers join forces in advertorial, sponsoring sports events–a healthy fit, 25 years of earth day, non-profit tie-ins, Turtle Island's recycling program, other types of promotions, examples of consumer promotions), trade advertising and promotions (three key trade publications, trade ads also used as consumer ads, trade ads scheduled to run in convention issues, trade ads announce growing business, editorial promotions, reaching retailers, example of trade ads). Continued.

2847. Packaged Facts. 1995. The meat and dairy alternatives market (Continued–Document part III). New York, NY: Packaged Facts. xii + 162 + 42 + 6 p. May. 28 cm.
• ***Summary:*** Contents: Continued from p. x. Continued Part IV: Distribution and retail. Distribution (Two distinct channels, mass-market products–warehouse delivery used most, natural foods products–independent distributors used most, distributors offer wide range of services, direct buying, several large distributors dominate health food channel, margins for the two channels differ, brokers support marketers' sales efforts, marketers' sales forces work with brokers), at the retail level–natural foods stores (the leading outlet–natural foods stores, soy-based products the heart and soul of natural foods store, products sold in several locations, stores adding refrigerator and freezer space, margins, product price comparison, meat alternatives–table, milk substitutes–table, cheese alternatives–table, frozen non-dairy desserts–table, prepared meals–table, in-store demos are top promotional activity, an increase in store

advertising, examples of retail promotions), at the retail level–mass market (most products not in mass market, store placement of meat alternatives varies, store-within-a-store, increased selection and space, targeting the vegetarian consumer, margins, warehouse clubs, *Cergro* pricing data). Part V: The consumer. Consumer use–soyfoods (About 25 million U.S. adults use soyfoods, natural foods shoppers more likely to purchase soy products, demographics of meatless burger consumers, use by type–tofu and soy burger use most common, other types of soyfoods used by about 2% of consumers, types of soyfoods eaten five or more times in the past year–table), the vegetarian consumer (what is a vegetarian, 12-22 million vegetarians and growing, small number of strict vegans, meat restrictors–a broader target of 77 million, who are vegetarians, demographic characteristics of vegetarians–table), consumer attitudes (main reason for choosing vegetarian foods, most important reason for becoming a vegetarian–table, concern about health higher among semi-vegetarians, most important reason for choosing vegetarian foods–table, cholesterol-fat primary health concerns, primary health concern when becoming a vegetarian–table, grocery store shoppers more influenced by doctor's orders, health also key reason given by restaurant diners, fat–salt–fiber and cholesterol top health concerns for meatless burger consumers, environment pollution tops list of other social concerns of vegetarians, vegetarians considered nutrition advisors, a slow transition to vegetarianism, attitudes about meat alternatives, room for improvement on taste, consumers have a positive image on soy, more interest in soymilk from natural foods shoppers). Appendix I: Examples of consumer and trade advertising and promotions [photocopies of ads]. Appendix II: Addresses of selected marketers.

Scope of the report: This is a study of vegetarian foods made to resemble meat and dairy products and sold at retail, mostly through supermarkets and health and natural food stores. These products include meatless burgers and luncheon slices, soymilk and rice milk, cheese alternatives, non-dairy desserts (usually non-dairy ice creams), and prepared vegetarian meals containing meat and dairy alternatives as major ingredients.

Products not covered: (1) Bulk and packaged tofu, unflavored tempeh–However products such as tofu- or tempeh burgers are covered. (2) Margarine, non-dairy creamer, non-dairy whip toppings, and egg substitutes. Although the first three of these categories are alternative to dairy products, they have become well accepted in the American diet and are not necessarily purchased by consumers wishing to avoid dairy products. "Also, the sheer size of these categories–each of which is many times larger than the overall meat and dairy alternatives market–would drastically skew the market numbers and trend information away from the products that are the focus of this report. For similar reasons, egg substitutes are also excluded."

2848. Krizstan, Jan; Trampus, Mirko. 1995. Re: Update on work with seitan, tofu, and shoyu in Slovenia. Letter (fax) to William Shurtleff at Soyfoods Center, June 19. 3 p.
• ***Summary:*** Jan and Mirko have received and enjoyed reading copies of *Tofu & Soymilk Production, The Book of Tempeh,* and *The Simple Soybean and Your Health* sent by Soyfoods Center. We made our first two cauldrons full of tofu on the night of June 12–52 kg of very sweet, aromatic and full bodied firm natural nigari tofu from 32 kg of Mirko's dry organic soybeans. We were so happy. We supply all of our retail outlets (34 of them as of today) with copies of simple introductory ads (some information about what is seitan and tofu, the way of Mirko's organic farming, and some recipes for preparing tofu and seitan). Each customer who comes to a healthy food shop and buys our organic (or other' regular) seitan or tofu gets such a copy for free. We already have very positive feedback–people say that our recipes are very simple and understandable and the meals taste good. Making tofu and seitan is becoming a kind of meditation to us and we agree with the sentence in your *Tofu & Soymilk Production* that 'When the master becomes selfless, the tofu makes itself.' Of course, we found that we are apprentices–the real master is Tofu.

"Since May 19 some very ill people from Republic of Croatia have come here to Metlika to buy our tofu and seitan. We gave them some tofu, seitan and shoyu plus information for preparation of meals using tofu and seitan. Most Slovenian (and Croatian) people have never heard of shoyu or tamari until now. It feels so nice to help ill people with healthy foods." Address: Mestni trg 22/1, 68330 Metlika, Republic of Slovenia. Phone: (386) 068 59 481.

2849. Jacobi, Dana. ed. 1995. The natural health cookbook: More than 150 recipes to sustain and heal the body. New York, London, Toronto, Sydney, Tokyo, Singapore: Simon & Schuster. 271 p. . June. 25 cm.
• ***Summary:*** This is a selection of the best recipes published in *East West Journal,* compiled by Dana Jacobi, Dan Seamens, and the editors or *Natural Health* magazine. The recipes are generally low in fat, free of white sugar and other refined foods, and nutrient dense, based on grains, legumes, and vegetables; some contain fish and shellfish. Chapter 4 is titled "Seitan, tempeh, and tofu." Miso and soy sauce are used throughout as seasonings.

Contains recipes for Amasake dressing (p. 153), and Amasake scones (p. 191). Amasake (or Amazake) is defined in the Glossary of ingredients (p. 243). Address: New York City, NY.

2850. Soyfoods Association of America. 1995. A consumer profile of the soyfoods shopper. San Francisco, California. 100 p. *
• ***Summary:*** Contents: Executive summary. Overview.

1. U.S. population–Awareness of soyfoods: Number of consumers who have heard of soyfoods (most have heard of tofu, few have heard of tempeh), demographics of soyfood-aware consumers (consumers under age 60 more aware of soyfoods, soyfoods-aware consumers are more affluent, greater number of Easterners but awareness is nationwide, more likely to be married).

2. Soyfoods consumers–Demographics: Use of soyfoods (about 26 million soyfoods consumers–15 million eat tofu, consumers who use one kind of soy product more likely to use another type), demographics (younger households and baby boomers, household incomes skew higher, more than two-thirds are college-educated, employed in white-collar professions, women in soyfoods households less likely to be in clerical jobs, men working full-time–some self-employed, busy women in a variety of employment situations, one-third of soyfoods consumers have children at home, most in the east–proportionately more in the west, proportionately more in pacific, live in areas of greater population density, living the American dream, mostly home-owners).

3. Soyfoods consumers–Shopping and eating patterns: Frequency of eating types of soyfoods (most eat soyfoods infrequently, soy cheese used more frequently, regular users use soyfoods–especially soymilk–a lot, consumers of one type use other types more), where consumers buy soyfoods (groceries/supermarkets stores of choice for tofu, natural foods store shoppers more dedicated soyfoods consumers, meat substitutes purchased in mass-market, other soyfoods in natural foods stores, soymilk customers split between grocery and natural foods, miso popular in Asian stores), future purchase plans (more than 6 million consumers plan to use soyfoods more, soy hot dog–cheese and frozen dessert consumers most enthused about eating more soyfoods), the soyfood shopper's diet (seek low-fat/cholesterol/sodium/sugar foods, health interests vary by types of soy products tried), other red meat alternatives (most list fish and poultry as red meat alternatives, vegetarian foods favored by consumers of specific soy products).

4. Soyfoods consumers–Attitudes about soyfoods: Attributes of soyfoods (a positive opinion of soyfoods' health benefits–consumers approve less of taste and ease-of-use, soymilk and soy hot dog consumers most likely to agree that soyfoods are healthy, few consumers have negative health image of soyfoods, soy products users believe in soyfoods' special nutrients, soyfoods easier to use than public thinks, familiarity breeds affection, users of various soy products see cost savings, those who use specific soy products–especially tempeh–cannot find them where they shop, consumers of various types do not feel soyfoods are a problem for allergies), importance of organically grown (more than one-third of soyfoods consumers seek organically grown, attitudes about organic stronger among users of specific products).

5. Soyfoods consumers–Sources of product information: Where consumers first learned of soyfoods (word of mouth is primary source, promotion works for packaged products), why consumers first began to eat soyfoods (novelty and health are the prime motivators, soymilk consumers more concerned about specific health and lifestyle issues–soy burger consumers seeking low-fat meat substitutes), why consumers currently eat soyfoods (consumers less sure why they currently eat soyfoods, tofu–soymilk–and soy burger consumers more likely to have specific reasons), familiarity with health connections (consumers unfamiliar with some of soyfoods' health benefits–familiar with soyfoods' link to cholesterol and heart disease, both users and interested non-users aware of link to cholesterol and heart disease, core consumers not well-informed about other health benefits), sources of information (magazines and newspapers most common source of health information).

6. U.S. population–Why consumers aren't eating more soyfoods: Who is interested in eating more types of soyfoods (consumers would like to try new soyfoods), what would get consumers to eat more soyfoods (taste and lack of cooking suggestions are barriers to use, soy hot dog consumers seeking lower prices–soymilk shoppers seeking more outlets–tofu consumers want recipes, rural–southern and consumers seek lower cost–more affluent seek better taste).

7. Children and soyfoods: How often children eat soyfoods (among soyfoods households–two-thirds of kids age 2-12 eat these products, households with children age 2-12 eat more soy burgers–soymilk, children age 13-18 more likely to be infrequent soyfoods consumers, households with older children tend to choose same products as soyfoods consumers overall), children's attitudes about soyfoods (children's attitudes toward soyfoods are mixed–many parents cannot speak for their children).

8. The tofu shopper: Ways consumers use tofu most often (tofu use most often in stir-frys), why consumers eat tofu (consumers say they eat tofu because it is healthy), what influences brand choice (price–freshness and taste), why consumers aren't eating more tofu (tofu consumers are looking for new ways to use tofu), demographics (most tofu users are 30-59–those 60 and over avoid it, higher household incomes, tofu household heads are highly educated and have executive jobs, household size and marital status similar to average American, concentrated in more populated areas–East and West coasts).

9. The soymilk shopper: Ways consumers use soymilk most often (most often used as a beverage), why consumers use soymilk (non-specific health features and convenience attract soymilk users), what influences brand choice (freshness, quality, taste drive soymilk sales), why consumers aren't using more soymilk (cost and availability hinder use), demographics (younger households use soymilk, more affluent households, education and occupation, more multiple-person households, more Westerners and those in mid-size MSAs).

10. The soy-based meat alternatives shopper: Why consumers use soy-based meat alternatives (because they are healthier), what influences brand choice (taste and price), why consumers aren't buying/using more soy-based meat alternatives (cost, unfamiliarity, taste and availability hinder use, cost and availability factors are higher among users of specific products), demographics (soy burger users and interested non-users are younger, household income somewhat higher among meat alternatives users, college educated and graduates, white collar employees, two person households for some products–soy burgers mirror U.S. population, soy bacon use higher in East–burgers higher in central region, variations by types of products used).

11. The soy-based dairy alternatives shopper: Why consumers used soy-based dairy alternatives (for health reasons), what influences brand choice (taste primarily), why consumers aren't buying or using more soy-based dairy alternatives (cost an unfamiliarity hinder use), demographics (older and more affluent, educated and professionally employed, smaller size households–more singles, live in moderately populated areas, more concentrated in east and west).

12. Other soyfoods shoppers–Soy flour, tempeh, and miso: Demographics (soy flour consumers older–miso consumers most affluent, soy flour, tempeh and miso found in educated households, occupation status similar to other soyfoods shoppers, smaller households and more singles use tempeh, more soy flour users in low-density areas, east and west coasts for miso and tempeh).

Methodology. Questionnaire. Continued. Address: One Sutter St., Suite 300, San Francisco, California 94104. Phone: 510-935-9764.

2851. Soyfoods Association of America. 1995. A consumer profile of the soyfoods shopper. II. Methodology of collecting information. San Francisco, California. 100 p. *
• ***Summary:*** This survey was conducted by Market Facts, Inc., a market research firm based in Chicago, Illinois. Project directors for this report were Tim Redmond (American Soy Products) and Peter Golbitz (Soyatech, Inc.). Fieldwork was done by Sheri Hoffenberg (Market Facts). Analysis and Report: Sara M. Starr and Peter Starr (Starr Track). Price: SAA members $475. Nonmembers: $975.

The survey was conducted in two parts. In the first part a questionnaire was mailed to 20,000 people in the Market Facts database. Of these, 17,715 people mailed back responses, and of these 15,168 were completed and usable. Three questions related to soyfoods: 1. Have you ever heard of: Ten types of soyfoods are listed–Tofu, soymilk, soy flour, tempeh, miso soup stock paste, soy burgers, soy hot dogs, soy bacon or breakfast sausage, soy cheese, and soy frozen desserts. The respondent is asked to check those that he or she has heard of. 2. Which of these ten soyfoods have you eaten 5 or more times in the past year? The same list is repeated and the consumer is asked to check as indicated. 3. "I would eat more soyfoods if... (1) They were more accessible where I shop for food, (2) I knew better what to do with them, i.e. recipes, (3) I was better informed on the health benefits; (4) I thought they tasted good; (5) They were less expensive. Check all that apply.

Part II. From the 15,168 people who mailed back completed and usable responses to part I, 750 people were chosen to participate in a follow-up survey, which consisted of a 4-page questionnaire containing in-depth questions about consumption of and attitudes toward ten different types of soyfoods, purchasing motivations and patterns, and questions about children's attitudes toward soyfoods. The sample was divided into 3 groups. A questionnaire was mailed to a representative sample of 626 people (anyone who indicated they had eaten soyfoods at least 5 times in the past year). An over-quota sample of 67 soymilk users and 57 respondents who indicated that they were soy cheese users. This was done in order to ensure enough completed questionnaires among people who used soymilk and soy cheese. To ensure the sample quality, consumers were again asked about their use of various kinds of soyfoods. Consumers who responded affirmatively to using at least one kind of soyfoods were retained in the mail survey sample. Address: One Sutter St., Suite 300, San Francisco, California 94104. Phone: 510-935-9764.

2852. Webster, Donovan. 1995. Green days: How I became a vegetarian for one trying month and changed my life and health forever. *Men's Health.* June. p. 116-20.
• ***Summary:*** The author struggled through a vegetarian diet for one month, losing 9 pounds and the roll of fat around his belly. He ate quite a few meat alternatives. When it was over he felt like he was "on the horns of a dilemma. Vegetarianism had, obviously, been good for me–and it hadn't been that difficult. Yet I also knew that, long term, the carnivorous pleasures of meat-based life would drag me back into the darkness of their cave. So I struck myself a bargain. For two months out of every year, one in the spring and one in the fall, I would be a vegetarian. The rest of the year I'd eat meat when I wanted to, but I'd still endeavor not to do it all the time."

A sidebar by Greg Gutfeld titled "The Meatless Market" begins: "Time was, a vegetarian had to make do with sprouts, tofu, and voting for McGovern. But new to the supermarket shelves are numerous meatless items mimicking our favorite animal-derived pleasures–even things like hot dogs, hamburgers, bacon and deli meat." The following products were tasted and are evaluated as "Hey, not bad": Worthington Chik Stiks, Worthington Stripples, Garden Gourmet Vege-Nuggets, Boca Burger (the best liked), Worthington Stakelets, Lightlife Fat-Free Meatless Smart Dogs, Garden Mexi Patties.

The rest were "No, thanks, we'll pass": Worthington

Meatless Salami, Natural Touch Lentil Rice Loaf, Yves Veggie Tofu Wieners, Yves Veggie Pepperoni, Lightlife Italian Lean Links, Lightlife Organic Three Grain Tempeh, Bearitos Vegetarian Chili.

2853. Brewster, Elizabeth. 1995. The joy of soy: But will it play in Peoria? *Food Processing* (*Chicago*) 56(7):36. July.
• ***Summary:*** The editorial begins: "Up till now, I've never had a good reason to overcome my fear of tofu, the squishy, slimy white stuff that serious vegetarians love to tout as a wonder food. But I may have to eat all my anti-tofu words–and a little tofu, to boot–in the wake of the newfound love affair between soyfoods and health researchers... There's been an explosion of new research results released in the past few months, all headed toward the conclusion that soyfoods are the greatest thing to hit the food chain since sliced bread."

Products like tofu, tempeh, TSP (textured soy protein) and miso "are known–if they're known at all–as exotic Oriental foods eaten by counter-culture vegetarians, not red blooded Americans." Address: Managing Editor.

2854. **Product Name:** Tempeh.
Manufacturer's Name: G.B.Z. s.r.o.
Manufacturer's Address: Uherske Hradiste, Czech Republic. Phone: +42 632 636 16.
Date of Introduction: 1995. July.
New Product–Documentation: This company is making soy products in the Czech Republic. They have the book titled *Tempeh Production* by Shurtleff & Aoyagi. Now they would like to introduce some new products such as seitan, amazake, koji, soy yogurt, natto, and cheese alternatives.

Talk with a company representative who speaks German. 1997. Feb. 3. The company now makes tempeh and natto. They introduced each product about 18 months ago. They would like to introduce tofu and seitan as soon as possible.

2855. **Product Name:** Tempeh (Soy & Short-Grained Brown Rice).
Manufacturer's Name: Marcus Tribelhorn Tempeh. Renamed Upfull and Right in Oct. 1997.
Manufacturer's Address: 1535 10th St., Los Osos, CA 93402. Since Oct. 1997: 1216 2nd St., Los Osos, CA 93402. Phone: 805-528-2080.
Date of Introduction: 1995. July.
Ingredients: Soybeans*, short grain brown rice*, water, apple cider vinegar, and *Rhizopus oligosporus* (Tempeh culture). * = Organically grown and processed in accordance with the California.
Wt/Vol., Packaging, Price: 8 oz pack. Retails for $1.49 locally.
How Stored: Refrigerated.
New Product–Documentation: Talk with (call from) Marcus Tribelhorn. 1994. March 13. He would like to make tempeh near San Luis Obispo. Talk with Marcus. 1997. Oct. 31. He started making this tempeh out of his home in June or July 1995, and made it there for about 2 years. He sold it to only one account, Natural Flavors vegetarian restaurant in nearby San Luis Obispo; this restaurant is no longer in business. He recently gave his little company a name (Upfull and Right) and moved it into a commercial space at 1216 2nd St. in Los Osos, California 93402. They currently make 100 to 150 lb/week of tempeh, in 8-oz packages. It is sold locally, unpasteurized, mainly at 3 natural food stores in San Luis Obispo and at the salad bar in the university cafeteria. He still works full time with his regular job–to provide a steady source of income while he is building the business. He would like to make an "Autumn Tempeh" with grains representing the autumn colors.

Label and Recipe List #2 (with 3 recipes) sent by Marcus Tribelhorn. 1997. Nov. 6. Label: 3 by 3.75 inches. Black on beige. A tiny logo shows soy and rice holding hands. "Organic, local tempeh. Unpasteurized. Best kept frozen up to 4 months or refrigerated up to 4 days. Ripe dark spots enhance flavor and do not indicate spoilage."

At the bottom of the recipe sheet is written: "Upfull and Right Tempeh is brought to you locally by Marcus Tribelhorn and Sean Hendifar. Upfull is how you feel when you eat it and right is how it's grown."

Talk with Tod Dalessio. 2001. April 30. Last month he acquired the assets of Upfull & Right, which made tempeh for a few local accounts, probably never more than 400 lb/month. The former owners wanted to see the business continue. He plans to move the business to a new location and rename the company Acorn Foods. He and his wife have been making tempeh for the last month or two.

2856. Hamlin, Suzanne. 1995. Do you speak tofu or miso yet? *New York Times.* Aug. 9. p. C2. Living section. Wednesday. [1 ref]
• ***Summary:*** Tofu is a "spongy white block that is a major part of Asian diets... Asian restaurants have increased the popularity of tofu, which sustained much of the Woodstock generation. Still there is notable resistance to the chalky soybean derivative that is often called 'the cheese of Asia.'

"Johanna H. Dwyer, director of the Frances Stern Nutrition Center at the New England Medical Center Hospitals in Boston [Massachusetts], discovered this resistance during a four-year study on soy protein and estrogen levels in women. She couldn't find subjects that were willing to consume enough tofu to make the study valid." So she ended up using a concentrated soy protein in the study. Dr. Dwyer still feels that "tofu is a good part of a healthy diet, even if by itself it doesn't prove to be a magic bullet. And a good diet is one that is low in saturated fat, high in fiber, and rich in fruits and vegetables."

Each of the following common soybean products is

defined: Soy milk, tofu, tempeh, miso, soy flour, textured soy protein.

2857. Mountain Ark Trading Company. 1995. Catalog–September-December 1995 [Mail order]. Fayetteville, Arkansas. 30 p. 27 cm.
• ***Summary:*** Soy-related products in this mail order catalog include: Miso, soy sauce, tempeh, tofu, black soybeans, yellow soybeans, tofu dressings, natto miso. Also: Sea vegetables, amaranth, quinoa, teff, blue corn. The general manager is Nick Masullo. Address: P.O. Box 3170, Fayetteville, Akansas 72702. Phone: 1-800-643-8909.

2858. Orthoefer, Frank T.; Liu, Keshun. 1995. Soybeans for food uses. *International Food Marketing & Technology* (*Germany*) 9(4):4-8. Aug. [5 ref]
• ***Summary:*** Contents: Introduction. Traditional soy foods: Soy milk, tofu, toasted whole soybeans and full-fat soy flour, soybean sprouts, yuba, soy sauce, tempeh, natto, miso. Soy protein ingredients: Soy grits and flour, soy protein concentrates, soy protein isolates. Soy nutrition: Soy protein, fat and calories, phytochemicals. Food bean market. Summary.

Two "different types of soybeans have emerged: oil beans and food beans. This is particularly true in the US soy market..."

Of the fourteen phytochemicals, seven are present in soybeans. These seven are phytates, isoflavones, carotenoids, coumarins, triterpenes, lignans, and phenolic acids. Phytochemicals have been shown to affect human health as much as vitamins and minerals, and many of them have anti-cancer properties. The discovery of phytochemicals may change how the nutritional value of food is assessed.

The world market for soybeans for food use is estimated at about 1 million metric tons (tonnes). In Japan alone about 830,000 tonnes are made into soyfoods as shown in a pie chart as follows: Tofu (552,000 tonnes, 63.4%), miso (180,000 tonnes, 21.5%), natto (90,000 tonnes, 10.7%), soymilk (10,000 tonnes, 1.2%), soy sauce (5,000 tonnes, 0.6%), and others (22,000 tonnes, 2.6%). In the USA the food bean market is estimated at 50,000 tonnes. Other major markets for food beans are in Korea, China, Taiwan, Hong Kong, Singapore, Malaysia, and Thailand. Food-grade soybeans can be sold by that the growers at a premium of 5-20% above the base price. The demand for food beans is increasing steadily. Address: 1. Vice President, R&D, Riceland Foods, Stuttgart, Arkansas; 2. Project Leader, Soy Food Lab., Jacob Hartz Seed Co., Stuttgart, Arkansas.

2859. Stevens, Jane Ade; Stevens, Roger. ed. and comp. 1995. U.S. soyfoods directory. Lebanon, Indiana: Indiana Soybean Development Council. 31 p. 28 cm.
• ***Summary:*** This first edition of the directory contains more than 270 company listings. The cover is checkerboard red and white. Contents: Forward [sic, Foreword]. How to use the Soyfoods Directory (incl. Internet access). Soyfood descriptions (alphabetical): Edamame (Sweet beans), food use soybeans (whole soybeans), organically grown soybeans, isolated soy proteins, lecithins, meat analogs (meat alternatives), miso, natto, nondairy (soy) frozen desserts, okara, soy cheese & yogurt, soy flour & grits, soy grits, soy meal & flakes, soynuts, soyoil, soy protein concentrates, soy sauces (tamari, shoyu, teriyaki), soymilk, tempeh, textured soy proteins, tofu & products. Composition and nutrient content of soyfoods (large table, p. 7). Soybean products chart: From whole soybeans, from soybean meal, from soyoil and lecithin. Soyfood companies by product (products listed alphabetically).

Soyfood companies (alphabetical by company name; Each listing contains address, contact, phone, soy products, product names, distribution, to locate product, classification). Soyfood companies by state (alphabetical by state; California has by far the most). Professional associations and industry information resources. U.S. soybean facts. Soyfoods directory survey.

This directory's address on Internet's World Wide Web is http://www.in.net/soy. For more information or suggestions, call 1-800-275-7679. Address: Stevens & Associates, 4816 North Pennsylvania Street, Indianapolis, Indiana 46205. Phone: 1-800-275-7679.

2860. Viavant, Suzi Jenkins. 1995. Recetas de soya [Soya recipes]. Guatemala City, Guatemala: Plenty USA. 28 p. 22 cm. [Spa]
• ***Summary:*** Contents: Introduction. Why soya? Useful advice. Utensils and equipment. Recipes with tempeh (10). Recipes with tofu (14). The first page (unnumbered) states: "This book was developed to help the company Alimentos San Bartolo to introduce soyfoods into the diet of the highlands of Guatemala. It is also designed to teach the reader various methods of preparing delicious dishes using tempeh and tofu." The contributors included Elena and Agostine Xoquic, Yelin and Yatun Reanda, Marion Moore, Alice Hashimoto, and Alimentos de San Bartolo.

Talk with Suzi Jenkins Viavant. 1996. Aug. 15. Plenty USA published this book in Guatemala City, with financial aid from Food for All. It was available in about August 1995. The tofu recipes are based on the very, very firm tofu made by Alimentos San Bartolo in Guatemala. Address: 3967 South 900 E., Apt. 13, Salt Lake City, Utah 84124. Phone: 801-268-2717.

2861. **Product Name:** Naturally Tofu Drinks, Tempeh Burger, Vegetarian Chili, Meatless Healthy Bologna, Vegetarian Sloppy Joe.
Manufacturer's Name: Wellwide International Ltd. (Importer).
Manufacturer's Address: Room 2905 Wah Yin House,

Wah Kwai Estate, Hong Kong. Phone: 852/2549-1173.
Date of Introduction: 1995. August.
New Product–Documentation: Listing in '95-96 Soya Bluebook, p. 100. The company is an importer. Contact Della Leung, Director.

2862. Fallon, Sally W.; Enig, Mary G. 1995. Soy products for dairy products? Not so fast. *Health Freedom Newsletter* (*Monrovia, California*) 14(5):12-20. Sept. [35 ref]
• ***Summary:*** Contents: Introduction. History of the bean. Fit for human consumption? Marketing the soybean? Processing denatures and dangers remain. Soy formula not the answer. Fabricated soy foods. Cancer preventing or cancer causing? Soy products are not complete. Only fermented soy products are safe. Another look at milk. Processing is the problem [that transforms healthy milk products into unhealthy ones]. Quality dairy products are available. Butter is a healthy food. Homemade formula best for babies. Contains two recipes for homemade formula: Milk based formula (based on unhomogenized raw organic milk plus lactose, cod liver oil, coconut oil, etc.). Milk free formula (based on 3½ cups of homemade broth, made from beef, lamb, chicken, or fish).

This article is written to scare people "who have turned to soy products as substitutes for dairy products," and to sing the praises of natural (fresh, raw, and organic) dairy products. It is loaded with so much incorrect information and false conclusions about soybeans and their alleged dangers to human health that one does not know where to begin in starting to refute them. To take just a few such statements: (1) "The Chinese did not eat the soybean as they did other pulses (legumes) such as the lentil, because the soybean contains large quantities of a number of harmful substances." Fact: The soybean, processed into a host of soyfoods using simple technologies, has been the main legume consumed in China since ancient times. It has long been referred to as "The cow of China."

(2) Trypsin inhibitors in soybeans are "not completely deactivated during ordinary cooking and can produce serious gastric distress, reduced protein digestion and chronic deficiencies in amino acid uptake." Facts: The SoyaScan database contains 386 articles on trypsin inhibitors. When active, these proteins inhibit trypsin, a digestive proteolytic enzyme secreted by the pancreas, which helps us to digest proteins. Fortunately, trypsin inhibitors are almost completely deactivated by the typical cooking of soybeans to make soyfoods. There is no scientific evidence that the small percentage remaining has any adverse effects on human health, digestibility, or amino acid absorption. A considerable body of research, starting in the 1970s, shows that trypsin inhibitors have anti-cancer properties.

(3) "The soybean also contains hemaglutinin [sic, hemagglutinins], a clot promoting substance that causes red blood cells to clump together." Fact: Like trypsin inhibitors, hemagglutinins are inactivated by ordinary cooking and have been a non-issue in the scientific literature for at least 10 years.

(4) Soybeans are high in phytic acids or phytates, which can cause health problems. "Only a long period of fermentation will significantly reduce the phytate content of soybeans." "Oriental children who do not get enough meat and fish to counteract the effects of a high phytate diet, frequently suffer rickets, stunting and other growth... Parents would do well to ask their six-year old boys whether they would prefer to be six-foot-one or five-foot-seven when they grow up, before substituting tofu for eggs, meat, and dairy products." Fact: Phytates and phytic acid are a two-edged sword. They appear to inhibit mineral absorption by forming tight chelates with a variety of polyvalent metals such as calcium, zinc, and iron. By virtue of forming a unique iron chelate, they suppresses iron-catalyzed oxidative reactions and may serve a potent antioxidant function in the preservation of seeds. By the same mechanism, dietary phytic acid may lower the incidence of colonic cancer and protect against other inflammatory bowel diseases. Twelve records in the SoyaScan database show phytic acid to have anticancer activity. In addition, they are one source of dietary phosphorus in the soybean.

(5) Aluminum content of soy formula is 10 times greater than milk-based formula, and 100 times greater than unprocessed milk. Aluminum has a toxic effect on the kidneys of infants, and has been implicated as causing Alzheimer's in adults. Fact: Aluminium is the most abundant metal in the earth's surface. It is harmless to humans except for infants with kidney failure–who should not drink soymilk. There is no solid scientific evidence indicating that aluminum causes Alzheimer's disease; that theory, advocated by a few scientists 10 years ago, is no longer being pursued.

(6) Allergies to soy are almost as common as those to milk. Fact: Roughly 10 to 15 times as many infants are allergic to cow's milk compared to soymilk. Since 1910 soy-based infant formulas have saved the lives of many infants whose mothers could not breast feed and who were allergic to cow's milk

The authors conclude that only traditional fermented soy products such as miso, natto, and tempeh, are safe.

About the authors (autobiographical): Sally W. Fallon, M.A. lives in Washington, DC, with her husband and 4 children. A member of the Price Pottenger Nutrition Foundation Advisory Board, she is a regular contributor to their quarterly journal. Mary Enig, PhD, is an expert in the field of lipid chemistry who has conducted many studies on *trans* fatty acids. She is also well known for a career of anti-hydrogenation and anti-margarine research and writing, with funding from the dairy industry. A large percentage of America's margarine is made from soy oil.

Update: Printout of website named Mercola.com sent to Soyfoods Center by Sjon Welters of Cabot, Vermont. 1998. Nov. 6. The title of this 6-page website is "Avoid

soy: Concerns regarding soybeans." On the last page we read: "The above information was abstracted from an article written by Sally Fallon and Mary Enig, PhD. (an international expert renown [sic] in the field of lipid chemistry) for Health Freedom News in September of 1995." Address: 1. M.A.; 2. PhD. Phone: 818-357-2181.

2863. Lamport, Rick. 1995. Soy to the world. *Granary News* (*Sarasota, Florida*). Sept. p. 1, 3, 10-11, 14-15, 18-19. [1 ref]
• ***Summary:*** A humorous, fun-poking potpourri and overview of soyfoods and some of the new research on their medical benefits. "In reputation, tofu, tempeh, and miso are the Gabor sisters of natural foods, i.e., thought to have bad taste and serve no purpose. But in reality, they are more like the Bridges brothers. They take on many roles and always give an unusually good performance. Pity the poor bean curd. It deserves our consideration, use and approval. Tofu is not really an acquired taste. It is more an acquired texture."

The author then coins some new soy words and phrases–which sound best pronounced with a Yiddish accent: Soyliloquy, psycho-soymatic, Moonlight Soynata, Soyviet Union, soylent majority, soyentific validation, lunasoy, soyonara.

A photo (p. 1) shows the rear end of a "Soyota" [Toyota] automobile bearing the license plate "Tofu Me–Florida Granary."

2864. Lorente, Carol Wiley. 1995. Meals that make the grade. *Vegetarian Times*. Sept. p. 45-49.
• ***Summary:*** Students in the nutrition science class at Walt Whitman High School in Bethesda, Maryland, have developed vegetarian recipes for their school cafeteria. First they conducted a poll of students to find out how many were vegetarian (11 of 93 = 12% said they were) and whether they would purchase a vegetarian option (75 of 93 = 81% said they would). The 8 vegetarian recipes they developed are given. Walt Whitman Chili uses tempeh as a major ingredient. Photos show the students and some of the dishes prepared from their recipes. Address: VT special projects editor.

2865. **Product Name:** [Tempeh].
Manufacturer's Name: Sue Mann Tempeh.
Manufacturer's Address: San Jose de Oyambarillo (near Quito), Ecuador.
Date of Introduction: 1995. September.
Ingredients: Soybeans, starter culture.
New Product–Documentation: Talk with Sue Mann. 1995. Dec. 27. She is still living in Ecuador, near Quito. She has been making tempeh on the ranch where she is living for about the last 6 months, and about 3 months ago she began selling it to expatriate friends and a few restaurants in Quito. It is not labeled, and her business has no official name. She gave some to her Korean acupuncturist who can see and feel energy fields. He said tempeh is excellent for freeing blocked energy in the digestive system.

2866. SunRich. 1995. SunRich (Ad). *Soya Bluebook Plus* 1995-96. p. 59.
• ***Summary:*** This one-third page black-and-white ad lists three categories of products: (1) Identity preserved specialty soybeans and grains: IP corn; Food quality soybeans available for soymilk, tofu, tempeh, miso, natto, sprouts, and soy sauce; Shipments available in containers, rail or bulk barge.

(2) Soyamilk powders: Spray-dried soymilk and tofu; Soy/dairy milk.

(3) Sweet Beans: Frozen green soybeans; Podded (*edamame*) or peeled (*mukimame*).

* Certified organic soybeans & products available. Address: P.O. Box 128, Hope, Minnesota 56046. Phone: 1-800-342-6976 or 507-451-3316.

2867. Wilson, Lester A. 1995. Soy foods. In: D.R. Erickson, ed. 1995. Practical Handbook of Soybean Processing and Utilization. Champaign, Illinois: American Oil Chemists' Society Press; St. Louis, Missouri: United Soybean Board. viii + 584 p. See p. 428-59. Chap. 22. [41 ref]
• ***Summary:*** Contents: Introduction. Soybean chemical composition. Unfermented soy foods: Soymilk, tofu (momen, kinugoshi or silken, packed tofu, aseptically packaged tofu, deep-fried tofu, kori tofu or dried-frozen tofu), other nonfermented soy foods (yuba, kinako or roasted whole soybean flour, fresh {edamame} and canned soybeans, texturized soy protein-based foods). Fermented soy foods: Miso, shoyu (soy sauce), natto, tempeh, sufu. Japanese Agricultural Standards. Identity preservation and transportation. Soybean quality characteristics: Overview, judging quality (tofu, miso, natto). Note: This is the earliest English-language document seen (Dec. 2005) that contains the term "roasted whole soybean flour."

Tables: 1. Nonfermented soy food products and common names by country. 2. Fermented soy food products and common names by country. 3. Chemical composition of soy foods. 4. Per capita annual consumption of soybeans (kg) in selected Asian countries (China, Indonesia, Japan, Korea, Malaysia, Philippines, Thailand; for the years 1968, 1978, 1988, 1994).

Figures: 1. Flowchart of refrigerated and shelf-stable soymilk production. 2. JAS seal of approval. 3. Diagram of equipment used in large scale tofu production (each piece of equipment is numbered and labeled). 4. Flowchart of regular tofu production. 5. Graph showing percent transmittance of whey versus coagulant concentration for soymilks at 6% solids made from Weber, Vinton, and Amsoy soybeans. A concentration of 0.023 N was selected as the optimum coagulant concentration, since it gave the most transparent whey. 6. Graph showing percent transmittance

of whey versus coagulant concentration for Amsoy soymilk at concentrations of 4, 5, and 8% solids. Concentrations of 0.018N, 0.019N, and 0.035N, respectively, were selected as optimum coagulant concentrations. 7. Flowchart of kinugoshi (silken) tofu production. 8. Flowchart of packaged tofu production. 9. Flowchart of aseptically packaged tofu production. 10. Flowchart of kori (dried-frozen) tofu production. 11. Diagram of equipment used in large scale production of dried-frozen tofu (each piece of equipment is numbered and labeled). 12. Flowchart of miso production. 13. Diagram of the interactive factors producing the characteristic attributes of miso. 14. Flowchart of tempeh production. Address: Iowa State Univ., Ames, Iowa.

2868. Jenkins, Suzi. 1995. The politics of soyfoods in San Bartolo, Guatemala (Interview). *SoyaScan Notes.* Oct. 21. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Alimentos San Bartolo now employs 6 people, 3 or 4 of whom have worked there for 15 years. The plant operates two days a week, Monday and Wednesday. About 65-75% of the products are sold to expatriates, and the remainder are sold to native Guatemalans. The approximate percentage of sales by product are as follows: Tofu 40%, soy ice cream 30%, tempeh 10%, soymilk 10%, soy flour atole (10%; pronounced ah-TOL), and whole soybeans 5%. Yet the soy flour atole probably earns the company more profit than any other product. It is made by roasting whole soybeans, then grinding them, and mixing about 3 parts of this roasted soy flour with 1 part of cornmeal. The product is sold as a dry mix in a plastic bag, and is served by adding several tablespoons to a cup of hot water, like traditional atole. It is expensive, costing about 2½ times as much as an equal weight of white wheat flour. People are willing to pay the price because they have learned that it is an excellent source of protein, and it tastes good. It is consumed by both infants and adults.

In about 1989 or 1990 the situation at the soy dairy in San Bartolo changed dramatically. Plenty Canada came in, took the keys to the building, and installed a new committee as the "board of directors in charge of the company. Then Plenty Canada pulled out and has never returned. Since that time the Dairy has received no outside funding. Local politics became a big part of the daily operations of the business, and there is now an ongoing political struggle. The leadership did not like the former employees and they continue to discriminate against them. Only one member of the workforce is on the committee." Elena and Agostine Xoquic are in pain. For example, Agostine is made to haul 50-100 lb of tofu and ice water on a long route that goes as far away as Guatemala City, changing buses many times, while the much younger and stronger new manager sits with his feet up on the table. The Dairy does not have its own vehicle.

Plenty USA has no control over the new committee. In addition, most of the people living in San Bartolo are jealous of the 6 people who work in the Soy Dairy, so for a number of years they have been boycotting the Dairy and its products. Suzi is inevitably associated with the old regime, even though she is very close to many people in the community. She has visited at least once a year, usually paying her own way, to check in and see how things are going. When she has worked there in recent years, it has usually been as a volunteer. This was one cause of the divorce process she is now in. She lived in Panajachel, an expatriate community about 15 minutes away by car; her daughter went to school there. She has no plans to go back there as a worker, though she would dearly love to if she could find a way to support herself.

She sees the next steps for the Dairy as trying to get the Guatemalan government to support use of the atole in the village school lunch program, and starting a restaurant in San Bartolo. She believes this basic concept or model could be duplicated and succeed elsewhere in Third World countries. She has had offers to go elsewhere in Guatemala, at good pay, to help start soy dairies. Address: 3967 South 900 E., Apt. 13, Salt Lake City, UT 84124. Phone: 801-268-2717.

2869. Albertson, Ellen. 1995. Super soy: The newest miracle food. *Self.* Oct. p. 148-151, 204. [1 ref]
• ***Summary:*** The subtitle continues: "Okay. One more time. Scientists are telling us they've found the nutritional Holy Grail, a simple food that prevents heart disease and cancer. Do we believe them? Yes!"

"Soy may be so effective that it actually crosses the line from nutritional to medicinal."

This article begins with a summary of the meta-analysis by Dr. James Anderson published in the *New England Journal of Medicine* (3 Aug. 1995). It reported soy in the diet can significantly lower high cholesterol." It also notes that: (1) "Genistein, a powerful natural chemical unique to soy," may stop the growth of cancer cells. (2) The natural estrogens in soybeans may "help alleviate postmenopausal symptoms." In Japan, where soy is typically eaten daily, there is no word for "hot flashes."

Photos and definitions of various soyfood products are given: Tempeh, soy flour, tofu, textured vegetable protein, soy milk. A section titled "15 delicious ways to add soy to your diet," gives serving suggestions for these and other soyfoods at breakfast, lunch, snack, and dinner.

A full-page table on p. 204 rates the best (B) and worst (W) of the following, with nutritional information, taste, texture, and comments: Hot dogs: B–Yves Veggie Cuisine Tofu Wieners. W–Soy Boy Right Dogs. Burgers: B–Boca Burger. W–Green Giant Harvest Burger. Sausage: Lightlife Lean Links Italian Sausage. W–Fantastic Foods Nature's Sausage. Bacon: B–Yves Veggie Cuisine Canadian Veggie Bacon. W–Lightlife Fakin' Bacon. Luncheon Meat: B–Yves Veggie Cuisine Deli Slices. W–Lightlife Smart Deli Thin

Slices–Roast Turkey Style. Plain soy milk: B–Westbrae Natural WestSoy 1% fat. W–Edensoy Extra. Soy cheese: B–Sharon's Finest Cheddar Style TofuRella. W–Soymage Cheddar Style Cheese Alternative. Chili: B–Midland Harvest Chili Fixin's. W–Fantastic Foods Vegetarian Chili. Pizza: Nature's Hilights Rice Crust Pizza. W–Farm Foods Pizsoy Cheese Style. Frozen Dinners: B–Amy's Tofu Vegetable Lasagna. W–Hain Pure Foods Pepper Steak. Dessert: B–Living Lightly Chocolate Almond Non Dairy Frozen Dessert. W–White Wave Dairyless Vanilla "Yogurt."

2870. Barnard, Neal D. 1995. Natural defenses against chemicals. *Good Medicine* (*PCRM, Washington, DC*) 4(3):16-17. Fall. [10 ref]
• ***Summary:*** One of the most surprising discoveries of modern medicine is that enzymes in the liver "can take the most powerful and dangerous chemicals, and, in an instant, render them totally harmless and show them to the door." It takes certain foods to boost or activate these enzymes, which eliminate toxic chemicals in two steps. In phase 1, an enzyme in the liver cell grabs hold of a toxic molecule and attaches oxygen to it. In phase 2, a second enzyme hooks the toxic molecule onto a carrier molecule, such as glutathione, which carries it away via the urine or feces.

The key is to have plenty of phase 2 enzymes. According to Dr. Paul Talalay of Johns Hopkins University, one of the best sources natural chemicals that cause the liver cells create large amounts of these enzymes is broccoli and other cruciferous plants, such as white cabbage, Brussels sprouts, cauliflower, and kale. "Soybean products, such as tofu, tempeh, and soy milk, also contain natural compounds that stimulate your body to make more of these helpful phase 2 enzymes, which may be part of the reason why Asian countries have especially low cancer rates." Address: M.D.

2871. Bloyd-Peshkin, Sharon. 1995. A labor of love: A group of vegetarians has spent two dozen years trying to change the world one acre at a time. *Vegetarian Times*. Oct. p. 66-73, 75.
• ***Summary:*** The Farm is a back-to-the land vegetarian community located about 75 miles southwest of Nashville, Tennessee. They have "spent a quarter century quietly pursuing what have become major trends of the 1990s... In the food business they are on the forefront of healthful eating. They produce tofu, tempeh, and soymilk;... publish vegetarian cookbooks; and run a vegetarian mail-order business that sells hard-to-find vegetarian foods. They've been instrumental in introducing soyfoods to the United States, as well as using them to assist people in developing nations." Their experiment in communal living began in 1971, but they began to come together at Stephen Gaskin's Monday Night Class, a course in the Experimental College at San Francisco State University, where love, tolerance, and compassion were the main tenets. In 1969 Gaskin went on a speaking tour of liberal churches across the country and invited along any members of the class who cared to join him. Seven months and 7,000 miles later a caravan of 300 people in school buses returned to San Francisco. In 1971 the caravan again hit the road, bound for Tennessee. hey rented a tract of land in Lewis County, one of the poorest in the state, and began farming. Others could join if they agreed not to smoke cigarettes, drink alcohol, eat meat, use weapons, or be violent in any way. If they decided to stay, they had to turn over all of their money and property to the community bank–except for tools, musical instruments, and clothes. Now they were part of a community dedicated to living a spiritually meaningful life.

Several years later a 1,000 acre tract of land became available next door to the land the community was renting. They purchased it for $70/acre and began to build a village and a soy dairy. For the first 10 years they had no running water and only battery-powered lighting. Now 10,000 hippies a year came to visit, and some stayed. When 750 more acres of land adjacent to the original farm came on the market, the community quickly bought it.

"But the Farm members' mission was more than just to build a community: They wanted to save the world. With its own basic needs for food and shelter barely met, the Farm sent volunteers to help with disaster relief after an Alabama tornado in 1974. This was the beginning of Plenty, the Farm's charitable relief and development agency. When an earthquake hit Guatemala in 1976 [Feb. 4], Plenty sent a construction crew to help rebuild the homes of poor Mayans... They also found a strain of soybeans that thrived in the local soil, and helped build a soy dairy that still produces tofu, soymilk, and soy ice cream. After the experience in Guatemala, Plenty made soy technology a regular part of its strategy for assisting people in developing countries. Other relief agencies have followed Plenty's lead, discovering that raising soybeans for soyfoods is one of the surest routes out of starvation and into self-sufficiency."

In 1978, after a few years of terrible financial losses, the Farm decided to keep its agricultural operations small scale and organic. By 1980 the population of the Farm had risen to about 1,500 and resources were stretched thin. The population of the Farm began to decline. There was a shift from the idealism of the 1970s to the materialism of the 1980s. The grumbling and discontent escalated, as did the Farm's debt of $1.2 million owed to local banks and merchants. In 1983, after much research and soul searching, the board decided the Farm should cease being a commune and become a cooperative instead. Members would still own the land in common but they would earn and spend their own money. "Food and medical care would no longer be free, and members would pay monthly dues in order to pay off the community's debt and maintain community property, such as roads and utilities. All adult members would ratify each year's budget and decide other major issues affecting the community.

"In the wake of this metamorphosis, known as the Changeover, more people left; by 1986 only 400 residents remained... Many of the people who left were bitter, feeling they had put everything into the community and were left with nothing." To pay its debts, the Farm sold off some of its communal assets, including Ice Bean, a nondairy ice cream. After 3 years, the Farm was debt free, and local businesses were thriving.

"The soy dairy, begun in order to feed thousands of hungry hippies, has been revived as the Farm Soy Company by founding residents Barbara and Tom Elliott, who today churn out 1,600 pounds of tofu and 10 to 15 gallons of soymilk daily with the help of two part-time employees and cleaning help from four teenagers. The Tempeh Lab, which pioneered U.S. production of this soyfood in 1974, is now owned by Cynthia Bates, who provides tempeh culture to individuals and businesses that make tempeh worldwide. Mushroompeople, owned by Frank Michaels," grows and sells shiitake mushrooms.

"The community's Book Publishing Company, which pays a staff of seven full-time and four part-time Farm members, has made these foods and vegetarian cooking accessible to the mainstream. The company also publishes information on midwifery and the nutritional aspects of a vegetarian diet. The Mail Order Catalog, owned by Cynthia and Bob Holzapfel, is a source of vegetarian foods that are difficult to obtain outside of major metropolitan areas."

Today the Farm owns its land outright and has about 185 residents, about half of them teenagers–who provide living proof that a vegan diet is healthy for children.

2872. Gabriel, John. 1995. A Plenty volunteer in Nicaragua writes. *Plenty Bulletin* (*Summertown, Tennessee*) 11(3):4. Fall. [1 ref]
• ***Summary:*** After studying Spanish full-time in Guatemala for 5 weeks, John and his wife Charlotte arrived in Managua in mid-April 1994. They worked with Soynica's leaf protein concentrate facility near Granada, Nicaragua, and the future Nutrem Soy Shop. He and Charlotte spent 2½ months helping to clean and paint the Nutrem shop, supervising and doing electrical and plumbing work, designing and making various pieces of equipment and fixtures. Charlotte also began training the crew to make tempeh and new varieties of tofu.

Chuck Haren and Casta Calderon (Plenty soy technicians) arrived one day before John and Charlotte were to return to the USA, "and at the perfect time to do some serious training of the three-person crew in tofu production. Chuck also put together the walk-in cooler." Charlotte and John returned to Managua at the beginning of October and worked there for the next 2½ months on the Nutrem Soy shop. They left in mid-December to travel and study Spanish for 5 weeks in Guatemala, then returned again at the beginning of February, 1995, and spent most of the next two months working at Nutrem. Rita, a Swiss volunteer, worked with Zaraya, the manager.

2873. Paine, Heather. 1995. Processing trends in Europe. Paper presented at the Third Bi-Annual SoyAfrica Conference. 14 p. + 11 p. of tables, charts, and graphs. Held 3-5 Oct. 1995 at Johannesburg, South Africa. Organized by Aproma. [10 ref]
• ***Summary:*** Contents: Introduction. History and production. The benefits of soya: Nutrition, functional properties. Products & applications: oil-based products (soya bean oil, soya lecithin), soya protein products (full-fat soya flours, defatted soya flours, soya concentrates, soya isolates), soya fibre products (incl. soy bran), whole soybean products or soya foods (soya milk or drink, tofu, yuba, soya sauce, miso, tempeh, natto). Trends and problems: Growing market for soy protein ingredients, U.S. soyfoods market, soymilk sales, problems of quality and image and legislation. Address: Editor, Soyfoods, England.

2874. Pfaff, Gunter; Shipley, Betsy. 1995. New technology for making tempeh, a cultured soyfood. Paper presented at Third National Symposium on New Crops, New Technologies. 5 p. Held Oct. 1995 at Purdue University. [5 ref]
• ***Summary:*** During the last 8 years they have developed and patented a new process for making a consumer friendly tempeh and have market tested it in the U.S. Midwest. The new process incubates the substrate (organically grown soybeans and barley) on stainless steel trays using water as the heating/cooling medium. A simplified drawing of the incubator/pasteurizer shows the stainless steel tray, tempeh, insulated lid, exit hole for air, tray supports, circulating waterbath, injected air, and overflow. Address: Betsey's Tempeh, 14870 Beardslee Rd., Perry, Michigan 48872. Phone: 517-675-5213.

2875. *Plenty Bulletin* (*Summertown, Tennessee*).1995. La soya continua, Guatemala, 1995. 11(3):1-2. Fall.
• ***Summary:*** "In the summer of 1995, with funding provided by Food for All, Onaway Trust, and Plenty donors, Suzi Jenkins returned to Solola in the highlands of Guatemala to work again with her Mayan friends. The soy dairy she helped develop in 1980 looks the same as when she left fifteen years ago. Most of the staff are people she and Laurie Praskin trained. Many of the little kids that once lined up eagerly at the dairy window for soy ice cream are now parents. This time the program Suzi directed was somewhat different in format, but the purposes were the same–to increase the use of soyfoods in Guatemala and to develop a market for the products of Alimentos San Bartolo (ASB). To do this, Suzi would focus on three tasks–holding cooking classes in Mayan cooking classes in Mayan communities around Solola and San Bartolo teaching methods of preparing foods

using tofu and tempeh, holding similar cooking classes at restaurants which are now, or will be, purchasing products from ASB, and, finally, creating and publishing a cookbook of recipes from the cooking classes. Assisting the program were two volunteers, Steve Karian and Jennifer Relin of Tufts University School of Nutrition, and Elena Paula Xoquic and Micaela Coj of San Bartolo... Thirty five cooking classes were held, and two thousand copies of the cookbook were printed. One immediate result of Suzi's work has been an increase in sales of soy products at ASB, both to individuals and stores. ASB now maintains its own store on the square in Solola."

Photos show: (1) A soy foods cooking class in San Bartolo. (2) Mayan kids sitting on a bench, enjoying the results of a cooking class. (3) Micaela Coq, a Mayan woman, leads a soy foods cooking class near Solola. (4) Mayan women showing a strong enthusiasm for soyfoods. (5) Agostine Xoquic cleans soybean grinding stones at Alimentos San Bartolo (ASB). These are the same stones originally installed in 1980. (6) A Mayan woman making tofu at ASB. (6) Marcelino Cortez is the new manager of ASB.

2876. *Soy Connection* (*The*) (*Chesterfield, Missouri–United Soybean Board*).1995. Foodservice recipes with soy. 3(4):2-page insert. Fall.
• ***Summary:*** Features five meatless recipes: Sweet 'n sour tempeh and vegetables (50 servings, created by Ken Bergeron, Kensington, Connecticut). Black soybean ragout (16 servings, created by Mark T. Buckley, certified executive chef, Bloomington, Illinois). Tofu fried rice. Hot and sour soup (with soft tofu) (each 50 servings, submitted by The Vegetarian Resource Group, Baltimore, Maryland). Barbecue meatballs–total vegetarian (240 x 1-inch meatballs, submitted by Dr. Kenneth Burke, Loma Linda Univ., Loma Linda, California). Address: PhD.

2877. **Product Name:** Tofurky: A Delicious Vegetarian Holiday Feast.
Manufacturer's Name: Turtle Island Foods, Inc.; Simple Living Network (Distributor).
Manufacturer's Address: P.O. Box 176, 601 Industrial Ave., Hood River, OR 97031. Distributor: P.O. Box 233, Trout Lake, WA 98650. Phone: 1-888-TOFURKY (863-8759).
Date of Introduction: 1995. October.
Ingredients: Each Tofurky includes: (1) 2 lbs. seasoned, baked & basted organic tofu roast: Organic tofu (organic soybeans*, water, nigari), nutritional yeast, poultry seasoning, salt, tamari, fresh ginger, orgainc pear sweetener; (2) 8 tempeh-wild rice & cranberry drumettes: Textured soy protein (soy flour and water), soy tempeh (organic soybeans*, water, apple cider vinegar, starter), grated carrots, organic wild rice*, malt extract, natural flavor, dried cranberries, vegetarian Worcestershire sauce, isolated soy protein, carrageenan, herbs and spices. (3) 1 pint golden nutritional yeast-mushroom gravy: Water, nutritional yeast, chopped fresh mushrooms, canola oil, unbleached white flour, diced onion, shoyu soy sauce, salt, spices; (4) Stuffing: Organic whole wheat bread cubes*, onion, celery, walnuts, dried cranberries, canola oil, sesame oil. * = Organically grown in accordance with Section 26569.11 of the California Health & Safety Code.
Wt/Vol., Packaging, Price: 3 lb 12 oz or 2¼ lb.
How Stored: Frozen.
New Product–Documentation: Audrey Van Buskirk. 1995. Nov. 10. Willamette Week. "A different drumstick." About Tofurky.

Polly Timberman. 1995. Nov. 15. Hood River News. "Soy be it! Tofurky provides a holiday feast for vegetarians."

Leaflet for Thanksgiving 1995. 8½ by 3.75 inches. Printed black on orange paper. No gravy. Two sizes: 2 lb., and 3 lb 12 oz.

Leaflet for Christmas 1995. Same size and color. Now comes with gravy. Two sizes: 2 lb 12 oz, and 4 lb 4 oz.

Ad (2¼ inch square, black and green) in Vegetarian Times. 1996. Nov. "Vegetarian Times Buyers Mart." Unnumbered pages at back of magazine. "100% vegan. Cooks in minutes. Serves 8 hungry adults. At local natural stores or via mail order. Call Toll Free: 888-Tofurky. Next day US delivery: $49.95 + $7 S&H [shipping and handling]."

Talk with lady from Simple Living Network (SLN). 1996. Oct. 31. This product, made by Turtle Island Foods (in Hood River, Oregon), was launched in October 1995, before Thanksgiving last year. Tofurky is also described on and can be ordered from the SLN Web site: http://www.slnet/CIP/Tofurky. There are 3,000 pages on this Web site.

Talk with Seth Tibbott, founder and owner of Turtle Island Foods. 1996. Nov. 1. See interview titled "History of Tofurky." Talk with (call from) Seth. 1996. Nov. 5. Tofurky will appear on the Today Show on Nov. 12 (Tuesday morning TV).

Leaflet #1 or "rack card" (3 5/8 by 8½, color) titled "Tofurky: A delicious vegetarian holiday feast." Tells all about the product in a question and answer format. Leaflet #2 (8½ by 11 inches), printed black on gray, titled "Tofurky! The meatless stuffed tofu roast." "Tofurky! consists of 3 pounds of basted and baked organic tofu in a 9-inch pie pan filled with a herbed, whole wheat bread crumb" stuffing. "The tender tofu slices can be cut into 8 generous servings."

Press release. 1996. Oct. 20. "Will that be turkey or Tofurky."

Box with Label sent by Seth Tibbott. 1996. Nov. 6. The outer box is 13¼ by 10½ by 3¼ inches. Printed red on cardboard color. New weight: 5 lb 15 oz. "The original Tofurky: A delicious vegetarian feast. 100% vegan. Cooks in minutes. Serves 8. Keep frozen or refrigerated. 1% of all

sales from this product to Farm Sanctuary Adopt a Turkey Program." The inner box is white. The label is printed black on white. Net weight: 2 lbs. 12 oz. On the label are printed two logos and addresses, and a UPC. The Higher Taste, 2402 SE Belmont Ave., Portland, Oregon 97214. Turtle Island Foods, Inc., PO Box 176, Hood River, Oregon 97031. Vegetarian Journal. 1996. Nov/Dec. p. 8. "Tofurky."

Dinner with Bob & Pattie Gerner to test and give feedback on Tofurky 97. 1997. May 10. A delicious sliceable roast, made mostly of gluten and tofu, may replace the former marinated baked tofu. The roast ingredients are: Water, vital wheat gluten, organic tofu, natural vegetarian seasoning, wild rice blend, shoyu soy sauce, fresh onions, granulated garlic, tomato sauce, molasses, sea salt.

Talk with Seth in early 1997. He sold 800 Tofurky in 1995 and 4,000 in 1996.

2878. United Soybean Board. 1995. Introducing the soy-a-mid: How soybeans fit into the eating plan described in the USDA's Food Guide Pyramid (Brochure). Chesterfield, Missouri: USB. 6 p. 29 cm.
• ***Summary:*** This food pyramid emphasizes dairy products (the "Milk, Yogurt and Cheese Group") and meats (the "Meat, Fish, Poultry, Dry Beans, Eggs & Nuts Group"), plus products made with soybean oil. "Right now you're probably eating a ½ cup's worth of soybeans every day without even realizing it."

"Plant foods in the Meat Group, such as beans, peas, lentils and nuts, provide protein, but this protein is not 'complete.' Animal protein is 'complete,' that is, it contains all of the eight amino acids required for proper nutrition. Plant proteins–*with the exception of soybeans*–need to be combined with grains or animal proteins to provide all the eight amino acids. Soybeans and soybean products, such as tofu and soybean flours, are one of the few plant protein sources that contain complete protein.

Soybeans belong to "The Pod Squad–legumes," which are not easily classified into one food group. "The soybean is something of a nutritional superstar, even among members of the Pod Squad... New medical research suggests that certain non-nutritive components in soybeans may work to reduce the risk of cancer. Many foods that come from soybeans are derived from the various components of the bean... Soy protein is extracted from the bean to be used in a host of manufactured foods form surimi to pancake mixes. Foods derived from whole soybeans, such as tofu and tempeh, are used as a primary protein source in many Asian countries. Tofu is also a good source of calcium in Asian diets where milk and milk products are seldom consumed. In fact, a Food Guide Pyramid in China or Japan would see tofu playing a major role in the third tier of the diagram.

"'Think Soybeans'–Whether you're spreading soybean margarine on your pancakes fortified with soybean flour, or experimenting with tofu in your stir-fry, remember that soybeans are a versatile food that can play an important role in your personal food guide pyramid."

An excellent illustration shows a whole soybean, divided like a pie chart into its major macronutrients. Address: P.O. Box 419200, St. Louis, Missouri 63141-9200.

2879. United Soybean Board. 1995. Soybeans: How a little bean becomes an ingredient in thousands of products from margarine to tofu to chicken feed (Brochure). Chesterfield, Missouri: USB. 12 panels + poster. 23 cm.
• ***Summary:*** This attractive color publication is folded so that the first 12 panels are a brochure. However when fully unfolded, a large color poster appears. The brochure notes: In 1992/93 the USA produced 51% of the world's soybeans. An early history of the soybean in the USA [full of errors]. America livestock (including poultry) consume about 22.5 million tons of soybean meal a year. How soybeans are grown. Composition of the soybean. Foods made from soybeans: Edamame, miso, natto, soy milk, soy sauce, tempeh, tofu or soybean curd, full fat flour. Photos (each incorrect) in the brochure show: "1904: The famous American chemist George Washington Carver discovers that soybeans are a valuable source of protein and oil. 1920s: Combines first used to harvest soybeans. 1922: First U.S. soybean processing plant opens. 1929: Soybean pioneer William J. Morse spends two years in China, gathering more than 10,000 soybean varieties for U.S. researchers to study. 1940: Henry Ford takes an ax to a Ford car body to demonstrate the strength of the soybean plastic he has developed."

The color poster (16 by 27 inches) is a cartoon showing how soybeans are processed into various products, including full fat flakes, crude and degummed soybean oil, soy concentrates, soy isolates, soy flours, and defatted soy flakes. A soybean utilization/processing diagram at the bottom of the poster shows 137 different products that can be made from the soybean, including 33 whole soybean products ("Traditional soyfoods" incl. tofu, soymilk, miso, tempeh, soy sauce, natto), 33 soybean meal products (26 edible uses + 7 feed uses), and 71 soy oil products (13 edible uses, 19 industrial uses, and 18 applications for lecithin). The seven types of lecithin applications are: Emulsifying agent (4 applications), nutritional (medical use, dietary use), anti-spattering agent (in margarine manufacture), stabilizing agent (in shortening), anti-foam agent (yeast manufacture, alcohol manufacture), dispersing agent (in paint, ink, and rubber manufacture, and in insecticides), and wetting agent (in cosmetics, paint pigments, and calf milk replacers).

Accompanying the brochure/poster is a note pad with the same slogan across the top of each sheet: "Soybeans–Designed for life." Across the bottom is written: "United Soybean Board–Investing check-off dollars." Address: P.O. Box 419200, St. Louis, Missouri 63141-9200.

2880. Ribbens, Bob. 1995. Traditional Foods Cooperative was changed to Earth Fire Products Co. in Feb. 1994 (Interview). *SoyaScan Notes.* Nov. 1. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** The change in name was accompanied by a change in ownership and structure–from a cooperative (which was a corporation) to a non-stock corporation. Bob made the change to reorganize the company's decision-making process. It was sort of like a bankruptcy. Prior to the change, Bob was funding the company but other people were running it. They didn't want to include him in the decisions. When he asked them to put up as much risk as he was putting up, as long as they wanted to make the decisions, they decided they didn't want to do that. They made an agreement about reducing risk on a new product, but they didn't keep their side of the agreement and ran down cash funds by a large amount. Bob is now owner. The stock is not owned by the workers. None of the former workers are with the business any more. There have been many changes during the last 6 months.

Bob Mandel and Cindy Wiar made the first products, tofu and tempeh, on their own in May 1984. Bob Ribbens thinks that the date of Nov. 1986 is too early for seitan; he thinks the introduction date should be 1989. He never saw tempeh on sale in the community before 1989. In 1989 they decided to stop making tofu and tempeh commercially, and to switch to making seitan and miso. The meeting for interested people too place in 1988, not in 1989. The organization formalized in the summer of 1989.

Bob's company presently has the following products on the market: Long-term barley miso (started selling in Feb. 1995). Seitan in 14 oz retail and 5 lb bulk pack. Brown rice miso, Kickapoo chutney, mellow white miso. They plant to start selling their mellow barley miso at a local co-op this month (Nov. 1995). They also plan to introduce a barbecue seitan. They also sell miso by mail order. They no longer make tofu or tempeh–those markets are too competitive. Address: P.O. Box 92 (Corner of Grove and North Railroad Streets), Gays Mills, Wisconsin 54631. Phone: 1-800-267-6918.

2881. Haren, Chuck. 1995. Soyfoods, Soynica, and Nutrem Soy Shop in Nicaragua (Interview). *SoyaScan Notes.* Nov. 8. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** The Nutrem Soy Shop started making and selling small amounts of soyfoods in Managua, Nicaragua, in about June or July 1994. They are managed by *Soynica* (*Organizacion Soya de Nicaragua*), an organization of women working to improve the lot of children and women in the barrios of Managua by providing nutrition and health education and by supplementing the nutritional needs of more than 4,000 children and 500-600 pregnant and nursing mothers. Nutrem is in the process of introducing fresh soyfoods to the marketing sector in Managua. They are also teaching their people how to make these foods on a very small scale. Even when John Gabriel was working to prepare the shop for opening, his wife Charlotte was teaching women how to make tempeh. Plenty USA helped them obtain a grant from the InterAmerican Foundation, to purchase equipment for the plant and pay for people the first year; Chuck is sure this grant money has run out, but they may have had follow-up grants. There will be a big program there soon with Soynica as the center of it; the Belgians or the Austrians are going to fund it. It will include extruders (such as the InstaPro) to make dry products. Chuck thinks several more years will be required before Nutrem can stand on its own; less time would be required if they were just a food business, rather than an educational center with a broad program. The women of Soynica have been making and selling soyfood products for a long time, and helping different women in the barrios on a micro-business scale. Nutrem is an educational center as well as a small producer of foods.

Nutrem now makes small amounts of the following soy products: Tofu, tempeh, soymilk, soy ice cream, and okara croquettes (a mixture of okara, tofu, flour, herbs, and spices). John does not know how many people are employed by Nutrem; it is owned, managed and operated by women, though they may have some technical help from men.

Nutrem's soy products are sold at about 7 different very small health food stores in Managua; some of these shops focus on herbs and one is macrobiotic. The products are consumed almost entirely by Nicaraguans, not by foreigners. Nutrem has started to sell a little tofu to hospitals. Some of the Soynica women take home soy products made at the shop and sell them in their neighborhoods. Some of these women have micro-businesses in their homes. They will make soyfoods at home with several neighbors in the morning, then sell these fresh in the neighborhood.

Luci Morren, a former Belgian nun, has long been a spearhead for the program. Plenty met her in Chiapas, Mexico, when the Guatemalans fled in the early 1980s. She has been in Nicaragua since about 1981. Casta, Chuck's wife, was the administrator of Soynica; Luci is now the vice president; she was the president. Soynica has a paid staff of about 25 women and a board of directors, which includes people from the Nicaragua National University, a woman judge, etc. Soynica is a group of people who were Sandinistas during the 1980s; they were trying to maintain good nutrition in the country and were teaching people how to use soybeans. Some people in the government didn't like this since the soybeans had to be imported from the USA, but when they started getting the soybeans from Mexico and Brazil, and showed the importance of their work, the government let them continue. Soynica was formed and registered in 1988-89 shortly before the election of Violetta Chamorro in Feb. 1990. Chuck estimates that Soynica has at least 500 members and volunteers. Their most important is *olla communales* or communal eating pots. While educating

people in the barrios about nutrition and soyfoods, they organized local groups into which they selected the most needy children and pregnant and nursing mothers. Six mornings a week Soynica offers these people a nutrition supplementation program in the form of an extra meal from the communal pot. Some of the soyfoods made at Nutrem may go into these communal pots. Nicaragua's economy is in pretty bad shape.

Nutrem was not the first tofu shop in Nicaragua. Before Chuck arrived in Nicaragua in 1990, he thinks there was a small tofu shop at the Ben Linder house–or perhaps somewhere else. There is another group named Tonali (pronounced toe-nah-LEE), a women's cooperative which Chuck helped in starting to make soyfoods; they have a bakery in Managua where in about 1992 they started making and selling tofu and soymilk. They also used the okara in their breads.

For details, write Luci Morren, Soynica, ERP-05, Managua, Nicaragua. To phone Nicaragua, where the time is 2 hours later than California: 011 +505-2-73360. Address: 3625 South 1st St. #110, Austin, Texas 78704. Phone: 512-912-1429.

2882. Buskirk, Audrey Van. 1995. A different drumstick. *Willamette Week* (*Oregon*). Nov. 10.
• ***Summary:*** "Only in Oregon... Two Oregon vegetarian outlets joined forces to produce Tofurky. The 'bird,' created by The Higher Taste, a Portland vegetarian caterer, is made with seasoned organic tofu, filled with a stuffing of cranberries, walnuts and bread crumbs, basted with a honey, ginger and tamari sauce and baked until golden. It comes with four 'dark meat drumettes' made by Hood River's Turtle Island Foods, a soy foods manufacturer, with grated organic tempeh, wild rice and carrots shaped into drumsticks. Think this sounds great? Awful? Taste it for yourself this Saturday, Nov. 11, between 11 and 4 pm, at Food Front, 2375 NW Thurman St."

A large cartoon shows a mother serving a turkey on a platter to her husband and son, seated–with knives and forks upraised–at the table.

2883. Timberman, Polly. 1995. Soy be it! Tofurky provides a holiday feast for vegetarians. So what if its flat? There's a stuffed creation just waiting for vegetarians to add the gravy and cranberry sauce. *Hood River News* (*Oregon*). Nov. 15. IIA. Kaleidoscope section.
• ***Summary:*** Tofurky is a joint venture between Portland's The Higher Taste (a vegetarian sandwich maker and caterer) and Hood River's Turtle Island Foods (a soy-foods manufacturer whose primary product is tempeh). Formerly located in Husum, Washington, Turtle Island later moved to the Graf building in Hood River's Diamond complex.

Vegetarians now have a centerpiece for their Thanksgiving dinner. "Looking for a way to make this happen, [Seth Tibbott, president of] Turtle Island, scouted its customers. The company found that Hans and Rhonda Wrobel of The Higher Taste had developed a product, Tofurky, that had been marketed in Portland to a growing band of followers for the past two years. Turtle Island added its own touch, several tempeh drumettes, and is marketing the Tofurky package to stores. Two sizes are available." "Six thousand drumettes were formed in Portland last week for inclusion in Tofurky packages. Directions are included for a mushroom gravy that Tibbott says pulls the whole thing together."

A sidebar titled "Why vegetarian?" discusses the ethical, world hunger, nutritional, and other reasons people choose this diet. Note: This is the earliest article seen that mentions Tofurky.

2884. Gordon, Jonathan. 1995. Work with soyfoods in England and Australia (Interview). *SoyaScan Notes*. Nov. 16. Conducted by William Shurtleff of Soyfoods Center. [1 ref]
• ***Summary:*** Jonathan's PhD thesis was titled "Improved lactic fermentation of soymilk for the preparation of soya bean curd," a subject closely related to soy yogurt. He submitted this thesis in 1992 at the University of Strathclyde [Glasgow, Scotland], working under Brian Wood. When he was midway through writing his thesis, he won a *Monbusho* [Ministry of Education] scholarship to Japan. Just as he was preparing to go, he and his wife had a baby and he decided not to go. Prior to that the University of Strathclyde had applied for a patent on the process he discovered in his thesis. When he didn't go to Japan, the university did not finish the patent application process. Its present status is unclear. He discovered how to do a lactic fermentation of soymilk that gave a good, low pH in a reasonable period of time. Brian Wood was an expert in lactic acid fermentations; he developed a 6-week miso and soy sauce process which he sold to Nestle. He was very unhappy with the outcome of this sale, because Nestle shut him out of involvement with the company. He expected to be actively involved with the company.

Jonathan's interest in tofu goes back to the late 1970s. A native of England, he spent two years (1979-1981) at Findhorn, a spiritual community in Scotland, where he first heard of tofu and he helped to make tofu once a week. Jonathan thinks that Jacques (a French Canadian) started the tofu operation in Findhorn, before Jonathan arrived. Jacques and Allen (British) were making tofu in 1979 when Jonathan was there. Each Thursday after dinner they would take over the kitchen and make about 30-40 lb of tofu, which was served in the communal dining room the next day. Jonathan left Findhorn in March 1981 and arrived in Australia in about July or August 1981. He traveled in Australia with a girlfriend (Karen James of California, who had just finished a professorship at UCLA) and they lived together at the Homeland Foundation in Upper Thora, Bellingen, New

South Wales, where they made tofu with other members of the community. Karen also made tempeh. Upper Thora is a little town in the Bellingen (pronounced BEL-ing-un) valley. Some community members had already been making tofu for a long time before he arrived; the tofu company was a completely established local business, with customers and delivery routes, when he arrived. They made about 300 lb/week of tofu and delivered it themselves to nearby communities in insulated cold boxes (called "Eskis," short for Eskimos) in a van. Homeland was also making tempeh at the time, but Jonathan was not a tempeh maker. He left Australia in 1982 to return to England.

In 1982 Jonathan became the foreman and tofu maker for The Regular Tofu Company (RTC) Ltd. in England, owned by John Holt. Jonathan was not with RTC when it started. John Holt was a "Premmie," a disciple of Guru Maraji, the young guru from India. His tofu shop was located in a house adjacent to the Premmie community house or ashram. He converted the small community kitchen (about 14 feet square) into a tofu shop. It had 2 cauldrons and a grinder. This was John Holt's private business; it was not a source of food and income for the Premmie community. John had a family at the time and he employed Premmies to do his work. At this time the tofu was made in a caldron. Guru Maraji came to that part of England many times. Leicester is one of the "Asian centers" of England; it has the largest immigrant population of any city in the country and there were 2 or 3 "Premmie" houses there. Maraji has a large Indian following, in addition to his Western disciples.

Jonathan also helped John Holt design his new factory in at Hayhill Industrial Estate (Unit 25, Sileby Rd., Barrow Upon Soar, Leicestershire LE12 8LD, England). into which Holt moved in about 1984. John Holt lived in Sileby, the town adjacent to Barrow Upon Soar.

Note: This company began making tofu in Dec. 1981 at 75 Chandos St., Leicester, LE2 1BU, England. In June 1984 (now located at 16 The Halcroft, Syston, Leicester, England LE7 8LD) they introduced 4 soy products under the Soyboy brand. John Holt had venture capital in the business, but they weren't getting a sufficient return on their money so John had to sell the company to another rather small company named something like Rainbow (they were making soup and burger dry mixes), which later sold it to Haldane.

Jonathan probably has John Holt's home address in Leicestershire. After Holt sold his business, he bought a franchise in a restaurant business (something like a pancake house) in Northampton or Nottingham, England. Jonathan has heard of Michael Cole of Manchester, but he does not know whether or not Michael ever worked for John Holt. Cole won the Entrepreneur Award of something like £50,000, and that enabled him to build a factory. In the early days only two companies in England were distributing semi-nationally–John Holt's and Michael Cole's. Address: Director of Operations, White Wave Inc., Boulder, Colorado. Phone: 303-443-3917.

2885. Kushi, Michio. 1995. Guide to standard macrobiotic diet: Kushi Macrobiotics Corp. edition. Becket, Massachusetts: One Peaceful World Press. 64 p. Nov. Illust. No index. 22 cm.

• ***Summary:*** Introduction. Part I–Basic principles of standard macrobiotic diet. Part II–Summary of daily dietary recommendations. Part III–Standard macrobiotic dietary practice: Whole grains, soup (incl. miso soup), vegetables, beans (incl. azuki beans, black soybeans, tofu, dried [frozen] tofu, tempeh, natto, okara), sea vegetables, fish and seafood, fruit, pickles, nuts, seeds snacks, condiments, seasonings, garnishes, desserts, beverages, modifications, helpful eating hints. Part IV–Proposed one week meal planner. Macrobiotic resources: The Kushi Institute, The One Peaceful World Society. Kushi Macrobiotics Corp. background (formed in May 1994 to market a line of natural, macrobiotic foods). Michio Kushi: Brief biography (Age 69, he is Chairman of the Board and Director of Research of Kushi Macrobiotics Corp.). On the rear cover is a portrait photo of Michio Kushi with his autograph in both English and Japanese.

Note: This book is designed to promote the Kushi Cuisine line of macrobiotic foods. A half-page black-and-white photo of that line of foods is shown facing the inside rear cover. The slogan is: "Perfect replacements for imperfect foods." Kushi Macrobiotics Corp. is located at Three Stamford Landing, Suite 210, Stamford, Connecticut 06902. Phone: 203-973-2929. Address: Becket, Massachusetts.

2886. Melina, Vesanto; Davis, Brenda; Harrison, Victoria. 1995. Becoming vegetarian: A complete guide to adopting a healthy vegetarian diet. Summertown, Tennessee: The Book Publishing Co. x + 262 p. Foreword by Suzanne Havala. Index. 26 cm. [20 ref]

• ***Summary:*** An excellent vegetarian and vegan sourcebook and cookbook by three registered dietitians. Contents: Acknowledgements. Foreword. Introduction. 1. What is a vegetarian? 2. The evidence is in. 3. Without meat–exploding the myths. 4. Without dairy products. 5. Veganism: More food for thought. 6. Fats and oils: A balancing act. 7. Fiber: The gift from plants. 8. The vegetarian food guide: Putting it all together. 9. Vegetarian nutrition in the growing years. 10. Vegetarian diplomacy. 11. From market to meals. 12. Recipes: Simple treasures. Appendixes: 1. Glossary. 2. Nutrition recommendations.

This book contains a wealth of accurate, positive information about many different types of soyfoods (especially tofu) and related subjects, including tofu, soymilk, tempeh, miso, soy yogurt, soy cheese, soy sauce, tamari, and soy oil (incl. omega-3 fatty acids). Plus wheat gluten, seitan, rice milk, sea vegetables, adzuki beans (p. 66, 162), quinoa, amaranth, macrobiotics, phytochemicals, plant estrogens found in tofu and other soy products (p. 75;

they may contribute to positive calcium balance and have a protective effect on the bone health of Chinese and Japanese women), dietary fiber.

Talk with Vesanto Melina. 1996. July 22. This book was originally published in Canada in May 1994 by Macmillan Canada in Toronto. A revised U.S. edition was published in Nov. 1995 by The Book Publishing Co. in Summertown, Tennessee. Address: Canada.

2887. Turtle Island Foods, Inc. 1995. Discover Turtle Island: Tempeh recipes and product information guide. Hood River, Oregon. 21 p. 22 x 10 cm.
Address: P.O. Box 176, Hood River, Oregon 97031. Phone: (503) 386-7766.

2888. Ledvinka, Ferro. 1995. Introducing macrobiotics and soyfoods to Italy (Interview). *SoyaScan Notes.* Dec. 24. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Ferro was a pioneer of macrobiotics in Italy. In the process he also helped to introduce soyfoods, especially to Florence. He first learned about macrobiotics when he read a book on macrobiotics in Italy. He started eating a macrobiotic diet. In Rome there was a macrobiotic center founded and run by Marquesa Parvolo, who had been cured of leukemia or a blood disease by George Ohsawa several years before. In 1971 he heard a lecture at this center in Rome by Rob Dobrin, who gave him Michio Kushi's address in Boston, Massachusetts. In the summer of 1972 he traveled to Boston to study macrobiotics, and there he learned how to make tofu and seitan. After leaving the USA, he returned to Italy, living in Rome. From there he worked to spread macrobiotic food and philosophy to all major Italian cities.

In Jan. 1977 Ferro went to Japan to work with Mr. Kazama at Mitoku, exporting macrobiotic foods to Italy and other European countries. The first Italian company to order these foods (including Japanese miso and tamari) was ProBios in Florence. They were followed by two Italian Macrobiotic Centers, located in Rome and Milan. In Oct. Ferro left Japan, returned to Italy, lived in Rome for a while, then moved to Florence, where he established the pioneering Fondazione Est-Ouest at via de Serragli 4, in Florence. This was a combination macrobiotic restaurant and macrobiotic study center. Ferro also worked for a while with ProBios. He taught various people to make tofu, seitan, and tempeh–but none of the restaurant customers would buy or eat these strange new foods. So Ferro decided to fry them and serve them as a snack, free of charge, before each meal. A Tuscan proverb says that "Even a slipper, if fried, tastes good." In this way people in Florence started to eat these new foods. The restaurant made and served these foods from about 1982 to 1985. Then people who were working in the restaurant moved to another place, became independent, and they started a small food factory named Soyalab. The founder of Soyalab, Matteo Iacovelli, is now the chairman of the Kushi Institute in Milan. Another person who helped a lot on the way was Alfredo Ingannamorte. These people learned how to make tofu and tempeh in Boston. Alfredo studied at the Kushi house in Becket. Matteo worked at a macrobiotic restaurant (Open Sesame) in Brookline Village. Address: Via Pellicceria 6, 50123 Firenze (Florence), Italy. Phone: 055-827 274.

2889. Behling, Ann. 1995. Soybeans: A natural cancer fighter. *Soybean Digest.* Dec. p. 26a.
• ***Summary:*** A recent study by the National Cancer Institute [Howe et al. 1992, published in *J. of the National Cancer Institute,* 84:1887-96] shows that the risk of colon cancer in the USA could be reduced by about 31% with an average increase in fiber intake of about 13 grams per day. The current average U.S. per capita intake of dietary fiber is only about 11 grams per day, while the recommended intake is 20 to 35 gm/day. Joanne Slavin, a professor in the Department of Food Science and Nutrition, University of Minnesota, says that whole soybeans offer the best source of soy fiber, followed by soy flour, miso, and tempeh.

2890. Klus, Klaus. 1995. Biotransformation von Sojabohnenisoflavonen und Bildung von Polyhydroxyisoflavonen durch Tempe-bildende Mikroorganismen [Biotransformation of soybean isoflavones and formation of polyhydroxylated isoflavones from the microorganisms that make tempeh]. PhD thesis Münster (Westfallen) University. 133 leaves. [Ger]*
Address: Germany.

2891. Nguyenle, T.; Wang, W.; Cheung, A.P. 1995. An investigation on the extraction and concentration of isoflavones in soy-based products. *J. of Pharmaceutical and Biomedical Analysis* (*Oxford*) 14:221-32. *
• ***Summary:*** Gives levels of daidzein and genistein in Infant formulas: Isomil (ready to feed), Nursoy (liquid concentrate), Prosobee (liquid concentrate). Soy flours (Central Soya–Soyafluffy), Centex, Promax, Promax plus, ADM–Nutrisoy, TVP, Acron-F, Acron-S, Cargill Protein Products -200/20, 200/70, Arrowhead, Molly Farm, Sun Ridge Farm, Soy drink, Tempeh, Soy concentrates (Procon, Promine), TVP (Response).

2892. Albert's Tofuhaus. 1995. The white side of life... und seine Vielfalt! [The white side of life–and its diversity!]. Lautersheim, West Germany. 10 p. Manufacturer's catalog and price list. 28 cm. [Ger]
• ***Summary:*** Contents: Listing of products by category. Description of individual products by category, with prices, weights, and order number. Map and ordering information.

The products and their categories are: Tofu products (natural, smoked, marinaded, etc.), fried products, spreads for breads, pasteten, salads, sauces, grilled products (hot

dogs, made by Viana), products made from wheat (tempeh, seitan, skewered seitan, made by Viana), pasta products, full-fat soy flour. On the cover is a cake of tofu, with a laughing face and two arms held out to the sides. The company logo is adapted from *The Book of Tofu* by Shurtleff & Aoyagi.

Two sheets of the company's letterhead are enclosed in the catalog. Address: Hauptstrasse 13, 67308 Lautersheim, West Germany. Phone: 06351-43718.

2893. Alexander, Victoria; Harris, Genevieve; Dyson, Sharon. 1995. A taste of Australia: the Bathers Pavilion cookbook. Berkeley, California: Ten Speed Press. xiii + 122 p. See p. 36, 72, 78. Illust. (color, incl. photos by Rodney Weidland). 27 cm.
• ***Summary:*** Bathers Pavilion is a restaurant fronting the beach in Sydney, New South Wales, Australia. "Thick, sweet soy sauce (kecap manis) is mentioned on pages 36, 72-73, and 78-79. In the headnotes to the recipe for "Marinated pork fillet with peanut sauce" we read (p. 72): "Kecap manis is a thick, sweet soy sauce from Indonesia. It is sweetened with palm sugar and flavoured with star anise and salam leaves (a little like bay leaves). Do not substitute for kecap manis as no other soy sauce will produce the same results."

Tofu is mentioned on pages 18, 30, and 45.

On pages 78-79 is a recipe for "Venison, tamarind and tempe hot pot," whose headnote begins: "Tempe is made from the remaining soy bean solids after they have been pressed to make soy milk. The solids are then compressed and fermented. Tempe has a wonderful nutty flavour..." Note: This is a description of okara tempe; most tempe is made from whole, dehulled soybeans rather than from okara.

The word "soy" is used to refer to soy sauce on pages 30 (light soy sauce), 42 (Japanese soy sauce), 43, and 52 (dark soy sauce). Address: 1. Owner, The Bathers' Pavilion.

2894. Hagler, Louise. 1995. Lighten up! Tasty, low-fat, low-calorie vegetarian cuisine. Summertown, Tennessee: The Book Publishing Co. 160 p. Illust. Index. 23 cm.
• ***Summary:*** This is a vegan cookbook containing over 130 easy-to-prepare recipes, including many soyfoods recipes: about 26 tofu recipes, 5 tempeh recipes, 7 textured vegetable protein recipes, and 3 miso recipes, plus recipes using wheat gluten and quinoa.

Contents: Introduction. Snacks and appetizers: Dips and spreads, salsas, finger foods, fresh juices. Salads and dressings: Salads as a main dish, light salads, salad dressings, sauces and pestos. Soups: Main dish soups, light soups. Mainly beans. Mainly grains. Mainly pasta. Mainly tofu, tempeh and: Textured vegetable protein. Vegetables: Greens of all kinds, spring and summer vegetables, fall and winter vegetables. Lighter sweet things: Lighter pies, cakes, tarts and cookies, lighter sweet toppings, fruit treats.

A color photo on the rear cover shows "Louise Hagler, best-selling author and editor of *Tofu Cookery, Tofu Quick and Easy,* and the original *Farm Vegetarian Cookbook,* has been a creative vegetarian since 1969." Address: Summertown, Tennessee.

2895. Herbst, Sharon Tyler. ed. 1995. The new food lover's companion: Comprehensive definitions of over 4000 food, wine, and culinary terms. 2nd ed. Hauppauge, New York: Barrons. xvi + 715 p. 18 cm. 1st ed. published 1990. Barron's Cooking Guide. [325* ref]
• ***Summary:*** This carefully researched and well written dictionary of food terms also contains 21 useful appendixes and a good bibliography. All enquiries should be directed to: Barron's Educational Series Inc., 250 Wireless Blvd., Hauppauge, New York 11778.

Soy and related entries can be found under the following headings: Adzuki bean (also azuki), agedashi, cheese–imitation cheese (generally includes tofu and lecithin), Fermented black beans (also called Chinese black beans and salty black beans), flour–gluten flour, kecap manis / ketjap manis, kudzu, milk (see soy milk), miso, natto, okara, queso fresco (also called queso blanco), quinoa, seitan, shoyu (Japanese for soy sauce), soybean, soybean oil, soy flour, soy milk, soy pea (see soybean), soy sauce (light soy sauce, dark soy sauce, Chinese black soy, tamari), tempe or tempeh, tofu (also called soybean curd and bean curd).

2896. Holzen, Heinz Von; Arsana, Lother. 1995. The food of Indonesia: Authentic recipes from the spice islands. Singapore: Periplus Editions; Clarendon, VT: Distributors, United States, Charles E. Tuttle. 120 p. Introduction by Wendy Hutton. Illust. (color photos). Index. 21 x 23 cm. Series: Periplus World Cookbooks.
• ***Summary:*** Recipes by Heinz von Holzen & Lother Arsana; food photography by Heinz von Holzen. Facing each recipe is a full-page glossy color photo. One recipe per page (usually). For each recipe, the Indonesian name is given first, in bold caps, above the English equivalent. The section titled "Indonesian ingredients" (p. 34-39) includes soy sauce (the two types are thick sweet soy sauce–*kecap manis,* and the thinner, saltier light soy sauce–*kecap asin*), and tempeh–a Javanese creation.

Soy related: *Sambal kecap*–Sweet soy sauce sambal (with 2 tablespoons sweet soy sauce, p. 44). *Sambal tauco*–Salted soy bean sambal (with ½ cup salted soybeans {tauco}, p. 45). *Gulai tempeh & Sambal goreng tempeh*–Tempeh stew (with 4 fermented soy cakes {tempeh}) & Hot spicy fried tempeh (with 2 fermented soybean cakes, p. 68).

Note: This book calls for an unusually large proportion of meat, fish, and poultry.

2897. Holzen, Heinz Von; Arsana, Lother. 1995. The food of Bali: Authentic recipes from the island of the gods. Singapore: Periplus Editions. 132 p. Introduction by Wendy Hutton. Illust. (color). Index. 20 cm. Series: Periplus World

Cookbooks.
• ***Summary:*** Tempeh is mentioned in the text on pages 6, 15 and 16–but it is not mentioned in the glossary of ingredients (p. 25-33) and is not called for in any recipes. The Glossary (p. 35) says that the two types of soy sauce used are "sweet soy sauce (*kecap manis*), and "thin soy sauce (*kecap asin*). As an alternative to sweet soy sauce use dark black Chinese soy sauce, and add brown sugar to sweeten it.

Recipes by Heinz von Holzen & Lother Arsana; food photography by Heinz von Holzen. Rich in graphics; poor in content. Address: 1-2. Grand Hyatt Bali.

2898. Kirchner, Bharti. 1995. The bold vegetarian: 150 inspired international recipes. New York, NY: HarperPerennial. xii + 286 p. Illust. (by Barbara Balch). Index. 24 cm.
• ***Summary:*** The author, a woman, draws on her Indian background for seasonings, but has been strongly influenced by her home in North America and world travels. The index contains 6 entries for tofu, 4 for tempeh, and 2 for miso–plus 1 for Soy-glazed napa cabbage (from Japan, with low-sodium soy sauce. p. 114-15). Address: Seattle, Washington.

2899. Mindell, Earl. 1995. Earl Mindell's soy miracle cookbook: 70 simple, tasty ways to add soy protein to your diet. New York, NY: Simon & Schuster. A Fireside Book. 91 p. No Index. 22 cm.
• ***Summary:*** The title page states that the recipes in this book were previously published in *Earl Mindell's Soy Miracle* (1995). At the end of each recipes is the source. Many of the recipes were developed by Judith Eaton, M.S., R.R., and Karen Lefkowitz, M.S., who have been tofu advocates for many years. "Judith and Karen run Nutrition Services, a consulting firm in Pomona, New York.

Contents: Salads. Spreads, dressings and sauces. Soups. Main dishes. Breads and breakfasts. Desserts.

The main soyfoods used–in descending order of predominance–are: Tofu (in 47 recipes). Soymilk (13, incl. Vitasoy and Edensoy). Tempeh (8). Texturized soy protein (3). Soy flour (3). Natural Touch okara patties (2) Miso (1). Soy sauce is used here and there as a seasoning.

Note: This is not a vegetarian cookbook. Ground beef, chicken, crabmeat etc. are used in a relative small proportion of the recipes. Address: R.Ph, PhD, registered pharmacist and Prof. of Nutrition at Pacific Western Univ. in Los Angeles. He lives in Beverly Hills, California.

2900. Northrup, Christiane. 1995. Heal your symptoms naturally. Potomac, Maryland: Phillips Publishing Inc. 18 p. 28 cm.
• ***Summary:*** In the section titled "Natural healing for menopause" (p. 1-3) Dr. Northrup advises women to take natural progesterone, since their body stops producing its own progesterone during menopause. This supplement provides relief from both hot flashes and mood swings for many women. "For two weeks out of every month, use a little progesterone cream on the soft areas of your skin, changing sites often... Another form of natural progesterone is plant progesterone. There are many sources. The most common are soy foods and yams (not sweet potatoes)." Also take a safe form of estrogen–estriol. It can be applied as a vaginal cream and may protect against breast cancer. "Natural estrogens such as estriol have been in use for over 50 years, and are considered generic. Although these natural hormones aren't very common in the U.S., estriol is one of the more popular estrogens in Europe." To find a U.S. source call the Women's International Pharmacy at 1-800-279-5708.

"Natural plant hormones with estrogen-like effects are found in soy products, such as soy milk, tofu and miso, in addition to cashews, peanuts, oats, corn, wheat, apples and almonds. Japanese women go through menopause more easily than American women, partly because their diet is so high in the natural estrogens found in soy products. (Note: If you still have your uterus, never take estrogen of any kind without balancing it with progesterone.)"

In the section titled "Natural healing for breast cancer" (p. 6-7) notes that you can lower your risk through diet. "Eat soy products, You can also protect your breasts with tofu. A study published in the September 1994 issue of the *American Journal of Clinical Nutrition* demonstrated that women who ate 60 grams of soy protein per day (about 2 ounces) had changes in the estrogen levels that were similar to the effects of tamoxifen–an antiestrogen drug that is undergoing study as a possible prophylactic agent in women who are at high risk for breast cancer.

"The effects of soy protein on hormonal levels are thought to be from estrogen-like substances in soybeans called isoflavones. These behave like partial estrogen agonists/antagonists, which means they help increase the effects of estrogen in women who have estrogen levels that are too low, while helping to decrease the effects of estrogen in women whose estrogen levels are too high.

"While we're waiting for more research on the subject, I'd recommend adding soy protein to your diet regularly. In addition to tofu, soy protein is found in tempeh, miso and natto. These products are sold in many grocery stores and in almost all health food stores." Address: M.D. (gynecologist), Women to Women, Yarmouth, Maine.

2901. Plenty International. 1995. From the global kitchen: A collection of vegetarian recipes. Summertown, Tennessee: The Book Publishing Company. 124 p. Illust. (57 photos). Index. 21 x 18 cm.
• ***Summary:*** Contents: Foreword, by Virginia & Mark Messina. Introduction. Local ingredients–Cooking tools. Description of uncommon ingredients. Recipe notes: Flours (incl. soy flour), tofu, grating tofu and tempeh, replacing okara with grated tofu or tempeh, cooking, breaking and

dehulling soybeans, hand mills and blenders. 1. North America: The Bronx, Native Americans (Oglala Lakota people at Pine Ridge Reservation in South Dakota), recipes (main dishes, salad, breads, desserts). 2. The Caribbean: Introduction (Jamaica, Dominica), recipes. 3. Central America: Introduction (Belize, Guatemala, Nicaragua, Casta Calderon's first experience with soy foods in Nicaragua), recipes. Africa: Introduction (Lesotho, Liberia), recipes. Sri Lanka: Introduction, recipes.

This remarkable, first-of-its-kind book by Plenty International tells the story of the pioneering work they have done over a period of several decades to introduce soyfoods to the Third World. The many vegetarian recipes in each section (each containing at least one soy ingredient, and based mostly on traditional soyfoods) are innovative and well adapted to that region. The 51 black-and-white photos, plus 6 color photos on the front and rear covers, add joy and a human face to the book. Much of the text is by Chuck Haren. Address: P.O. Box 394, Summertown, Tennessee 38483. Phone: (615) 964-4864.

2902. Zibart, Eve. 1996. The very fertile vegan field. *Washington Post.* Jan. 26. p. N24. Weekend section.
• ***Summary:*** The article begins: "It's not unusual anymore for non-vegetarians to eat at such green hot spots as the Health Zone, Food for Thought or Planet X (which is turning into the caterer-of-choice for veggie and vegan alternative rock types). Likewise, its easier and easier for vegetarians to find foods they like at new nutrition-conscious restaurants such as Felix, Greenwood, etc.–as well as at mainstream spots.

Today, more and more restaurants are offering vegan dishes, which contain no animal products whatsoever. A vegan diet precludes not only meat, poultry and seafood, but dairy products, eggs, butter, lard and other animal fats, cream sauces, cheese, etc. Yet that still leaves plenty of room for fine dining.

Most Asian cuisines (except Korean and Filipino) limit the use of dairy products and eggs. Malik, a downtown Thai restaurant, has a dozen vegetarian / vegan entrees, "including several featuring that heart-healthy favorite tofu" in various sauces such as red curry, black bean sauce, and peanut curry.

The Vegetable Garden in Rockville is the only wholly vegan Chinese restaurant in the area, although most Chinese eating place have a good variety of choices. The key words are "mock" and "Buddha." Mock chicken and mock pork are nicknames for tofu and other soy-based meat alternatives. The word "pork" sometimes refers to seasoned tempeh dishes. Since Buddhists are also vegans, correctly labeled "Buddhist delights" contain no animal products.

Most Japanese restaurants offer hot or cold tofu and "lightly salted soybean pods called edamame."

Ends with a directory of ten restaurants in the Washington, DC, area that offer a good selection of vegetarian or vegan dishes.

2903. GEM Cultures. 1996. Catalog [Mail order]. 30301 Sherwood Rd., Fort Bragg, CA 95437. 10 p. Jan. [4 ref]
• ***Summary:*** New additions include *The Simple Soybean and Your Health,* by Virginia and Mark Messina, and a maple tofu kit. Contents: Soycrafters Section: Tempeh, natto, koji starters, miso, koji, tofu boxes, tofu coagulants (natural nigari, Terra Alba naturally occurring calcium sulfate or gypsum). Books. Bread cultures. Dairy cultures. Tea fungus–Kombucha. Sea vegetables. Kitchen items. Ordering information. Address: Fort Bragg, California. Phone: 707-964-2922.

2904. *Health Naturally* (*Ontario*).1996. The tempeh of the times. Dec. 1995 / Jan. 1996. p. 44.
• ***Summary:*** "Terrific tempeh is made right here in Canada by Noble Bean, a small family-run business in the Ottawa Valley. Noble Bean uses only organically grown soybeans in its plain tempeh, combined with other organic grains (such as quinoa, rice, barley and millet) in its blended tempeh."

"Look in the freezer section for Noble Bean tempeh, available in health food stores in central and eastern Canada (Noble Bean, phone/fax 613/278-2305).

A photo shows the packages and labels of six different Noble Bean tempeh products.

2905. INTSOY. 1996. Soybean processing and utilization. June 4-28, 1996. An international training program (Brochure). Urbana, Illinois. 12 panels. 22 x 10 cm each.
• ***Summary:*** Contents: Basic topics to be presented in the 1996 course are the same as for the 1995 course. Professional opportunities. Cost and travel information (the course costs $4,300 plus an estimated $1,600 for room, board, and other local living expenses. INTSOY is unable to offer scholarships). This is the 16th offering of the training program. Some 170 persons from 26 countries have attended the course. Danny Erickson is the training officer in charge. Address: International Soybean Program, Univ. of Illinois, 169 Environmental and Agricultural Sciences Building, 1101 West Peabody Drive, Urbana, Illinois 61801. Phone: (217) 333-6422.

2906. Lukin, Anne. 1996. Tempeh temptations: Festive vegetarian dishes for the holidays. *Ontario's Common Ground Magazine* (*Canada*) Winter 1995/96. p. 16, 18-19.
• ***Summary:*** An introduction to tempeh, with five recipes. Tempeh makers in Ontario include Noble Bean (uses organically grown soybeans) and Soy City (in Toronto, Lorraine Guardino). A photo shows six tempeh products (packages and front panel labels) made by Noble Bean: Tempeh, Quinoa Tempeh with Sesame, Tempeh with Sea Veggies, 3 Grain Tempeh with Soy, Tempeh Burger, Tempeh.

2907. Napier, Kristine. 1996. The one food that could save your life: Long a favorite of vegetarians, the soybean is now touted as a potent cholesterol cutter. Why its not just another dietary fad. *Good Housekeeping.* Jan. p. 101-02.
• ***Summary:*** This article begins with a summary of the meta-analysis by Dr. James Anderson of Kentucky, published in the *New England Journal of Medicine* (Aug. 3), showing that soy protein can lower blood cholesterol. Contains two recipes: Hearty pasta & vegetables (with textured soy protein), and Thai tofu stir-fry. A sidebar titled "Where's the soy?," gives a brief description of tofu, tempeh, isolated soy protein, soy flour, soya powder, textured soy protein (TSP), and soy milk. Address: R.D.

2908. Soyfoods Center archival collections, from the 1600s ongoing. 1996. Lafayette, California. [6313 ref]
• ***Summary:*** As of 1 Jan. 1996 the Soyfoods Center Archives contains 6,313 unpublished archival documents–mainly correspondence, interviews, photographs, and unpublished manuscripts relating chiefly to the history of soybeans and soyfoods, and to a lesser extent, the history of vegetarianism and natural foods.

Main subject areas include: early history of soybeans and soyfoods; modern soy protein products; soyfoods industry and market; industrial utilization of soybeans; soy pioneers in the U.S., Europe, and worldwide; major U.S. soybean crushers; Seventh-day Adventists worldwide; pioneer U.S. soy protein companies; pioneer U.S. natural food companies and distributors; soybeans, soyfoods, Third World nations, and world hunger; nutritional and medicinal value of soybeans and soyfoods; and soybean production, trade, and marketing.

Document level access is available through the repository's SoyaScan information retrieval system.

Most important specific subject areas: Miso, natural foods, Seventh-day Adventists, soy sauce, soybean, soybean industry, soybean products, soyfoods, soyfoods industry, soymilk, tempeh, tofu, vegetarianism. Address: P.O. Box 234, Lafayette, California 94549. Phone: 510-283-2991.

2909. Connolly, Maureen. 1996. Have you had your tofu today? For the health-conscience, soy has become the superfood du jour. Is it all it's cracked up to be or the next incarnation of oat bran? *Women's Sports and Fitness* 18:62-63. Jan/Feb. [3 ref]
• ***Summary:*** Studies show that soy can reduce your risk of coronary disease. A 1990 study by the National Cancer Institute identified five anticarcinogens present in soybeans. As little as 25 gm/day of soy protein can be beneficial to health, and many soy products are now on the market. The author talks about "soy's new celebrity" and asks her readers "why not try tofu?"

A sidebar titled "A smorgasbord of soy" (p. 63) gives a brief description of the following soy products: Isolated soy protein, miso, soybeans, soy flour, soy milk, tempeh, textured soy protein (TSP), and tofu. Address: New Jersey.

2910. Hagler, Louise. 1996. Soyfoods cookery: Your road to better health. Summertown, Tennessee: The Book Publishing Co. 160 p. Illust. Index. 21 cm. Introduction by Mark and Virginia Messina.
• ***Summary:*** Contents: Foreword, by Louise Hagler. Introduction, by Mark Messina and Virginia Messina: Introduction, soybeans–a powerhouse of nutrition, soy and cancer (soybeans–a phytochemical factory, genistein and non-hormone cancers, soy and cancer treatment, isoflavones in the diet), soyfoods and heart disease–beyond cholesterol, soyfoods and bone health, soyfoods and kidney disease, menopause, perspective on soyfoods, about the Messinas. Basic soyfoods (glossary): Whole soybeans, fresh green soybeans, soymilk, okara (soy pulp), soymilk powder, soy protein concentrates, soy protein isolates, tofu, freeze-dried tofu, tempeh, textured vegetable protein, miso, soy flour or grits, yuba or bean curd stick or sheet, natto, soy sauce, soy oil, soy lecithin, convenience soyfoods (frozen soyburgers, frozen tamales and burritos, frozen soy hot dogs or wieners, frozen fat-free soy ground meat replacement, frozen soy pizza, tempeh burgers, frozen tofu lasagne, stuffed shells, manicotti, tortellini or ravioli, frozen soy breakfast links or "sausages" or tempeh "bacon," "ground" tofu, meatless chili mixes, meatless burger mixes, soy "cheeses," eggless soy mayonnaise, tofu salad dressings, soy ice creams, frozen pot pies, frozen pocket breads, instant miso soup, eggless soy cake, quick bread, pancake and waffle mixes, liquid soy coffee creamer, smoked or baked tofu). Feeding babies and children soyfoods. Breakfast, brunch & bread. Whole soybeans. Sauces, spreads, dips & dressings. Soup & salad. Main dishes. Desserts. Drinks & yogurt.

No dairy products or eggs are used; honey is called for in some recipes. Optional microwave instructions are sometimes included. Address: Summertown, Tennessee. Phone: 615-964-3571.

2911. Messina, Mark; Messina, Virginia. 1996. SoyFacts No. 9: Soyfoods & nutrients (Leaflet). Lebanon, Indiana: Indiana Soybean Development Council. 2 p. Front and back. 28 cm.
• ***Summary:*** Contents: Introduction. Macronutrients in soybeans: Protein, fat, fiber. Micronutrients in soyfoods: Calcium, iron, other. A table shows the nutrient content of the following soyfoods: Soybeans (½ cup, cooked). Tempeh (½ cup). Textured soy protein (½ cup cooked). Soynuts (¼ cup). Tofu (½ cup). Soy flour, defatted (¼ cup). Soy milk, plain (1 cup). For each food the following are given: Calories, protein, carbohydrate, fat, saturated fat, niacin, vitamin B-6, folic acid, calcium, iron, magnesium, copper, zinc.

Note: One version of this leaflet was developed for consumers and another for dietitians. The project was funded by the Indiana Soybean Development Council. Address: 1.

PhD; 2. MPH, RD. Both: Nutrition Matters, 1543 Lincoln St., Port Townsend, Washington 98368. Phone: 360-379-9544.

2912. Stacy, Michelle. 1996. Can soy save your life? Michelle Stacy separates hype from hope. *Food & Wine.* Feb. p. 88-94, 96. [1 ref]
• ***Summary:*** This story is based on the study by Dr. James Anderson in the *New England Journal of Medicine* (Aug. 1995). "In its cholesterol-busting guise, soy bears an eerie resemblance to another unglamorous food: oat bran."

"A growing body of evidence suggests that it [soy] may help prevent certain cancers, slow calcium loss from bones and moderate symptoms of menopause. Many of these effects, researchers posit, are due to natural substances in soy called isoflavones, which resemble the hormone estrogen and may replicate the many protective effects of estrogen without any of its drawbacks."

But many marketers, including Ronald Paul (president of Technomics, a food-consulting firm in Chicago) believe that soy has a bad image. "It's going to be a marketing challenge to change the public's view of it. I always like to say that if you can make the kiwi a success you can make anything a success." Will companies start to promote their products by advertising on the package "Excellent source of soy!"? Another obstacle to acceptance for some people that tofu reminds them of the health-food era of the 1960s.

Photos show the following packaged soyfoods, each with a brief description: Edamame, soy sauce, soy milk, soy flour, miso, tempeh, roasted soybean powder, tofu. Contains the following recipes, each accompanied by a color photo: Grilled tofu salad. Miso-carrot dressing. Tempeh sandwiches. Chili con tofu. Miso-clam soup. Fried tofu with mushroom gravy. Miso-stuffed chicken. Silken tofu in ginger syrup. A full-page color photo shows green vegetable soybeans in and around one large pod. Small photos show most of the recipes, plus a field of soybeans, and a farmer holding a young soybean plant. Address: Author of *Consumed: Why Americans Love, Hate, and Fear Food* (Simon & Schuster).

2913. The Mail Order Catalog. Spring-summer 1996. Catalog of books and food. 1996. P.O. Box 180, Summertown, TN 38483. 24 p.
• ***Summary:*** The book section of this mail order catalog contains listings for an excellent selection of vegetarian and vegan cookbooks, plus books on food nutrition & health, alternative healthcare, women's healthcare, native Americans and their cultures, and animal rights.

The vegetarian food products section offers TVP granules and chunks, Response textured soy protein concentrates (misleadingly called "Response TVP flakes"), Harvest Direct vegetarian broth, and Protean, instant gluten flour (regular or flavored), seitan "chicken" or "sausage" mix, Mori-Nu silken tofu, Soja instant soy beverage, organic low-fat soymilk powder, Red Star nutritional yeast, Beano, and tempeh starter. Address: Summertown, Tennessee. Phone: 800-695-2241.

2914. Tibbott, Seth. 1996. Strong growth at Turtle Island Foods, Inc. (Interview). *SoyaScan Notes.* March 1. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Turtle Island has benefited strongly from the rapid growth if interest in meat alternatives. The company's best-selling product is the Superburger, which is sold mostly at natural- and health food stores. During 1995, sales for all Turtle Island's products were up about 30-35% over 1994, and in 1994 they were up about 20% over 1993. Address: Turtle Island Foods, Inc., P.O. Box 176, Hood River, Oregon 97031. Phone: (503) 386-7766.

2915. O'Connor, Amy. 1996. Native Foods: It's not a mirage. *Vegetarian Times.* March. p. 112.
• ***Summary:*** Tanya Petrovna is chef and owner of Native Foods, which opened in Palm Springs in May 1995. She makes her own tempeh, seitan, and textured vegetable protein. Popular items include the Jerk Burger, a spicy grilled seitan steak marinated in Jamaican spices, Japanese-style Yakisoba made with stir-fried buckwheat noodles, and the Moby Dick, a flash-fried seitan fish sandwich.

2916. Joyce, Michael. 1996. Update on tempeh in Australia (Interview). *SoyaScan Notes*. April 22. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Michael is still in business making tempeh. Address: Tempeh Manufacturers Pty. Ltd., MS. 84, Nambour 4560, QLD, Australia. Phone: 074-467-342.

2917. Astuti, Mary; Marseno, Djagal W.; Marsono, Y.; Gitawati, Iswani. 1996. Development of antioxidant enzyme superoxide dismutase in soybean tempe. In: Alex Buchanan, ed. 1996. Proceedings of the Second International Soybean Processing and Utilization Conference: 8-13 January 1996, Bangkok, Thailand. Bangkok, Thailand: Printed by Funny Publishing Limited Partnership. Distributed by The Institute of Food Research and Product Development, Kasetsart University. xviii + 556 p. See p. 399-402. [12 ref]
• ***Summary:*** "The purpose of this study was to observe the development of antioxidant enzyme Superoxide Dismutase (SOD) during soybean tempe fermentation using inocula of *Rhizopus oligosporus, Rhizopus oryzae* and commercial. Soybean was fermented for 0-72 hours and the activity of SOD in crude extract was evaluated using the nitrite method. In the early stage of fermentation (0-12 hours), SOD activity was not detected, but after 12 hours of fermentation, SOD activity gradually increased up to 60 hours then decreased. The highest activity was in tempe fermented with *Rhizopus oryzae* followed by commercial culture and *R. oligosporus*. Tempe was a good source of natural antioxidant and all the

incocula showed similar patterns of producing SOD during tempe fermentation."

Oxygen is vital for the life of many creatures, but it is also potentially toxic. Superoxide anions are known to be capable of stimulating lipid peroxidation. "One of the terminal products of lipid peroxidation is malondialdehyde which can reach into cells and tissues which cause not only damage to lipid molecules but also non-lipid biomolecules such as protein that cause cell mutation. Since lipid peroxides are suggested as one of the substances responsible for degeneration diseases, more attention should be paid to foods which have a beneficial effect on lipid peroxide prevention."

Note: Organic peroxides tend to decompose easily to free radicals, which can damage living cells and cause unnatural aging. Address: 1-3: Faculty of Agricultural Technology, Gadjah Mada Univ., Yogyakarta, Indonesia; 4. Badan Tenaga Atom Nasional, Yogyakarta, Indonesia.

2918. Buchanan, Alex. ed. 1996. Proceedings of the Second International Soybean Processing and Utilization Conference: 8-13 January 1996, Bangkok, Thailand. Bangkok, Thailand: Printed by Funny Publishing Limited Partnership. Distributed by The Institute of Food Research and Product Development, Kasetsart University. xviii + 556 p. Illust. No index. 30 cm. [Eng]

• ***Summary:*** The first international conference of this type was held in Jilin, China, in 1990. Contents: Foreword, by Dr. Saipin Maneepun, Chairman, Scientific Committee. Scientific committee (13 members plus 2 secretaries). Executive summary, by Alastair Hicks. Keynote address. Part I: Crop technology related to processing (2 plenary papers, 2 regular papers, and 13 poster sessions). Part II: Post-production systems (1 plenary paper, 4 regular papers, and 2 poster sessions). Part III: Food processing technology (1 plenary paper, 7 regular papers, and 21 poster sessions). Part IV: Food science and nutrition (1 plenary papers, 5 regular papers, and 7 poster sessions). Part V: Tempe (6 regular papers, and 1 poster session). Part VI: Feed technology (2 plenary papers, and 7 regular papers). Part VII: Marketing technology (1 plenary paper, and 2 regular papers). Part VIII: Industrial technology (1 plenary paper, 4 regular papers, and 5 poster sessions).

This conference was organized by the Department of Agricultural Extension, Ministry of Agriculture and Cooperatives, Thailand. In collaboration with Institute of Food Research and Product Development, Kasetsart Univ., Thailand. Supported by FAO, American Soybean Association, and United Soybean Board.

On the rear cover, below a logo of an orange soybean superimposed on a globe inside a yellow square, is written: "Soybeans and soyfoods: Green, clean and healthy." Address: Bangkok, Thailand.

2919. Charoenthamawat, Pornthip. 1996. Tempeh research and activities in Thailand. In: Alex Buchanan, ed. 1996. Proceedings of the Second International Soybean Processing and Utilization Conference: 8-13 January 1996, Bangkok, Thailand. Bangkok, Thailand: Printed by Funny Publishing Limited Partnership. Distributed by The Institute of Food Research and Product Development, Kasetsart University. xviii + 556 p. See p. 395-97. [12 ref]

• ***Summary:*** Contents: Introduction. Research review: Varieties of material, product development, supplementation, nutritional therapy. Consumption promotion.

"Tremendous work on peanut tempeh has been conducted over the past ten years under the Peanut Collaborative Research Support Program at the Department of Product Development, Faculty of Agro-Industry, Kasetsart University." A great deal of additional research and development has also been conducted on okara tempeh, made by fermenting the residue from tofu or soymilk production.

"The main obstacle to promotion of tempeh consumption is the need to integrate tempeh products into the Thai culture and life style." Address: Researcher, the Inst. of Food Research and Product Development, Kasetsart Univ., Bangkok 10900, Thailand.

2920. Goulart, Frances Sheridan. 1996. Oh, soy! *Fit* (*New York*). March/April. p. 77-79.

• ***Summary:*** On the section titled "A nutritional wonder," the authors notes that soymilk has 15 times more iron than dairy milk, 50% less fat, and no cholesterol. Tofu is one of the two best sources of calcium (yogurt is the other) recommended by the Osteoporosis Foundation for meeting adult calcium needs (1,000 mg/daily). One 4-oz. serving of tofu provides twice as much calcium as one cup of plain yogurt. Soybeans provide the antioxidant vitamins A and E.

A sidebar titled "Your soy shopping list" gives brief definitions of tofu, tempeh, miso, natto, soy milk, soy cheese, soy sauce, and textured vegetable protein (TVP). Address: Connecticut.

2921. Hermana, -; Karmini, Mien; Karyadi, Darwin. 1996. Health significance of tempe for human nutrition. In: Alex Buchanan, ed. 1996. Proceedings of the Second International Soybean Processing and Utilization Conference: 8-13 January 1996, Bangkok, Thailand. Bangkok, Thailand: Printed by Funny Publishing Limited Partnership. Distributed by The Institute of Food Research and Product Development, Kasetsart University. xviii + 556 p. See p. 391-94. [15 ref]

• ***Summary:*** Contents: Introduction. Nutritive value of tempe: Overview, tempe and infective diarrhea, hypocholesterolemic effect, inhibition of fatty acid peroxidation.

Throughout Indonesia tempe is consumed by people of

low as well as high socio-economic level. Tens of thousands of tempe makers produce tempe at home using 10-150 kg of soybeans daily. The largest tempeh maker uses 2 metric tons of soybeans daily. Producers are united in the Koperasi Produsen Tempe Tahu Indonesia (KOPTI; Cooperatives of Producers of Tempeh and Tofu in Indonesia).

"In the future more people are expected to consume tempe because there has been training in tempe technology by the Nutrition Research and Development Center in Bogor in 1986 and 1990." The two training workshops "were sponsored by the United National University and attended by 22 fellows from 10 countries in Asia and Africa." Address: Nutrition Research and Development Centre, Bogor, Indonesia.

2922. Husin, Adinan; Ahmad, Hasimah Hafiz. 1996. Soybean as a consistent industrial resource. In: Alex Buchanan, ed. 1996. Proceedings of the Second International Soybean Processing and Utilization Conference: 8-13 January 1996, Bangkok, Thailand. Bangkok, Thailand: Printed by Funny Publishing Limited Partnership. Distributed by The Institute of Food Research and Product Development, Kasetsart University. xviii + 556 p. See p. 497-507. [30 ref]
• ***Summary:*** Contents: Abstract. Introduction. Processing of soybean. Food uses of soybean. Processing of soybean oil. Processing of protein products: Flours, protein concentrates, protein isolates, textured protein products. Unfermented soy products: Soy curd/tofu, soymilk, snacks. Fermented products: Tempe, soy sauce, cheese (Commercial cheese alternatives claim to taste, melt, and stretch like regular cheese. Soy cheese now comes in Jalapeno Jack style, Cheddar style, mozzarella style, Garlic-herb style, and Monterey Jack style). Non-food uses ("Soy oils are used in non-food applications such as in the preparation of soaps, paints, varnishes, resins, plastics, lubricants and agrochemicals"). Promoting the use of soybean. Conclusion. Address: Food Technology Research Centre, MARDI, G.P.O. Box 12301, 50774 Kuala Lumpur, Malaysia.

2923. Krusong, Warawut; Yongsmith, Busaba. 1996. Factors affecting acid formation in soymilk from high vitamin B-12–tempeh. In: Alex Buchanan, ed. 1996. Proceedings of the Second International Soybean Processing and Utilization Conference: 8-13 January 1996, Bangkok, Thailand. Bangkok, Thailand: Printed by Funny Publishing Limited Partnership. Distributed by The Institute of Food Research and Product Development, Kasetsart University. xviii + 556 p. See p. 403-07. [10 ref]
• ***Summary:*** Cooked, dehulled soybeans were inoculated with both *Rhizopus oligosporus* and with *Propionibacterium shermanii* then incubated to make a "high vitamin B-12 tempeh (HVT)."

Vitamin B-12 is produced only by microorganisms. *Propionibacterium shermanii* is widely used in large-scale production of vitamin B-12 (Florent and Ninet, 1979). Krusong et al (1991) reported that non-sequential mixed fermentation of *Rhizopus oligosporus* and *Propionibacterium shermanii* was able to produce vitamin B-12 in tempeh, called high vitamin B-12 tempeh (HVT); this tempeh contained 10 times as much vitamin B-12 per gram as the original soybeans.

In this article, the HVT tempeh was used to prepare HVT soymilk, and "lactic soydrink" was prepared from the HVT soymilk using a mixed culture of appropriate lactic cultures, a mixed culture of *Lactobacillus bulgaricus* and *Streptococcus thermophilus* at 5% concentration. No sucrose was added to the HVT soymilk during its lactic acid fermentation. It was fermented for 16 hours to attain the highest acid production. Address: 1. Dep. of Agro-Industry, Faculty of Agricultural Technology, King Mongkut's Inst. of Technology, Ladkrabang, Bangkok 10520; 2. Dep. of Microbiology, Faculty of Science, Kasetsart Univ., Bangkok 10903, Thailand.

2924. Maneepun, Saipin. 1996. The role of formulated soyfoods and their enrichment. In: Alex Buchanan, ed. 1996. Proceedings of the Second International Soybean Processing and Utilization Conference: 8-13 January 1996, Bangkok, Thailand. Bangkok, Thailand: Printed by Funny Publishing Limited Partnership. Distributed by The Institute of Food Research and Product Development, Kasetsart University. xviii + 556 p. See p. 291-99. [10 ref]
• ***Summary:*** Contents: Abstract. Introduction. Using full-fat soyflour (FFSF) in formulated soyfoods: Traditional full-fat soyflour production, processing technology for full-fat soyflour production, baby food products (and conclusions of a metabolic study), cookies, concentrated soymilk, formulated cereal-soy snackfoods (made by an extrusion cooker), soynoodles (using 10% FFSF with wheat flour). Using defatted soy flour (DSF), soy concentrates and isolates. Development of tempeh flour as a food ingredient. Conclusion.

Tables show: (1) Protein content and protein score in various cereal-soy combinations (wheat, corn, or rice unfortified or fortified with soy). (2) Ingredients for six high-protein snacks. (3) Proximate analysis of these 6 high protein snacks. (4) Nutritional evaluation of 8 high protein snacks. (5) Composition of four commercial formulated soyfoods (supplementary baby food, cookie, concentrated soymilk, soynoodle). Address: Director, Inst. of Food Research and Product Development, Kasetsart Univ., P.O. Box 1043, Bangkok 10903, Thailand.

2925. Osho, S.M. 1996. Fortification and enrichment of African diets using soybeans. In: Alex Buchanan, ed. 1996. Proceedings of the Second International Soybean Processing and Utilization Conference: 8-13 January 1996, Bangkok, Thailand. Bangkok, Thailand: Printed by Funny Publishing

Limited Partnership. Distributed by The Institute of Food Research and Product Development, Kasetsart University. xviii + 556 p. See p. 314-21. [15 ref]
• ***Summary:*** Contents: Abstract. Introduction. Materials and methods: Research was conducted to incorporate soybeans, on a household scale, into traditional root and tuber crops (e.g., cassava), cereals (e.g., maize, sorghum, millet, rice), developed appropriate processing techniques for making tofu and soy tempe [tempeh] based products, used an extruder to develop commercial products containing soy, disseminated the technologies developed to rural households and small-scale companies.

Results and discussion: A good example of how soybean has improved nutritional values is by fortification of cassava and gari, quality and acceptability of local soft cheese (*warankashi,* made by coagulating cow's milk with an aqueous extract from the leaves of the sodom apple (*Calotropis procera*)), and soybean curd (tofu), tempe is a nutritious Oriental food.

Tables: (1) Nutrient composition of local gari and fortified soybean gari. Four columns. (a) Nutrients. (b) Control gari. (c) 75% cassava + 25% soybean milk residue [okara]. (d) 75% cassava + 25% whole soybean paste.

(2) Sensory evaluation of soygari compared with local gari. Gari fortified with okara (overall acceptability 6.7) was almost as well accepted as traditional gari (6.8).

(3) Chemical composition of local cheese (warankashi) and soybean curd (tofu).

(4) Sensory evaluation scores for warankashi (overall acceptability 6.4) and tofu (5.0).

(5) Chemical composition of tempe-fortified maize based weaning foods (dry weight basis).

"Conclusion: Through aid from the International Development Research Centre (IDRC) Canada, the International Institute of Tropical Agriculture (IITA) is collaborating with national programs in Nigeria and recently Ghana, Cote d'Ivoire and Benin to develop household and small-scale processing techniques for soybean. The project is also planning to extend coverage to other African countries. The future of soybeans looks bright in Africa." Address: International Inst. of Tropical Agriculture, Oyo Rd., PMB 5320, Ibadan, Nigeria.

2926. Robertson, Robin. 1996. 366 healthful ways to cook tofu and other meat alternatives. New York, NY: Penguin/ Dutton. 406 p. Index. 24 cm. A Plume book. Nutritional analyses provided by Ed Blonz, PhD.
• ***Summary:*** Contents: Introduction. 1. Appetizers, hors d'oeuvres, and sandwiches. 2. Stews and hearty soups. 3. Pasta dishes. 4. Casseroles, gratins, and risottos. 5. Stir-fries. 6. Burgers, loaves, and savory pies. 7. Under wraps, stuffed, and skewered. 8. Sautéed, seared, and grilled. 9. Main-dish salads. 10. One-dish meals.

The three main meat alternatives used in the recipes in this book are tofu, tempeh, and seitan. Other soy and related foods are used in recipes are: Adzuki beans, soy milk, and TVP. The author is a woman. Address: Professional chef and cooking instructor, Virginia Beach, Virginia.

2927. Soetrisno, Noer. 1996. Socio economic aspects of tempe production in Indonesia. In: Alex Buchanan, ed. 1996. Proceedings of the Second International Soybean Processing and Utilization Conference: 8-13 January 1996, Bangkok, Thailand. Bangkok, Thailand: Printed by Funny Publishing Limited Partnership. Distributed by The Institute of Food Research and Product Development, Kasetsart University. xviii + 556 p. See p. 371-76. [7 ref]
• ***Summary:*** Contents: Abstract. Background. Tempe production and marketing system. Tempe industry products. Challenges and future of tempe industry.

Originally tempeh was made only in a limited area in Central and East Java. Today, there are more than 93,000 home industry units recorded as tempe makers throughout Indonesia; they employ more than 265,000 workers.

Tempe makers often employ a number of tempe vendors–often friends or relatives–to distribute and sell their products–either finished tempe or half-fermented tempe. Under this system, job seekers can enter the market quickly and easily with almost no experience or capital. This has helped tempe production to expand quickly.

The fact that tempe makers require water and produce waste can create difficulties in dense urban settings. This problem first arose in the mid-1970s as tempe makers migrated into big cities such as Jakarta, and it caused them to organize themselves and to attract government attention. By early 1980, makers of soyfoods, especially tempe and tofu, began to organize cooperatives of tempe and tofu producers, starting in the big cities. Today there are 111 primary cooperative societies (KOPTI) organized by tempe and tofu makers; these have joined into a National Federation of Tempe and Tofu Producer Cooperatives (GAKOPTI).

In Indonesia there are only few large tempeh manufacturers. The largest production capacity reported so far is less than 3,000 kg of soybeans per day, while the average capacity is 50-200 kg of soybeans per day. Address: Faculty of Industry Technology, Parahyangan Catholic Univ., Jalan Gunung Mas c-11, Bandung 40142, Indonesia.

2928. Suharto, Ign. 1996. Global transfer of food technology in small scale tempe industry. In: Alex Buchanan, ed. 1996. Proceedings of the Second International Soybean Processing and Utilization Conference: 8-13 January 1996, Bangkok, Thailand. Bangkok, Thailand: Printed by Funny Publishing Limited Partnership. Distributed by The Institute of Food Research and Product Development, Kasetsart University. xviii + 556 p. See p. 377-81. [2 ref]
• ***Summary:*** Contents: Abstract. The development of low cost protein food. The problems of technology transfer in

small-scale tempeh industries. The population triangle. Vertical patterns of transfer in small-scale tempeh industries: Role of foreign countries, modern tempe industries, supply of production equipment. Conclusions. Address: Faculty of Industrial Technology, Catholic Univ. of Parahyangan (Unpar), Ciumbuleuit 94, Bandung 40141, Indonesia.

2929. Vaidehi, M.P. 1996. Soya-maize tempe biscuits and porridge mix for the growth and health of 0-5 year children. In: Alex Buchanan, ed. 1996. Proceedings of the Second International Soybean Processing and Utilization Conference: 8-13 January 1996, Bangkok, Thailand. Bangkok, Thailand: Printed by Funny Publishing Limited Partnership. Distributed by The Institute of Food Research and Product Development, Kasetsart University. xviii + 556 p. See p. 382-90. [8 ref]

• ***Summary:*** The first step is to make tempeh using 700 gm maize grits and 300 gm soybeans. The finished tempeh is then sliced, steam blanched for 15 minutes, dried (in an oven or in the sun), powdered into a desired grit size, then packed in polyethylene pouches for future use in biscuits. When making porridge, se 650 gm maize grits and 300 gm soybeans.

"Soya-maize porridge and biscuits were fed in comparison with existing supplementary food in the national programme for malnourished children. The tempeh fed group improved in weight and height gain significantly in 3 months compared with the control. Porridge contained 11.6 gm protein and 400 calories per 100 gm mix with whole wheat, milk and sugar. A similar experiment with biscuits prepared with tempeh showed significant improvement among malnourished children compared with the DFS blended biscuits fed group. Many B-complex clinical deficiency symptoms disappeared after feeding test tempe products. Both porridge and biscuits had good shelf life, low cost, high protein and acceptability." Address: Prof. and Head, Div. of Rural Home Science, Univ. of Agricultural Sciences, Bangalore, Karnataka State–560 024, India.

2930. DeAngelis, Lissa; Siple, Molly. 1996. Recipes for change: Gourmet wholefood cooking for health and vitality at menopause. New York, NY: Dutton Signet. A Div. of Penguin Books USA Inc. xvi + 400 p. May. Index. 25 cm. [34* ref]

• ***Summary:*** In the upper right corner of the front cover we read: "Feel great without hormone replacement therapy!" This is a book, with a natural foods and macrobiotic slant, about using foods in place of hormone therapy to help deal with nine problems that occur around the time menopause: Premenstrual syndrome, hot flashes, fatigue, heart palpitations, memory lapses, mood swings, irritability and depression, weight gain, waning interest in sexuality, hypothyroidism. All menu suggestions are divided into two choices: Vegetarian and non-vegetarian (but with many vegetarian dishes). Pages 4-5 note that science has found active ingredients in foods that promote good health during menopause. Soybeans and soy products are "rich in phytohormones... sometimes called phytoestrogens." Four types of food are "off the menu" = should not be consumed: Refined sugars, caffeine and coffee, processed oils, and refined white flour and refined grains. The subsection titled "Phytohormones" (p. 16) lists ten foods, including tofu and brown rice, as good sources. The benefits of phytohormones and soyfoods are also discussed in the section on "Breast cancer" (p. 55-56).

Soy-related recipes include: Miso soup (p. 90). Bean basics (p. 120-23). Tofu teriyaki with vegetables (p. 123-24). Tempeh, green beans, and carrots with mustard sauce (p. 132-33). Tempeh slices for sandwiches (p. 148-49). Tofu alfredo sauce (p. 303).

The recipes also call for: Adzuki beans, almond butter and tahini, almond milk, kudzu, and plums (umeboshi). The last page is titled "About the authors." Photos of Lissa DeAngelis and Molly Siple appear on the inside rear dust jacket. Address: 1. Private nutrition consultant, North Edison, New Jersey; former Assoc. Director of the Natural Gourmet Cookery School in New York City for 10 years; 2. Registered Dietitian, Los Angeles, California.

2931. Messina, Mark; Messina, Virginia. 1996. The dietitian's guide to vegetarian diets: Issues and applications. Gaithersberg, Maryland: Aspen Publishers, Inc. xi + 511 p. Index. 24 cm. [1939 ref]

• ***Summary:*** Contents: Preface. Acknowledgments. Part I: An overview of vegetarian diet. 1. Demographics and definitions: History of vegetarianism, profile of vegetarians, types of vegetarian diets. 2. Health consequences of vegetarian diets: Differences in dietary components of vegetarian and nonvegetarian diets, cardiovascular disease, hypertension, cancer, diabetes, obesity, kidney disease, renal stones, gallstones, diverticular disease, other conditions, the dairy connection, phytochemicals, conclusion.

Part II: Vegetarian nutrition. 3. Protein: A historical perspective on protein, protein requirements, vegetarian diets and protein digestibility, assessing protein quality, plant proteins and nitrogen balance, protein complementarity, conclusion. 4. Calcium: Osteoporosis, calcium and osteoporosis, calcium absorption and the RDA, calcium excretion, bone health of vegetarians, meeting the calcium RDA on plant-based diets, plant sources of calcium, other factors that affect bone health/fracture rate, conclusion. 5. Minerals: Iron, zinc, selenium, copper, magnesium, phosphorus, manganese, iodine, sodium, chloride, potassium, fluoride, chromium, molybdenum. 6. Vitamins: Vitamin B_{12} (cobalamin), riboflavin, vitamin D, vitamin B_6, vitamin B_1 (thiamin), niacin, folate, biotin, pantothenic acid, vitamin C (ascorbic acid), vitamin A, vitamin E, vitamin K. 7. Food guides for vegetarians: A history of food guides, developing

food guides for vegetarians, vegetarian food guides, appendix 7-A–food guides for vegetarians (food guide for lacto-ovo vegetarians and vegans, the 1-2-3-4-5 vegetarian food guide, American Dietetic Association's vegetarian food guide, the vegetarian food pyramid, the vegetarian food pyramid, macrobiotic food guide).

Part III: Vegetarian diets throughout the life cycle. 8. Pregnancy and lactation: Weight gain and calorie needs in pregnancy, weight gain in pregnant vegetarians, meeting nutrient needs of pregnancy on a vegetarian diet, meal-planning guidelines, adolescent pregnancy, potential complications of pregnancy, common conditions of pregnancy, vegetarians and lactation, appendix 8-A–food guides for pregnant and breast feeding vegetarians (food guide I, food guide II). 9. Vegetarian diets in infancy: Growth in vegetarian infants, vegetarian diets during the first six months of infancy, solid foods for vegetarian infants, comparison of sample menu plans for 9-month old vegan and omnivore infants, potential concerns in infant feeding, macrobiotic diets in infancy, fatty acids in the diet of vegetarian infants, conclusion. 10. Preschool and school-age children: Growth of vegetarian children, diets of vegetarian children, protein, fat, calcium, vitamin D, vitamin B_{12}, iron, zinc, guidelines for meal planning for vegetarian children, milk in the diets of vegetarian children, counseling parents of vegetarian children, vegetarian diets for school-age children, school lunch, bag lunch, appendix 10-A–meal-planning guidelines for children (other food guides). 11. Vegetarian diets for adolescents: Growth of vegetarian adolescents, nutrient needs of vegetarian adolescents, meal-planning guidelines for vegetarian adolescents, eating disorders. 12. Vegetarian diets for older people: Dietary status of older vegetarians, nutrient needs of older vegetarians, meal planning for older people.

Part IV: Practical applications for counseling vegetarians. 13. Counseling vegetarian clients: Dietary assessment, counseling clients to plan menus based on vegetarian food guides, vegetarian diets as dietary therapy, reducing fat in vegetarian diets, reducing food costs on vegetarian diets. 14. Diabetes: Diet therapy for diabetes, vegetarians and diabetes, the diabetic exchange lists, appendix 14-A–exchange lists for meal planning. 15. Vegetarian diets for athletes: Vegetarian diets and athletic performance, nutrition needs of athletes, risks of amenorrhea in female vegetarians and female vegetarian athletes. 16. Vegetarian food preparation: Preparing grains, preparing beans, using tofu, using textured vegetable protein, using egg substitutes, cooking with sweeteners.

Glossary of vegetarian foods. Resources on vegetarian diet: Vegetarian resources for dietitians, resources for vegetarian clients, on-line services, mail-order vegetarian foods.

Appendixes. A. Fiber, cholesterol, and macronutrient intakes of adult vegetarians and nonvegetarians. B. Lipid levels in adult vegetarians and nonvegetarians. C. Blood pressure of adult vegetarians and nonvegetarians. D. Anthropometric data of female adult vegetarians and nonvegetarians. E. Anthropometric data of male adult vegetarians and nonvegetarians. F. Intake ratios of N-6 to N-3 fatty acids on vegetarian and non-vegetarian diets. G. Protein, calcium, phosphorus, sodium and potassium intakes of adult vegetarians and nonvegetarians. H. Iron intake and status of vegetarians and nonvegetarians. I. Mineral intake of adult vegetarians and nonvegetarians. J. Water soluble vitamin intake of adult vegetarians and nonvegetarians. K. Fat soluble vitamin intake of adult vegetarians and nonvegetarians. L. Fiber, cholesterol, and macronutrient intakes of vegetarian and nonvegetarian school-age children and teenagers. M. Water soluble vitamin intakes of vegetarian and nonvegetarian school-aged children and teenagers. N. Fat soluble vitamin intake of vegetarian and nonvegetarian school-aged children and teenagers. O. Mineral intake of vegetarian and nonvegetarian school-aged children and teenagers. P. Fiber, cholesterol, and macronutrient intakes of elderly vegetarians and nonvegetarians. Q. Water soluble vitamin intake of elderly vegetarians and nonvegetarians. R. Mineral intake of elderly vegetarians and nonvegetarians.

The information on vitamin K is excellent and extensive (despite one small error): Table 6-12 (p. 197) gives the vitamin K content of selected foods. The content of soybean oil is 77 micrograms per tablespoon (not milligrams as stated). Other rich sources are (per ½ cup cooked): Lentils (261 mcg), kale (179 mcg), spinach (141), broccoli (119). The source of these statistics is: USDA Provisional table on vitamin K content of foods. 1994. Hyattsville, Maryland: USDA.

Index listings for individual soyfoods: Tofu: p. 38-82, 392. Tempeh: p. 391. Soymilk: p. 214-15, 284-85, 391. Miso: p. 389. Soy cheese, soy flour, soy yogurt, soybeans, soynuts, Take Care (fortified soy protein beverage sold in powdered form), tamari: p. 391 (Glossary of vegetarian foods). Address: 1. PhD; 2. MPH, RD. Both: Nutrition Matters, Inc., 1543 Lincoln St., Port Townsend, Washington 98368. Phone: 360-379-9544.

2932. **Product Name:** Tempeh.
Manufacturer's Name: Plain Foods. Renamed Vermont Soy in May 1997.
Manufacturer's Address: Box 248, Johnson, VT 05656.
Date of Introduction: 1996. May.
New Product–Documentation: Call from Todd Pinkham, founder and owner. 1996. July 10. He is an organic dairy farmer who, with his partner (Megan Treadwell), milks 30 cows. They feed the cows organically grown feeds, and he has been shocked to learn how much grain is typically fed to cows. In May 1996 he and his partner started making and selling tempeh.

Call from Todd Pinkham. 1997. Sept. 18. In May 1997 he and Meg left their farm, moved to a new location (44 Foundry St., Waterbury, Vermont 05676. Phone: 802-244-5400), and into a commercial building (formerly Green Mountain Coffee Roasters) with several other small food processors. At the same time they changed the business name to Vermont Soy from Plain Foods. They still make only plain tempeh (distributed refrigerated the day after it is packed) and there is a strong demand for the product. He would like to add a burger and some other tempeh products to their line.

Form filled out and two labels sent by Megan Treadwell. 2001. June. Vermont Soy is at 44 Foundry St., Waterbury, Vermont 05676. Phone: 802-244-5400. They now make Tempeh, and Barbecue Burger, both organic.

2933. Raymond, Jennifer. 1996. The peaceful palate: Fine vegetarian cuisine. Revised ed. Calistoga, California: Heart & Soul Publications. Published by the author. Distributed by The Book Publishing Co., Summertown, TN. 159 p. Illust. Index. 28 cm.
• ***Summary:*** A vegan cookbook, with a substantial section on vegan nutrition. Contains 11 tofu recipes and 1 recipe for tempeh sandwich. A portrait photo (p. 159) shows Jennifer Raymond.

Talk with Jennifer Raymond. 1996. May 30. The new enlarged edition was available on 2 May 1996. There are new recipes and with each recipe is a nutritional analysis. The book is still available from the author, as well as nationwide because it is distributed by the The Book Publishing Company in Summertown, Tennessee. She is now working closely with Dr. Dean Ornish, and adds: "He is at the center of where things are happening related to vegetarianism, diet, and health. His work has had a more profound impact on the way that the medical profession and people in general view vegetarianism than that of almost any other person. It has allowed vegetarianism to turn a really big corner." Address: 1418 Cedar St., Calistoga, California 94515. Phone: 707-942-2180.

2934. Jacobi, Dana. 1996. The soy of cooking: Throw out your old ideas about soy–These innovative recipes bring out the delicate, sophisticated flavor of soy. *Natural Health.* May/June. p. 76-81, 138-44.
• ***Summary:*** Contents: Introduction (incl. health benefits and isoflavones). Soy, the next generation. Soymilk: Cooking tips, how to buy. Tempeh: Cooking tips, how to buy. Fresh green soybeans: Cooking tips, how to buy. Soy meats: Cooking tips, how to buy. Newfangled tofu: Cooking tips, how to buy. Recipes include: Soymilk smoothie. Thai salad with savory tofu. Garlic tempeh croutons. Green soybeans with pickled cabbage and ginger. Barbecued beans and tempeh bacon or tofu franks. Chili with black soybeans. Chocolate pote de crème.

A sidebar discusses: Powdered soymilk, soycheeses, soy sour cream, soy yogurt, soy-based cream cheese, margarine substitute (Spectrum Spread containing canola oil and soy isolate). Address: Food writer, New York, NY.

2935. Hunter, Jean B.; Steinkraus, K.E.; Drysdale, A.E. 1996. Value of fermented foods for lunar and planetary stations. Paper presented at 26th International Conference on Environmental Systems. SAE Technical Paper 961416. Held July 1996 at Monterey, California. [35 ref]
• ***Summary:*** Contents: Abstract. Introduction: What is food fermentation, brief description of the BLSS (bioregenerative life support systems) diet without fermented foods, prior work on CELSS (closed ecological/environmental life support systems–an acronym increasingly replaced by BLSS), diets and menus, escaping the constraints of the CELSS diet, alternatives to food fermentations, particular opportunities for fermented foods, upgrading edible biomass, improved hedonics, convenience advantages, nutritional advantages, top dozen food fermentations for the space program (in descending order of total score): Yeast-raised wheat bread, single-cell lipids (from *Apiotrichum curvatum;* formerly *Candida curvata* D), amasake [amazake] (sweetener), mushrooms from residues, tempeh & related products–tempeh gembus (meatlike texture), vinegar, tapé/tapuy [tapeh], pickled vegetables, idli/dosa breads, dawadawa/natto (meaty flavor), rice wine, soy yogurt (sogurt) and other soy dairy replacers (dairylike).

This paper begins: "Three significant problems with food supply in bioregenerative lifesupport systems are addressable through use of fermented foods. The quantity of inedible and marginally edible biomass can be reduced; the hedonic quality of the diet can be enhanced; and food storage constraints can be relaxed due to the superior keeping qualities of fermented products."

"The crew diet for the lunar and planetary stations is likely to be based on four crops–wheat, soy, and white and sweet potato–which will make up the majority of calories consumed. Rice, salads and a few vegetable crops will add micronutrients and some variety. No animal foods or sugar crops will be produced, and no fruits except possibly strawberries."

"At the lunar station we expect that 85% of calories will be produced on site, with only 15% supplied from Earth. The resupply must include all flesh and dairy foods, spices and flavorants, luxury foods such as coffee and chocolate, imported fats and sweeteners, fruits, nutritional supplements and religious foods to be consumed in the CELSS."

"We are aware of only two sets of work on CELSS menus. Frank Salisbury has published an instructive and highly relevant survey of vegan and vegetarian dietary practices in the context of the space program, based on his 1994 workshop at JSC. One key point is that vegan cuisine and its ingredients–including fermented ingredients–deserve greater attention by CELSS planners because of

their importance to high-closure lifesupport systems." Address: Cornell Univ., Dep. of Agricultural & Biological Engineering, Room 218 Riley Robb Hall, Ithaca, New York 14853. Phone: 607-255-2297.

2936. *Soybean Quarterly* (*Nebraska Soybean Board, Lincoln, Nebraska*).1996. Soy reduces effects of osteoporosis. 2(3):2.
• ***Summary:*** Research indicates that consuming soy as part of a healthful diet may be one way to low risk of osteoporosis. This disease affects 15 to 20 million Americans, especially women. "High protein diets are associated with an increased loss of calcium in the urine. When it comes to protecting bone health, decreasing loss of calcium from the bones may be more important than consuming more calcium. Soy protein offers excellent quality protein, with less calcium loss compared to the same amounts of animal protein.

"Estrogen replacement therapy may reduce the risk of bone fractures by 50 percent." Soybeans and most soyfoods are a unique source of isoflavones, which mimic estrogens and may help promote bone health. In animal studies, isoflavones have been found to inhibit bone fracture and stimulate bone formation.

Many soyfoods, especially calcium-set tofu and calcium-fortified soymilk, but also soybeans, textured vegetable protein, and tempeh are good sources of calcium that are well absorbed by the body.

2937. McCord, Holly; Yeykal, Teresa A. 1996. Menopause naturally: Got hot flashes? get soy! *Prevention* (*Emmaus, Pennsylvania*). Aug. p. 65-70. [1 ref]
• ***Summary:*** About 75% of American post-menopausal women experience hot flashes and night sweats, along with sleep disturbances and mood swings. Until now, the only antidote for these unpleasant symptoms has been hormone-replacement therapy (HRT), a prescription medicine the replace the estrogen that women's bodies start making less of. But recently researchers have found that the foods made from the soybean may offer a practical alternative.

"The trail of evidence linking soy with a hot-flash-free menopause starts in Asia." There isn't even a word for hot flash in Japanese. Sherwood Gorbach, M.D., at Tufts University School of Medicine, in Boston, Massachusetts, was one of the first to suggest that the reason for this may lie in the Asian diet, which is rich in soyfoods that contain isoflavones–a natural plant form of estrogen. In one day, a typical Asian woman–who eats about a quarter pound of soyfoods–may be getting 30 to 50 milligrams of isoflavones from her food.

Three clinical studies are now under way to see if and how soy isoflavones work to relieve menopausal symptoms. At Bowman Gray School of Medicine of Wake Forest University (Winston-Salem, North Carolina), Gregory Burke, MD, heads a study of 240 women over age 45 experiencing hot flashes or night sweats. Every day for 2 years the women will drink an 8-ounce soy beverage containing either 1 mg, 34 mg, or 50 mg of isoflavones without knowing which level of isoflavones they're receiving. Researchers will see if more isoflavones relieve their menopausal symptoms or anxiety or mood swings.

Two studies at Tufts University, in Dr. Gorbach's department, are following 60 women with hot flashes. For 3 months, these women will eat either two specially designed almond- or chocolate-flavored soy breakfast bars that each contain 20 mg isoflavones (for a daily total of 40 mg isoflavones) or two placebo bars without isoflavones. Researchers will track the women's reports of hot flashes and night sweats, and their levels of estrogen and other hormones. Though these studies have not been completed, preliminary data look promising says Dr. Gorbach.

A table (p. 67) shows the amount of isoflavones (in mg) in a typical serving of various soyfoods. In descending order: Nutlettes breakfast cereal* (½ cup): 122 mg isoflavones + 140 calories. Beef(Not) textured soy protein granules* (¼ cup dry): 62 mg + 70 calories. Roasted soy nuts (¼ cup): 60 mg + 195 calories. Tempeh (½ cup): 35 mg + 165 calories. Low-fat tofu (½ cup): 35 mg + 54-75 calories. Regular tofu (½ cup): 35 mg + 105-120 calories. Take Care High Protein beverage powder (Protein Technologies International; 2 scoops): 35 mg + 100-130 calories. Regular soymilk (1 cup): 30 mg + 130-150 calories. * = Available from Dixie USA, 1-800-347-3494.

Even if this research doesn't show positive results, other studies show that soy lowers cholesterol and may prevent breast cancer and osteoporosis. "A serving of soy every day could turn out to be a good bet," says Dr. Gorbach. Researchers recommend consuming in the range of 30-50 mg/day of isoflavones. More than 100 mg/day could be harmful, so its is best to get your isoflavones from food instead of pills. Contains two recipes: Creamsicle Cooler (shake with soft tofu; 35 mg of isoflavones). Southwestern Skillet (with Beef(Not); 62 mg of isoflavones).

2938. Messina, Mark. 1996. Soyfoods and soy pills. *Soy Connection* (*The*) (*Jefferson City, Missouri*) 4(3):1. Summer. [4 ref]
• ***Summary:*** Argues convincingly that, in most cases, it is better to eat soyfoods as part of a healthy, balanced diet, than to take soy pills. "Without question the one group of phytochemical, in particular the isoflavones, is responsible for most of the recent research focus on soy. This is because of the observed biological properties of isoflavones (such as the estrogenic activity) and because, for practical purposes, soyfoods are the only natural dietary sources of these compounds." However since several companies are now marketing soy/isoflavone pills, one need no longer eat soyfoods to get isoflavones.

"Individual pills provide as much as 20 mg of isoflavones; that's quite a bit considering that there are

about 30-40 mg of isoflavones per serving of soyfood. As the research spotlight continues to shine on isoflavones, it is probable that these soy pills will find an enthusiastic market.

"Of course, there are at least two obvious reasons for promoting soyfoods, rather than soy pills. One, is that there are other phytochemicals in soyfoods, such as phenolic acids and saponins that may exert beneficial effects and that are not present in significant amounts in the pills. Two, for most people, incorporating soyfoods into the diet will lead to diet lower in saturated fats and cholesterol and higher in fiber (in the case of soybeans, tempeh, TVP). Taking pills does nothing to encourage a change in overall eating, but eating soyfoods does. There is another consideration–there are potentially critical differences in isoflavone composition between the soy pills and soyfoods. The health implications of these differences need to be addressed.

"But what if, for example, research establishes that isoflavones are directly responsible for inhibiting bone resorption [osteoporosis] and relieving menopause symptoms (night sweats, hot flashes)? What then should be the response of a woman who consumes a healthy diet and who wishes to use soy pills to relieve menopausal symptoms? I don't think there are any easy answers to such questions. As a general approach, foods are always preferred, but in specific situations phytochemical pills may be an alternative that has some merits." Address: PhD.

2939. Wang, Huei-Ju; Murphy, Patricia A. 1996. Mass balance study of isoflavones during soybean processing. *J. of Agricultural and Food Chemistry* 44(8):2377-83. Aug. [45 ref]

• ***Summary:*** Discusses: Soybeans (Vinton 81, 1992), soybeans, (Vinton 81, 1993), soybean flour, products made in the lab–Tempeh, soymilk, okara, tofu (momen or cotton, $CaSo_4$ coagulant), whey, soy protein isolate, defatted soy flour, daidzein, genistein, glycitein. Address: Food Science and Human Nutrition, 2312 Food Sciences Building, Iowa State Univ., Ames, IA 50011.

2940. Sheridan, Margaret. 1996. Is tofu ready for the big leagues? *Los Angeles Times.* Sept. 26. p. H8, H10, H11.

• ***Summary:*** The article begins: "Tofu, the spongy off-white soybean cake that spells B-O-R-I-N-G for so many people, is about to get a marketing makeover. Slick packaging, toll-free consumer hotlines, new products, and a blitz of cookbooks created by chefs rather than earnest vegetarian activists are some of the strategies tofu companies plan to use to bring tofu into the mainstream." A number of second generation tofu products found in supermarkets, and forthcoming cookbooks are listed.

"But some advertising and marketing professionals say that's not enough." The author talks with many such people who dislike tofu for various reasons: "Tofu is a joke... Tofu is a sissy. Bland, white, boring. It needs to take a stand. Become something. And that name! Its terrible." "Tofu goes against the American palate... Very little in American food, except baby food or gelatin, has that texture. Even buying tofu is alien. What else do you buy floating in water? And Americans love convenience. Bean curd is anything but. It's not an open-and-eat product." "I buy tofu but it just sits there, floating in my refrigerator. It makes me feel stupid and guilty. What do you do with it? I end up tossing it out." Hinoichi is America's largest tofu manufacturer. In March 1997 the company plans to move from its present 50,000 square foot plant in Los Angeles to a facility three times that size in Garden Grove. Harry Tanikawa, Hinoichi sales manager, notes that tofu and soy have been helped by good research and press from the medical community. He adds: "When you see fast-food places such as Panda Express in the shopping malls adding more tofu items to the menu, when you can buy a tofu hot dog at Dodger Stadium, you know tofu has arrived." Note: Dodger Stadium is a major league baseball park in Los Angeles.

Worthington Foods has experienced a sales rush in meat alternatives; the category went from nothing four years ago to $150 million a year. The company's best-selling items, sold under the Morningstar Farms brand, are breakfast patties, sausage links, garden burgers, and spicy black bean burgers–according to Don Burke, executive vice president of sales and marketing. The people who buy Worthington products are "the masses, people who want to cut down a little on meat and saturated fat. Most are aging baby boomers who want taste, convenience, and a health benefit."

Tofu "recipes for the mainstream" include: Red flannel hash. Mushroom scrambler. Tofu-stuffed French toast. Tofu slaw. Tofu citrus shake. Tofu cheesecake (p. H11).

The article ends with two sidebars: 16 "Tofu do's and don'ts." Soy food: Its many looks (p. H11)–Defines different soyfoods: Tempeh, miso, textured vegetable protein (TVP), soy milk, soy flour, soy cheese, soy sauce, tamari. Address: Times staff/food writer.

2941. Hastings, Carl. 1996. Soybean products in human foods. Paper presented at Regional Workshop on Soybean Processing and Utilization for Central America and the Caribbean. 4 p. Held Sept. 15-18 in Jamaica.

• ***Summary:*** Contents: Introduction. Soy sprouts. Whole soybeans: Cooked green beans, cooked soybeans, roasted or deep fat cooked soybeans (soy nuts–salted, flavored, etc., candy coated, salad topping, bakery ingredient or topping, soynut butter, soy coffee) fermented soybeans (tempeh–Rhizopus, natto–Bacillus, hamanatto–Aspergillus). Cereal blends: CSM (Corn-Soy-Milk), WSB (Wheat-Soy-Blend), other (bulgur, oat, sorghum grits).

Refined soy oil: Solvent extracted, physically extracted, uses, lecithin. Soy protein: Soy flour (full fat, defatted), concentrates, isolates, textured, uses. Hulls. Soy fiber. Soy milk: Liquid, powder, uses (plain, flavored, fortified, blends,

instant formula, nutritional beverages, tofu, soy cheese, frozen desserts, yogurt, soymilk film (yuba)). Soy sauce. Soy paste (miso). Soy pulp (okara). Address: Reliv, Inc., Chesterfield, Missouri.

2942. The Mail Order Catalog. Fall-winter 1996. Catalog of books and food. 1996. P.O. Box 180, Summertown, TN 38483. 24 p.
• ***Summary:*** The book section of this mail order catalog contains listings for an excellent selection of vegetarian and vegan cookbooks, plus books on food nutrition & health, alternative healthcare, women's healthcare, native Americans and their cultures, and animal rights.

The vegetarian food products section offers TVP granules and chunks, Response textured soy protein concentrates (misleadingly called "Response TVP flakes"), Harvest Direct vegetarian broth, and Protean, instant gluten flour (regular or flavored), seitan "chicken" or "sausage" mix, Mori-Nu silken tofu, Soja instant soy beverage, organic low-fat soymilk powder, Red Star nutritional yeast, Beano, and tempeh starter. Address: Summertown, Tennessee. Phone: 800-695-2241.

2943. Jacobi, Dana. 1996. The natural kitchen: Soy! 75 delicious ways to enjoy nature's miracle food. Rocklin, California: Prima Publishing. xii + 244 p. Oct. Index. 22 cm. Series: The natural kitchen. [16 ref]
• ***Summary:*** Contents: Preface. Acknowledgments. Introduction: Soy and health. All about soyfoods: Traditional soyfoods (tofu, miso, tempeh, soy sauce, soymilk), other Asian soyfoods (okara, yuba, kinako, natto), second-generation soyfoods (soy dairy products, soy deli foods, textured vegetable protein {TVP}, textured soy protein {TSP}, soy isolate (isolated soy protein)), more soy choices (fresh soybeans, dried black soybeans, soy flour, soy grits, soy flakes, soy nuts), cooking with soyfoods (tofu {pressing, freezing, marinating, sautéing and pan-crisping, frying, braising, pureeing, parboiling, storing and handling tofu}, miso, tempeh, soymilk, other soy dairy foods), cook's notes (herbs, spices and flavorings, nuts, oils, produce, stock, sweeteners).

Soups, appetizers, and first courses. Main dishes. Pasta and light dishes. Side dishes and sauces. Salads, burgers, and kebabs. Desserts. Breakfast and beverages. Mail order sources.

The Preface states: "If you are new to soy, you will find descriptions of soyfoods, from tofu to soymilk... If you already cook with soyfoods, the approximately 75 recipes in this book and their variations will expand your repertoire. These recipes will take you across lines that people who cook with soy rarely approach. The dishes bring familiar and satisfying textures along with flavors that are full and deep. Whether ethnic or classic, they are dishes with verve and elegance." The author first tasted tofu, with her parents, in 1953, "at the precocious age of eight," at The Great Shanghai on 125th St. in Manhattan, New York City. Address: Food writer, New York, NY.

2944. Oser, Marie. 1996. Soy of cooking: Easy-to-make vegetarian, low-fat, fat-free, and antioxidant-rich gourmet recipes. Minneapolis, Minnesota: Chronimed Publishing. xviii + 264 p. Illust. Index. 23 cm. [55 ref]
• ***Summary:*** This is a very nice gourmet vegan cookbook with 16 full-page color photos. Contents: Dedication. Notice: Consult a health care professional. Grateful acknowledgment to. Foreword, by Neal D. Barnard, M.D. Preface, by Marie Oser. Introduction, by Suzanne Havala. Soyfood for thought. A healthy kitchen. The soyfoods pantry (short definitions of generic and brand-name soy products). A quick guide to ingredients. Substitutions. Spices: The variety of kitchen life. Techniques.

Recipes: Sensational starters. Soups, stews, and salads. Bountiful breads. Exceptional Entrées. Soyful sides. Pizza and pasta. Delectable desserts.

Resource guide (Names and addresses of 23 companies selling soy and soy-related ingredients). Recommended reading (15 books). Bibliography (40 journal articles). Address: Agoura Hills, California 91391. Phone: 818-707-7353.

2945. United Soybean Board. 1996. National report on consumer attitudes about nutrition. Seattle, Washington. 8 p. Oct. 28 cm.
• ***Summary:*** This report, commissioned by USB, was conducted by a an independent research firm. It included telephone interviews with 1,000 consumers and primary household shoppers of all ages throughout the USA. They were asked a series of up to 23 questions. The standard margin of error for the study is ±3.2%.

Popularity of soy products: A bar chart shows the following, listed in descending order of popularity. The first number indicates the percentage of the population who are familiar with each product; the second number indicates the percentage of those who are familiar with the product that have tried it. Tofu–76% of Americans are familiar with tofu, and 53% of these have tried tofu. Veggie burger–69% /53%. Soybean oil–65% / 28%. Soy milk–58%–35%. Infant formula [soy-based]–53% / 36%. Soy protein–42% / 32%. Soy flour–41% / 30%. Miso–17% / 58%. Tempeh

14%–45%.

"How healthy are soy products? 40% of the population acknowledge that soy has positive health attributes. Half of those believe soy is a high protein source. 13% of the respondents cited soy as an option for lactose intolerance, 13% as a low fat food and 11% as a cholesterol reducer."

Consumer concern and confusion about nutrition terms: Trans fatty acids–37% of the population are familiar with the term; 38% of those who are familiar are concerned about

trans fatty acids; 51% of those who are familiar are confused about trans fatty acids. Hydrogenation: 36% are familiar, 39% of those are concerned, and 46% of those are confused. Address: 190 Quuen Anne North, Seattle, Washington 98109. Phone: 1-800-TALK-SOY.

2946. Tibbott, Seth. 1996. History of Tofurky (Interview). *SoyaScan Notes.* Nov. 1. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** King Harvest Natural Foods was a vegetarian sandwich company, deli, and juice shop in Portland, Oregon. They made a fresh Tofurkey Sandwich–which was just tofu, slightly browned, maybe marinated in some turkey-like seasoning, with some trimmings. In 1980, when Seth started delivering his tempeh to stores in Portland, he first saw this sandwich, which he enjoyed eating in Portland-area stores. That was when he first heard the word "Tofurkey." In about 1982-83 King Harvest discontinued their Tofurkey Sandwich; they never made it again, though they are still in business making other sandwiches and food products.

The ancestor of Tofurky was created in 1991 by Hans and Rhonda Wrobel of The Higher Taste–one of Seth's customers–a caterer and food manufacturer in Portland, Oregon, with a little deli; they make tempeh & lettuce sandwiches and tofu sandwiches. They started making a vegetarian stuffed Tofu Roast with gravy for their customers at Thanksgiving. They sold about 30 units the first year, 1991, largely to a local audience–including Seth. It was tofu in a pie pan with stuffing in the middle, then another layer of tofu on top. It was basted and baked, and tasted good–but it sold for $30. Seth saw this as a meat alternative that had potential at Thanksgiving. The vegetarian recipes for making mock turkey are too long and complicated for the typical cook.

Seth wanted to use the name "Tofurky" (which he coined) for his new product idea. But before he did, he called the folks at King Harvest and asked them if they had a trademark on or any other rights to the name. They said "No." He then asked them for permission to use that name. They said "Fine–"No problem"–in part because they hadn't made the product for more than ten years.

In October 1995 Turtle Island, together with The Higher Taste (in an informal and unwritten joint venture), introduced the first "Tofurky." Higher Taste made the product's centerpiece, a dome-shaped layer of marinated tofu with a whole wheat stuffing inside. Seth had been developing a tempeh burger that tasted more like turkey than burgers, so he got a drumstick form (Holomatic) and started making tempeh drumsticks. He added four of these to the Higher Taste Tofu Roast, and included a recipe for Nutritional Yeast Gravy. Turtle Island, which had good distribution for its tempeh, was responsible for marketing the product. Seth test marketed it as a frozen product in 24 natural food stores and co-ops on the West Coast; it retailed for $24.99 to $27.99 and weighed 3 lb 12 oz. There as also a 2 lb 4 oz size. Seth sent out some press releases and product attracted extensive local media coverage. No products were sold by mail order. Most natural food stores (such as Nature's), to which Seth introduced the product enthusiastically, predicted that it would never sell. But Seth had a strong belief in it. Somebody at the Puget Consumers Co-op (PCC) in Seattle, Washington, took the product, even though they doubted it would do well. Then "it caught fire" at the PCC's seven upscale stores in Seattle. They had to install a special telephone line–a Tofurky Hotline–for all the Tofurky special orders they were getting. Turtle Island did demos in PCC stores which further stoked the demand. After Thanksgiving, Turtle Island was flooded with calls and letters ("fan mail") from happy customers who said things like "Wow! I've been waiting 20 years for this." Usually food manufacturers only hear from customers when they are upset. "The customers believed in the product more than the savvy retailers–who had completely missed this niche." Feedback cards were included in every product, and this feedback indicated that the gravy (originally created by The Farm in Summertown, Tennessee, but greatly improved on by Seth) was what made the product delicious, but consumers wanted the gravy itself–not just the recipe–included with the product. In 1995 about 800 Tofurkys were sold, mostly at Thanksgiving but some at Christmas (with gravy).

Realizing that the product had real potential, Seth contacted a lawyer and registered "Tofurky" as a trademark. This year (1996) the tofu is made by Island Spring in Vashon, Washington. When extra firm tofu was seasoned then baked, it froze quite well. The tofu is sent out in 8-oz blocks (each 3½ by 5 by 3/4 inches)–not in the shape of a turkey or drumsticks. The drumettes are a little spicier, and come with cranberries, wild rice, carrots. This year the product is frozen but they are also test marketing it refrigerated. Several West Coast distributors carry the product. Now the whole package weighs 5 lb 15 oz; the wholesale price is $24.95 to $25.60, so it retails for about $33-$36. Last week, Seth sent out 50 press releases to print, radio, and TV sources. This year (1996) more than 800 have been sold already, and Seth expects total sales to reach 2,000 to 3,000. The 1996 ingredients in the Golden Mushroom gravy are: Water, nutritional yeast, expeller pressed canola oil, unbleached flour, chopped fresh mushrooms, diced onion, shoyu, herbs, spices, non-dairy lactic acid culture. Note: This gravy is delicious! Note: The following number of Tofurkys were sold: 800 in 1995, 4,000 in 1996, 15,000 in 1997, 45,000 in 1998, and an estimated 55,000 to 59,000 in 1999.

Who coined the word Tofurky? Seth didn't, though he was the first to spell it in that way, without an "e"–for two reasons: First, it was the right number of letter for a phone number. And second, he spelled it wrong the first time he wrote it and then kept repeating his mistake. Most people who hear the word for the first time spell it "Tofurkey" so

Seth has had to purchase a second Internet domain name spelled "Tofurkey.com." Seth was also the first to register the name (by any spelling) as a trademark.

But at least four other people and groups probably coined the word "Tofurkey" before Seth coined "Tofurky." (1) Jeremiah Ridenour believes that he coined it many years ago. (2) Peter Golbitz sent Seth a photo showing him with long hair and some Tofurky he made. (3) King Harvest Natural Foods in Portland, Oregon (see above). (4) A group of Rastafarians, black from inner-city Tacoma, Washington, had developed a very delicious barbecued tempeh, so Seth was exploring a co-packer arrangement. After the first Tofurky season, when they heard on the news that Seth made Tofurky, they sent him a flaming e-mail saying it was bad karma for him to rip them off because they had invented the word "Tofurkey." They refused to shake Seth's hand. They now took him to be the white devil, so he left under that cloud. Jeremiah and Peter were friendly about it, but Jeremiah likes to joke with Seth about how Seth owes him several million dollars in royalties for use of his name "Tofurky." Seth now sometimes jokingly calls his business "Tofurky Island." Address: Turtle Island Foods, Inc., P.O. Box 176, Hood River, Oregon 97031. Phone: 541-386-7766 OF.

2947. Zibart, Eve. 1996. The joy of soy. *Washington Post.* Nov. 15. p. N26. Weekend section.
• ***Summary:*** The article begins: "The more nutritionists look into soy products, the more they like them. Diets including soy allegedly head off several types of cancer, osteoporosis, high cholesterol levels and heart disease." Soyfoods are easily digested and could be a good bet for folks getting over the flu or winter whatever. Soyfoods are fairly high in calcium, so they can help replace dairy products in vegan and lactose-intolerant regimes.

Discusses the various soyfoods and restaurants that serve them in the Washington, DC, area: Edamame (a bowl of boiled and salted soybeans in the pods) at Tachibana in McLean. Tofu in the hot pot at Tin Yang in Adams-Morgan. Fried white tofu with red chili sauce at Rabieng in Baileys Crossroads.

The most widely available forms of soy are tofu and tempeh. "Tofu is among the best non-meat sources of protein, and relatively low-fat..." Tofu is much less expensive than other protein foods, which making dining a bargain as well as healthful.

"To understand the real versatility of soy products, however, it's worth visiting the Vegetable Garden in Rockville, which... is beginning to get national attention from magazines that follow healthful eating. Its menu follows strict Buddhist rules, so there are no dairy products, garlic or onions," and, of course, no meat, poultry, fish, shellfish or eggs.

Ends with a directory of four restaurants in the Washington, DC, area, that feature soy: Harmony Cafe, Ivy's Place, The Vegetable Garden, and The Feed Bag.

2948. **Product Name:** [Tofu, Tempeh, Soymilk, Soyshakes / Smoothies, Soysages].
Foreign Name: Tofu, Tempeh, Soymilk, Soyshakes / Smoothies, Soychicha.
Manufacturer's Name: Organica-ecotienda.
Manufacturer's Address: Xicotencatl 653-18, Col. Centro, Veracruz, VER 91700, Mexico. Phone: 29-31-30-83.
Date of Introduction: 1996. November.
New Product–Documentation: Letter and form filled out by Pat Hayward. 2000. Aug. 25. This company, managed by Pat Hayward and Claudia Gutierrez, makes and sells the above five soyfood products, which they introduced in Nov. 1997. Production of each in kg/month is as follows: Tofu 50. Tempeh 2. Soymilk 40. Soyshakes/Smoothies 40. Soychicha 10.

2949. Hager, Stacy. 1996. What the heck are tofu and tempeh? Here's a dictionary of healthy soyfoods. *Soybean Digest.* Dec. p. 14-15. In "Soyfoods Special Report" section.
• ***Summary:*** Gives a brief description of tofu, tempeh, textured soy protein (TSP), isolated soy protein, soy milk, soy flour, green vegetable soybeans, and roasted soy nuts. The article begins: "No, tofu's not a martial arts method, tempeh's not an Arizona city, and TSP isn't an abbreviation for teaspoon."

2950. Holin, Fae. 1996. Getting sneaky with soy: How to use tofu without a family strike. *Soybean Digest.* Dec. p. 23, 27. In "Soyfoods Special Report" section.
• ***Summary:*** Describes how registered dietitian Anne Patterson slowly introduced tofu to her family, starting with desserts. She and her husband, Jim, own corn and soybean acreage in Illinois. Jim "doesn't really like to see white tofu," so Anne always disguises it–as by putting it in lasagna in place of ricotta cheese, or in other baked or main dishes to reduce the amount of oil or eggs used. She notes that the new lite or low-fat tofus are excellent. Also describes how to use tempeh, soy flour, soy beverage (soy milk) and TSP (TVP). Her family also likes the commercial soy burgers now widely sold in mainstream grocery stores.

Contains recipes for: Strawberry tofu fruit dip. Tofu basil pasta sauce on fettuccine.

2951. **Product Name:** Christmas Tempeh (With Soy & Red Lentils).
Manufacturer's Name: Marcus Tribelhorn Tempeh.
Manufacturer's Address: 1535 10th St., Los Osos, CA 93402. Phone: 805-528-2080.
Date of Introduction: 1996. December.
Ingredients: Soybeans, red lentils, barley, local Postelsia (sea palm; a sea vegetable).

Wt/Vol., Packaging, Price: 8 oz.
How Stored: Refrigerated.
New Product–Documentation: Talk with (call from) Marcus Tribelhorn. 1997. Oct. 31. He made 2-3 batches of this tempeh during December 1996. He sold all of it to Natural Flavors, a vegetarian restaurant in nearby San Luis Obispo–they were buying about 35 lb/week. this restaurant is no longer in business. The product had no label, so the name "Christmas Tempeh" did not actually appear on the product.

2952. *Vegetarian Times.*1996. Soy–Humble bean; rich benefits. Dec. p. 20-21.
• ***Summary:*** This is a summary of several of the more important studies presented in September at the International Soy Symposium in Brussels. Soy and cholesterol: Dr. James Anderson reported that people who eat generous amounts of soy protein may lower their risk of heart disease, because soy significantly decreases LDL ("bad") cholesterol, which can block arteries and even seep into blood vessels, causing atherosclerosis or thrombosis. "Other dietary changes, such as increasing fiber and decreasing saturated fat intake, can also help to lower LDL cholesterol. But unlike most other foods, soy can also raise HDL ("good") cholesterol levels. Good cholesterol gobbles up the bad cholesterol that accumulates along artery walls." Moreover, phytochemicals in soy can prevent the oxidation of bad cholesterol. Oxidation makes arteries clog more easily. Eating as little as 1¼ cup of tofu or tempeh a day could reduce blood cholesterol by about 10%.

Women's cholesterol and bone health: Susan Potter of the University of Illinois reported that soy protein lowers blood cholesterol in post-menopausal women, but the effects went beyond those of a low-fat diet. After the 6-month cholesterol study, those women who ate soy protein had a significantly greater bone mineral content and density. Potter found "actual increases in bone density" among the women who ate soy. The researchers believe that this important increase is caused by two isoflavones in soy, genistein and daidzein, which have properties similar to those of the hormone estrogen. "Estrogen supplements are often prescribed to women after menopause as a way to prevent osteoporosis."

Prostate cancer: Several studies have shown that the soy isoflavone genistein inhibits the growth of human prostate cancer cells in the laboratory. This research prompted Dr. Stephen Barnes and other scientists at the University of Alabama to launch a pilot study to see if eating soy can prevent prostate cancer in elderly men with a genetic risk for prostate cancer. Results are expected by the spring of 1997.

In this same issue, see sidebar titled: "Soy and breast cancer: A debate rages."

2953. Astuti, Mary. 1996. The history of tempeh. In: Proceedings of the National Symposium on Tempe Development in a Modern Food Industry. Gadjah Mada University, Yogyakarta, April 15-16, 1995. [17 ref. Eng]* Address: Gadjah Mada Univ., Faculty of Agricultural Technology, Jalan Socio Yusticia, Bulaksumur, Yogyakarta, Indonesia.

2954. Gelles, Carol. 1996. 1,000 vegetarian recipes. New York, NY: MacMillan. [vii] + 598 p. Index. 24 cm.
• ***Summary:*** In the Introduction, a section titled "Soy products" (p. 17-18) includes brief definitions of soybeans, bean curd (tofu), miso, seitan, soy flour, soy milk, soy nuts, soy sauce and tamari, soy sprouts, tempeh, and textured vegetable protein (TVP).

In the chapter on "Entrees" is a section (p. 217-27) is titled: "Tofu, tempeh, seitan, and textured vegetable protein (TVP)."

The index contains 20 entries for tofu, 5 each for tempeh and soybeans, 4 for textured vegetable protein (TVP), 3 for seitan, and 1 for miso.

A table (p. 14) gives the time to cook various types of beans (that have been soaked overnight, the soak water discarded, and fresh water added) in a pot or saucepan (not in a pressure cooker); the adzuki bean takes the shortest time (45 to 90 minutes) while the soybean takes by far the longest time (2½ to 3½ hours [which is not nearly long enough]). Herein lies one key reason that Asians strongly prefer soyfoods to whole soybeans. Address: Author, food stylist and recipe tester, New York City.

2955. Pfaff, Gunter; Shipley, Betsy. 1996. New technology for making tempeh: A cultured soyfood. In: J. Janick, ed. 1996. Progress in New Crops. Arlington, Virginia: ASHS Press. xix + 660 p. See p. 509-11. [5 ref]
• ***Summary:*** Tempeh is incubated in a stainless steel tray floating in a waterbath. A diagram shows the apparatus. Address: Betsey's Tempeh, 14870 Beardslee Rd., Perry, Michigan 48872.

2956. Sapuan, -; Soetrisno, Noer. 1996. Bunga rampai tempe Indonesia [Anthology of Indonesian tempeh]. Cipinang Indah, Jakarta, Indonesia: Yayasan Tempe Indonesia [Indonesian Tempe Foundation]. iii + 324 p. Illust. (some color). Map. 24 cm. [Ind]*
• ***Summary:*** This Indonesian government publication is a collection of diverse articles about the nutritional value of tempeh and its relationship to socio-economic conditions in Indonesia. Includes bibliographic references.

Note: According to an e-mail from Mary Astuti (17 Sept. 2011) this book has been published in English with the help of the American Soybean Association.

2957. Seubsman, Sam-ang. 1996. A trial social marketing of fermented whole soybean (tempe) for complementary feeding of infants among mothers in Jakarta. PhD thesis,

University of Queensland, Australia. 351 p. Illust. 30 cm. *
• ***Summary:*** Includes bibliographic references. Address: St Lucia, Queensland, Australia.

2958. Soetrisno, Noer. 1996. The marketing of tempe in Indonesia. In: Sapuan and Noer Soetrisno. 1996. Bunga rampai tempe Indonesia [Anthology of Indonesian tempeh]. Cipinang Indah, Jakarta, Indonesia: Yayasan Tempe Indonesia [Indonesian Tempe Foundation]. iii + 324 p. *

2959. South Dakota Soybean Research & Promotion Council. 1996. Soyfoods: A healthy profile. Sioux Falls, South Dakota. 33 p. Illust. No index. 23 cm. [1 ref]
• ***Summary:*** This is an original and colorful soyfoods cookbook, with many full-page color photos of prepared recipes. Near the bottom of the front cover: "As technology advances, science is discovering that unique compounds found in soyfoods help prevent or even treat some of society's most serious diseases." Contents: Health benefits of soyfoods: Heart disease, cancer prevention, osteoporosis, diabetes, kidney health, menopause. Incorporating soy into your diet. Nutritional benefits of soyfoods: Phytochemicals, phytoestrogens, protein, fiber. Guide to modifying recipes: A one-to-one substitution of soyfoods for animal products and white flour. The diabetic exchange list. Recipes (p. 4-31). Introducing soy into your diet: Buying and storing tofu, types of tofu, tips on using tofu, textured soy protein (TSP), isolated soy protein, soy flour, soy milk, tempeh.

Talk with Betty Hansen at South Dakota Soybean Board. 2000. May 15. This cookbook (which is undated) was first published in 1996. It was later reprinted by the Nebraska Soybean Board, with their Nebraska logo on the back. Address: 3801 S. Western Ave., Suite #105, Sioux Falls, South Dakota 57105. Phone: (605) 330-9942.

2960. Steinkraus, Keith H. ed. 1996. Handbook of indigenous fermented foods. 2nd ed., revised and expanded. New York, Basel, and Hong Kong: Marcel Dekker, Inc. xii + 776 p. Illust. Index. 26 cm. Food Science and Technology Series, Vol. 73. Index. 26 cm. [350 + soy ref]
• ***Summary:*** This 2nd edition is about 108 pages longer than the original 1983 edition. Contents: Introduction to indigenous fermented foods. (1) Indonesian tempe and related fermentations: Protein-rich vegetarian meat substitutes. (2) Indigenous fermented foods involving an acid fermentation: Preserving and enhancing organoleptic and nutritional qualities of fresh foods. (3) Indigenous fermented foods involving an alkaline fermentation. (4) Indigenous fermented foods in which ethanol is a major product: Type and nutritional significance of primitive wines and beers and related alcoholic foods (incl. Chinese koji (big *qu* {bricklike in shape and made from barley or wheat and soybeans, inoculated with *Aspergillus*} molds), and small *qu* ({spherical, plate-circular or rectangular in shape and made from rice or rice bran with various herbs, inoculated with *Mucor* and/or *Rhizopus* molds}, p. 449), Japanese amazake (p. 480-81).

(5) Indigenous amino acid / peptide sauces and pastes with meatlike flavors (p. 509-654): Introduction.

(A) Soy sauces: Japanese shoyu: Koikuchi, usukuchi, and tamari; Chinese chiang-yu, by Tamotsu Yokotsuka (p. 511-17). Biochemistry of *Saccharomyces* (*Zygosaccharomyces*) *rouxii,* by Steinkraus, Franta, and Ayres (p. 517-24). Umami flavor, by Kawamura and Kare (p. 524-28). Chinese fermented product related to soy sauce (big *qu,* small *qu,* and jiang, by Chen & Ho, p. 528). Taiwanese soy sauce, by Liu (p. 528-33). Malaysian soy sauce: Kicap, by Ong, Mercian, Poesponegoro and Tanuwidja (p. 531-39). Indonesian soy sauce: Kecap, by Saono, Poesponegoro and Tanuwidja (p. 539-43). Korean soy sauce, by Chang (incl. homemade kanjang and meju, p. 543-44). Taiwanese black bean sauce: Inyu, by Jan et al. (p. 544). Philippine taosi, by Steinkraus (p. 544-45).

(B) Fermented soybean pastes: Japanese miso, by Ebine, Shurtleff and Aoyagi (p. 545-56). Indonesian tauco, by Saono et al. and Winarno (p. 556-59). Korean Doenjang and kochujang, by Chang, Shurtleff and Aoyagi (p. 559-64).

(C) Fermented fish-shrimp sauces and pastes (p. 565-606).

(D) Fish-soy sauce and fish-soy paste, by Ismail, p. 607-11).

(E) Miscellaneous Oriental fermentations. Japanese natto (itohiki natto), by Hayashi and Ota (p. 611-24). Japanese Hama-natto (hamanatto) and related products (incl. yukiwari natto, p. 624-26). Chinese red rice: Anka (Ang-kah), by Lin, Su and Wang, Sooksan and Gongsakdi, and Pichyangkura (p. 626-33). Chinese sufu, by Su and L.-P. Lin (p. 633-41). Preserved duck eggs / Century eggs, Chinese pidan (p. 641-42). Pidan are made by a chemical process, not by fermentation. Note: Chapter 5 contains about 240 references. Much of the text in this chapter is similar to that in the original 1983 edition, although this chapter is 7 pages longer and contains 3-4 new sections.

(6) Mushrooms: Producing single-cell (microbial) protein on lignocellulosic or other food and agricultural wastes.

(7) General papers related to indigenous fermented foods. Address: Inst. of Food Science, Cornell Univ., Geneva, New York.

2961. Winter, Ruth. 1996. Super soy: The miracle bean. New York, NY: Crown Publishers Inc. 192 p. Index. 21 cm. [106 ref]
• ***Summary:*** On the cover is written: "This wonder bean can help fight cholesterol, high blood pressure, blood sugar, cancer, ease menstrual and menopause symptoms, and keep a colon healthy. Includes a cookbook of 50 soy recipes from New York's Natural Gourmet Cookery School."

Contents: Introduction: The Cinderella bean. 1. How soy protects the heart and blood vessels: Full of fiber, the Eskimo secret omega-3 fatty acids, lecithin and vitamin E, preventing strokes, magnificent magnesium, soy and the Mediterranean diet, foam to wash out cholesterol?, cholesterol competitors–phytosterols, is it thyroid hormone [when thyroxine levels rise, cholesterol falls]?, amino acid at work?, could it be the B's?, is it the flavonoids?, the bean and obesity, high blood pressure and the bean, could it be just avoiding meat and dairy products?, summing it up. 2. How soy protects against cancer: Protease inhibitors, trypsin inhibitors, plant estrogens, polyphenols, terpenes–antioxidants, fighting phytates, maybe it's due to low-count amino acid, saponins, inositol–the cancer-fighting phytic acid, which soy products have the most anticancer potential?, potential adverse effects of soybeans. 3. How soy helps ease digestive problems: Promoting regularity, calcium and soybeans. 4. How soy is beneficial in diabetic diets. 5. How soy is proving beneficial to women: The soy and the cycle, other hormonal benefits, magnesium, PMS and pregnancy, contraceptive or fertility inducer?, so "B" it, the bones need it, magnesium and bones, boron and bones, it could be the phytates. 6. Soy and men: Soy and sex, protein power. 7. Soy products and their nutritional value: Soybeans, edamame, soybean sprouts, tofu (also known as bean curd and dou fu-tofu), tempeh, soy milk, yuba, soy cheese, okara, soy yogurt, soy sauce, soy oil, soybean lecithin, soy nuts, miso, natto, soy flour, soy powder, soy protein isolates, concentrates and grits, texturized soy protein, convenience of soy foods. 8. Easy ways to add soy to your diet: Some other easy ways to add soy to your diet, sensible soybean use. 9. Recipes: Appetizers, soups, salads, main dishes/entrées, side dishes/breakfast, sauces/dips, desserts. Glossary. Where to get more information. References. Address: M.S., Health and science writer, Short Hills, New Jersey.

2962. Blazek, Zdenek. 1997. Re: G.B.Z. is preparing soy products in the Czech Republic. Letter to William Shurtleff at Soyfoods Center, Jan. 13. 2 p. Handwritten, with signature. [Eng]
• ***Summary:*** His company is making soy products in the Czech Republic. They have the book titled *Tempeh Production* by Shurtleff & Aoyagi. Now they would like to introduce some new products such as seitan, amazake, koji, soy yogurt, natto, and cheese alternatives.

Talk with a company representative who speaks German. 1997. Feb. 3. The company now makes tempeh and natto. They introduced each product about 18 months ago. They would like to introduce tofu and seitan as soon as possible. Address: G.B.Z. s.r.o., 68606 Uherske Hradiste, Czech Republic. Phone: +42 632 636 16.

2963. Stevens & Associates, Inc. ed. and comp. 1997. U.S. 1997 soyfoods directory. Lebanon, Indiana: Indiana Soybean Development Council. 47 p. 28 cm. [29 ref]
• ***Summary:*** This second, expanded edition of the directory contains more than 270 company listings. Contents: Forward. How to use the Soyfoods Directory (incl. Internet access). Daily soyfood guide pyramid (color). Soyfood descriptions (alphabetical): Introduction, green vegetable soybeans (edamamé), hydrolyzed vegetable protein (HVP), infant formulas–soy based, lecithin, meat alternatives (meat analogs), miso, natto, nondairy soy frozen dessert, okara (see soy fiber), soy cheese, soy fiber (okara, soy bran, soy isolate fiber), soy flour, soy grits, soy protein concentrate, soy protein isolate, soy protein–textured, soy sauce (tamari, shoyu, teriyaki), soy yogurt, soybeans, soymilk (soy beverages), soynut butter, soynuts, soyoil & products, sprouts–soy, tempeh, tofu & tofu products, whipped toppings (soy based–"similar to other nondairy whipped toppings, except that hydrogenated soyoil is used instead of other vegetable oils"), yuba. Soybean products chart: From whole soybeans, from soybean meal, from soyoil and lecithin. Soyfood companies by product (products listed alphabetically).

Composition and nutrient content of soyfoods (large table, p. 14). Soyfood companies (alphabetical by company name; Each listing contains address, contact, phone, soy products, product names, distribution, to locate product, classification). Mail-order soyfoods: Soyfood mail order companies (listed alphabetically by company). Soyfood companies by state (alphabetical by state; California has by far the most). Soybean promotion & research organizations (national, and state). Professional associations and industry information resources. Soy cookbooks (19). Soy resource books (10). Soyfood fact sheets and recipes: 1-2 pages each for meat alternatives, miso, soyoil, soy flour, soymilk, tofu, textured soy protein, whole soybeans. Soyfoods directory survey.

This directory is on the Internet's World Wide Web at http://www. soyfoods.com. For more information or suggestions, call 1-800-301-3153. The Internet version of the Directory continues to improve. "The first year saw hits to our site increase from 1,000 the first month to more than 8,000 per month now. We have added a new search engine that makes it easier to find information and a new monthly e-mail newsletter, *Soyfoods USA,* designed to inform media sources, dietitians and consumers about the latest soyfoods information. To subscribe to this popular newsletter, just send an e-mail message to soyfoods@ind.com with the words "Subscribe Soyfoods USA" in the body or subject field."

Talk with Roger Stevens. 1997. March 10. The 1997 directory was first available in January 1997. About 100,000 copies of this directory were printed, and all but 7,000 have already been sent out free of charge. About 77,000 copies were sent to registered dietitians nationwide; all are members of the American Dietetic Association. Another 10,000

copies were sent to the American Association of Family and Consumer Sciences–basically extension personnel at the Cooperative Extension Service in each county; these people provide a lot of consumer information about foods and agriculture. About 500 copies were sent to each of the 20 state soybean development councils. The remaining 6,000 copies were sent to callers who left their name and address at a toll-free answering service. The next step is to do a media tour in Indiana. Traveling with a registered dietitian, they expect to generate a lot of requests from citizens of Indiana. One of the goals is to show other states that if you promote soyfoods in this manner, you will get a lot of interest. Roger hopes to encourage other states to take a more active role in promoting soyfoods. The directory has generated a tremendous amount of information on the part of dietitians who call the toll-free number and have many questions about soyfoods; Roger tries to refer them to people who have the answers–such as 1-800-Talk-Soy. The Indiana Soybean Council has had to hire a new person just to handle the requests for this directory.

Next Roger plans to do a survey of registered dietitians to learn more about their responses to the 1997 directory. He might ask: Did you receive the book? Do you use it? If so, in what way and how often? How many people do you influence with regards to soyfoods as a result of this book? So if each of the 77,000 dietitians influences, on average, 10 people a year, the directory has reached more than 750,000 people. One major goal of this book is to help dietitians include more soyfoods in their own diets and in the diets of their clients. How can we better help you do this? Do you want a cookbook? A starter kit? Shall we include coupons?

From the focus groups he has already conducted, Roger thinks that future editions of the directory will be presented more like a cookbook or recipe book, with the directory in the back. "People really like the recipes. They just hand them out to their clients. We get requests for 100 books at a time from dietitians, who give the entire book to their clients at classes, in their offices, etc." Roger has the funds to do the research to find out exactly what dietitians want in the way of soyfoods recipes and how they want them organized.

Other possible questions: Which part or parts of the book do you find most valuable? Which do you find least valuable. Is there any information which is not in the book that you wish were included?

Roger would also like to develop for the next edition of this book a graphic presentation of the inside of a typical supermarket showing all the different products which contain soy.

Note: The word "soyoil" is used instead of "soy oil" throughout this directory. Address: Stevens & Associates, 4816 North Pennsylvania Street, Indianapolis, Indiana 46205. Phone: 317-926-6272.

2964. Sullivan, Cheryl; Rhodes, Kathy. 1997. Simply soy: A variety of choices. Williamsburg, Virginia: Virginia Soybean Association. 118 p. Undated. Illust. Recipe index. 26 cm.
• ***Summary:*** Contents: Introducing soyfoods into your diet. The healthful soybean. Exploring soyfoods: Dried soybeans, fresh green soybeans, soy milk, tofu, textured soy protein, soy flour, soy grits, tempeh, miso, soy meat analogs. Where to find soy products. Nutrient information. Recipes: Breakfast, beverages, breads, appetizers & snacks, salads, soups, sandwiches, side dishes, main dishes, desserts.

Talk with Susan Haller of the Virginia Soybean Assoc. 2000. Nov. 9. This undated book was published about 3-4 years ago.

Talk with Cheryl Sullivan. 2002. Aug. 12. She wrote this booklet for the Michigan Soybean Promotion Committee; it was published in about Jan. 1997. It was never sold and is now available online at www.soyfoods.com/SimplySoy. Address: 1. M.A., R.D., Sullivan Nutrition Inc.; 2. PhD, R.D., Preventive Cardiology Program, Univ. of Michigan; c/o 151 Kristiansand Drive, Suite 115 E & F, Williamsburg, Virginia 23188. Phone: (757) 564-0153.

2965. **Product Name:** Tempe.
Manufacturer's Name: Toko Ramé Indonesian Restaurant.
Manufacturer's Address: 17155 Bellflower Blvd., Bellflower, CA 90706. Phone: 562-920-8002.
Date of Introduction: 1997. January.
Ingredients: Incl. soybeans, tempeh starter.
New Product–Documentation: Talk with Daniel Ungerer, food industry consultant. 1997. Dec. 9. Ms. Vera Yuliansyah started making tempeh at this restaurant about 6-9 months ago. Bellflower is in southern California, directly south of Los Angeles between Paramount and Norwalk.

2966. Indonesian Tempe Foundation (Yayasan Tempe Indonesia). 1997. International Tempe Symposium: "Reinventing the hidden miracle of tempe." Jakarta, Indonesia. 8 panels. 21 cm. [Eng]
• ***Summary:*** This brochure (first circular) announces the International Tempe Symposium to be held on 13-15 July 1997 at Denpasar, Bali, Indonesia. The symposium fee for participants (if paid before 15 May 1997) is $250.00. For those presenting a paper it is only $150.00. Accompanying persons pay $100.00. A tentative program and rates at 3 hotels are given. There will be a pre-symposium tour of Denpasar, Bali.

The second circular for this symposium, sent by e-mail on March 21, gives details on the papers to be presented at each of the sessions. Session I: Global prospects of tempe in the world–5 papers. Session II–8 papers. Session III–8 papers. Parallel session IIIA: Socio-economic aspects of tempe–7 papers. Parallel session 3B: Processing–8 papers. Total: 36 papers.

Another handsome second circular (printed, 4 panels each, front and back) arrived 7 June 1997. It also included

a registration form and a leaflet about Yayasan Tempe Indonesia. Address: Gd. Bulog II, 2nd floor, Jl. Kuningan Timur M.2/5, Jakarta 12950, Indonesia. Phone: 062-021-520-7239.

2967. Mangels, Reed. 1997. Vegetarian Journal's guide to breakfast "meats." *Vegetarian Journal* (*Baltimore, Maryland*). Jan/Feb. p. 24-25.
• ***Summary:*** A large table gives a nutritional comparison of breakfast meats and meat alternatives in three categories: Bacon (2 alternatives), Canadian bacon (1), and sausage (9). The meatless meat alternatives are made from tofu, tempeh, and textured soy protein concentrate and wheat gluten. Address: Ph.D., R.D.

2968. Shurtleff, William; Lingle, Sheila. 1997. Readers like Soyfoods Report. *Soybean Digest.* Mid-Feb. p. 66.
• ***Summary:*** Since Soyfoods Center was omitted from the "Soyfoods Special Report" in a previous issue of *Soybean Digest,* Shurtleff writes about the Center and its resources. A Texas reader thanks the Digest for writing about tofu and tempeh, which he has eaten for the past 30 years as he worked as an agronomist. Address: 1. Director, Soyfoods Center, Lafayette, California; 2. Indiana Soybean Development Council.

2969. Wight, Karen James. 1997. Work with tempeh and tofu at Homeland Foundation in Australia (Interview). *SoyaScan Notes.* March 12. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Karen arrived at Homeland Foundation in Australia in either late December 1981 or early 1982 (she no longer has her passport from that era). She lived in Australia for 6½ months, during which she lived at Homeland Foundation for 3½ months. Homeland was located at Upper Thora, in the Bellingen Valley, about 40 miles inland from Coffs Harbour, near the east coast of New South Wales. The area was incredibly lush, green, and fertile.

She left southern California in August 1981 (after leaving a professorship at UCLA), spent 2 months in Hawaii studying body work, then flew to Sydney (the capital of New South Wales), arriving in about October 1981. She met Jonathan Gordon at a community in a hotel just outside of Sydney, where they stayed for about a month. Then they stayed at a community in Victoria for about 1 month. They spent Christmas in Melbourne–where the only thing offered to eat was meat. Then they went directly to Homeland. They wanted to go there because Jonathan had been to Findhorn (a spiritual community in northern Scotland), and he knew some of the Findhorn people who had started Homeland.

Karen is sure the company that made tofu, tempeh and sprouts (mainly alfalfa and mung bean sprouts; no soy sprouts) had a name (but she cannot remember what it was) because they sold products commercially outside the community in order to earn income for Homeland Foundation. The equipment was new and gorgeous; the sprouting room was very modern, sanitary, and well organized. The company made good use of the okara–a by-product from making tofu; they used it to make delicious okara granola and soysage. These two products were consumed mostly in the community and by friends; they were not sold.

Karen has no idea when Homeland was established or when they started to make tempeh and tofu. She would guess they had been making and selling soyfoods for at least a number of months, and perhaps a year or two. She thinks it is fairly likely that they were making tempeh by January 1981. They had clearly built it into a very productive and well-organized operation. Karen is quite sure that they started making tempeh after tofu production was well established.

The tofu and tempeh were made in the same small room, but each was made by different people; Karen made tofu more than tempeh. They made tempeh in an incubator that was the size of a refrigerator–about 30-40 pounds at a time, approximately twice a week. Tofu was made daily. Only soy tempeh was made. They may have learned both the tempeh and tofu processes from one of the many people who came regularly from Findhorn. The various people who were head of the community had all been to Findhorn. Karen remembers getting up at 2:00 in the morning to make tempeh. She wishes Jonathan would write a book about spirituality, service, cooking, and food. Address: 2333½ Rodriguez Rd., Santa Fe, New Mexico 87501. Phone: 505-982-4765.

2970. Danival. 1997. Price List–Danival: 1 March 1997. Mezin, France. 21 p. 30 cm. [Eng]
• ***Summary:*** Contents: Unrefined Atlantic sea salt. Tomato preserves. Vegetable preserves (incl. azuki with hijiki sea weed). Mushroom preserves. New condiments. Fruit purees with no added sugar (but 35% corn syrup for sweetness). Cereal sweeteners (barley malt, wheat syrup, corn syrup, rice syrup, apple syrup). Desserts and fruit juice. Fruit desserts. Agen prunes. Danival's macrobiotic food range: "Europe's leading manufacturer of organic macrobiotic food products. Produced in France, traditional Japanese manufacture. Non genetically engineered soya, grown by Mr. Berjon from his own seed beans since 1991." Brown rice miso* (unpasteurized, 4 sizes), barley miso* (unpasteurized, 4 sizes), young shiro miso* (unpasteurized, 2 sizes), shoyu* (unpasteurized; 5 sizes), tofu*, smoked tofu*, tempeh with shoyu and wakame*, seitan with shoyu and hijiki*, gluten powder*. * = Organically grown, certified by AB-Ecoconcert.

A 4-page French-language color insert (dated March 1997) contains color photos of many of these products, sealed in glass jars–incl. "Bio Miso (*Orge/Gerst*), Sauce Bolognaise Seitan, Raviolis (*Farcies au Seitan*), and Bio

Shoyu." Address: Moulin d'Andiran, 47170 Mézin, France. Phone: +33 5 5397 0023. Fax 5 5397 0010.

2971. Fairbrother, Anthony; Petterson, David. 1997. *Tempe*–a nutritious food for developing countries. *Food Chain* (*Intermediate Technology, England*) No. 20. March. p. 13-15.
• ***Summary:*** A good introduction to tempeh and its production in developing countries. Contains recipes for Tempe Goreng and Tempe Bacem. Photos show. (1) Four cakes of finished tempeh of different sizes. (2) People packing inoculated soybeans into small plastic bags of 200 gm each. (3) Tempeh being made in long plastic tubes, 3 cm in diameter; when done, these are cut into ½ kg and 1 lg portions. Address: 1. Curtin Univ. of Technology, GPO Box U 1987, WA [Western Australia] 6001, Sydney, Australia; 2. Agriculture Western Australia, Baron-Hay Court, S. Perth, WA 6151, Australia.

2972. Parks, Thomas R.; Lampi, R.A.; Marquardt, R.F. 1997. Development of technology base needs for processing in an advanced life support (ALS) system. Moffett Field, California: National Aeronautics and Space Administration, Ames Research Center. 62 + 63 p. March 24. Illust. No index. 28 cm. Final report. NASA CR-6816SN. [16 ref]
• ***Summary:*** This final report covers five crops: Soybeans, rice, wheat, peanuts, and white potatoes. The section titled "Process investigations–Soybeans" (p. 1-25) discusses five products made from soybeans: Soy flour, tempeh, soymilk (plus okara), soy yogurt (fermented), and tofu. Descriptions are given of each food and the process used.

Figures show: (1) General flow schematic–Soybean products. (2) Flour from dehulled soybeans. (3) Concept sketch–Soybean dehuller. (4) Water elutriation column to classify/separate particles by settling rate differences (Input: Dehulled beans and hulls). (5) Flow chart of tempeh from dehulled soybeans. (6) Flow chart of tempeh from beans with hulls. (7) Flow chart of soymilk from dehulled beans. (8) Flow chart of soymilk without prolonged soaking. (9) Flow chart of soymilk (Shurtleff & Aoyagi procedure). (10) Flow chart of tofu from beans with hulls. (11) Flow chart of tofu from dehulled beans. (12) Flow chart of yogurt from dehulled beans. (13) Label of Redi-Set Culture from Chr. Hansen Laboratory, Milwaukee, Wisconsin.

Color photos show: (1) Vertical plastic tube described in Fig. 4. (2) Soybean hulls and cotyledons following flotation separation using the prototype device shown above. (3) The K-Tec mill used in preparing the various flour products for this project. (4) Plastic bag filled with full fat soy flour prepared from dehulled beans. (5) Tempeh in perforated plastic bags, made according to "The Tempeh Lab" procedure. (6) A glass of soymilk produced by modified Shurtleff & Aoyagi procedure. (7) Freshly made okara on a blue dish. (8) Freshly prepared tofu; one sample was made from dehulled soybeans, the other from beans with hulls.

Table 1 shows yield data for different food products: Soymilk 11:1. Tofu 1.77:1. Soy yogurt 10.2:1. Tempeh (dehulled beans) 1.59:1. Tempeh (beans with hulls) 2.32:1. Okara (dehulled beans) 1.64:1. Okara (beans with hulls) 2.19:1. Soy flour (dehulled beans) 0.62:1. Address: Food and AgroSystems, Inc., 1289 Mandarin Dr., Sunnyvale, California 94087. Phone: 408-245-8450.

2973. Pirello, Christina. 1997. Cooking the whole foods way: Your complete, everyday guide to healthy, delicious eating with 500 recipes, menus, techniques, meal planning, buying tips, wit & wisdom. New York, NY: Berkeley Publishing Group (HPBooks). xii + 525 p. March. Illust. Index. 24 cm. In 2003 a CD was made in Princeton, New Jersey by Recording for the Blind & Dyslexic. [38 ref]
• ***Summary:*** This is basically a macrobiotic cookbook. It is largely vegetarian, but has one long chapter of fish recipes (p. 189-220). No red meat or sugar is used. One long chapter, titled "Tofu, tempeh, & seitan" (p. 157-88) contains many recipes. Other soy-related recipes include: Basic miso soup (p. 38). Miso millet stew (p. 78). Minute miso soup (p. 102). Black soybean relish (p. 136; as black soybeans are simmered, they create their own gravy). Baked beans with miso & apple butter (p. 143). Tofu cheese (with miso, p. 162). Lemon miso sauce (p. 422). Also contains recipes for amasake, azuki beans, and sea vegetables.

The recipe for "Tofu cheese" (p. 162), which is very creative and delicious, was developed by Christina many years ago, but the method was kept a secret–until now! Basically extra firm tofu is fermented / pickled in white miso. This recipe is for those who can't stand to give up cheese, and the resulting fermented soy cheese can be used in place of dairy cheese in many recipes, ranging from creamy white sauces to thin squares on a cracker. The tofu can be fermented in the miso anywhere from 12 hours to 4 days–depending on how strong you would like the flavor to become.

2974. *Travelin' Light* (*Lightlife Foods, Greenfield, Massachusetts*).1997. Reset your (body) clock! Spring/summer. p. 1-2.
• ***Summary:*** The lead article is a summary of information about aging. On the left half of the front page is a quotation from Dr. Benjamin Spock, M.D., pediatrician and author of the best-selling book *Baby and Child Care.* In 1991 Dr. Benjamin Spock gave up eating meat and dairy products–after a series of illnesses that left him weak and unable to walk unaided. In his own words: "When I was 88 years old, I gave up meat entirely and switched to a plant-foods diet following a slight stroke. During the following months, I not only lost 50 pounds but gained strength in my legs and picked up stamina. Now, at 93, I'm on the same plant-based diet and I don't eat any meat or dairy products. I either swim, walk, or paddle a canoe daily and I feel the best I've felt

since my heart problems began."

Note: The source of this quotation is given as *Nutrition Advocate,* April 1996. Born on May 2, 1903, Dr. Spock died on 15 March 1998 at his home in San Diego.

Also in this issue: List and brief description of 19 Lightlife products. "Light bites"–Short pieces about soybeans, vegetarianism, health, and the environment. "Ask Lightlife"–Questions and answers (including: (1) Soy and menopause. (2) A long answer about Monsanto's genetically engineered Roundup Ready soybeans; Lightlife is looking into this issue. In the meantime, the company suggests that consumers buy products made from "certified organically grown" soybeans such as Lightlife Organic Tempehs. (3) Lightlife contributes at least 5% of its profits to non-profit organizations–such as the new Greenfield Teen Center). Coupons. Recipes. Ad for Lightlife T-shirt. Nutritional comparison of Lightburger and Beefburger. Fakin' Bacon now has a new name: Marinated Smoky Tempeh Strips.

2975. Viana Naturkost GmbH. 1997. Preise und Neues [Prices and new products]. Euskirchen, Germany. 28 p. 30 cm. [Ger]

• ***Summary:*** This impressive, stylish/classy color catalog from Biofach, March 1997, consists of two parts. The 20-page smaller format (26.5 cm) black-and-white insert gives the prices of all products for 1997. The larger color catalog describes new products. The price list contains the following product categories: Basic and seasoned tofu products. Fresh tofu spreads. Tofu hot dogs. Wheat gluten products. Tofu cutlets. Tempeh. Seitan. Burgers and snacks. Spreads in glass jars. Soy sauce and miso products (organic shoyu, organic tamari, barley miso, brown rice miso). Fresh patés. Deli salads. Soya mayonnaise (Vianaise). Rice drink. Noodles. Fresh pasta stuffed with tofu fillings (Tortellini, Maultaschen). Frozen products (incl. Chili con tofu and spring rolls). Sprouts (11 types & products, not incl. soy sprouts). Spreads from Noka. Canned products (*Konserven*). Address: Willi-Graf-Str. 88, 53881 Euskirchen-Kuchenheim, Germany. Phone: 02251-9446-0.

2976. **Product Name:** Tempeh: Fermented soya bean "cake."
Manufacturer's Name: Dakini Health Foods Pvt. Ltd.
Manufacturer's Address: Vidyut Nagar, Plot A2, Kawdewadi, Pune 411 001, India. Phone: 0091-212-63-1990 (phone and fax).
Date of Introduction: 1997. April.
Ingredients: Soybeans, water, starter culture.
Wt/Vol., Packaging, Price: 400 gm or 250 gm. Retails at the shop for 65 Rupees or 43 Rupees respectively (1997/05).
How Stored: Frozen or fresh.
New Product–Documentation: Letter (fax) from Sjon Welters. 1997. May 11. Seemo and Kairava own this company. "They are making soybean tempeh but have trouble producing rice tempeh. They need technical assistance. They hope to find it in your books on tempeh."

Letter (fax) from Seemo and Kairava in response to questions from William Shurtleff of Soyfoods Center. 1997, May 12. They started selling tempeh last month (April 1997) to friends and to two shops and to Osho (Omune International) in Pune [Puna]. Soon it will appear on the menus of several restaurants also. Note: This is the earliest known commercial soybean tempeh made in India. Seemo is Mr. H. Shapira from Israel and Kairava is Mrs. J. Spaelstra from the Netherlands. Seemo is in charge of tempeh, Kairava in charge of tofu & soymilk. They got their first starter culture from *Centralbureau voor Schimmelcultures,* in Baarn, the Netherlands. Now they use this as a mother culture to make their own starter. Other foods they now make include white tahini, brown tahini, peanut butter, and hummus (made from chickpeas with tahini). They are experimenting with tofu and soya milk, but they don't presently have enough space to go commercial with these. No articles have been published about their company; they haven't done much publicity yet due to limited space and production capacity. They came to India to be at the ashram of Sri Rajneesh in Pune. Though the master [who was called "Osho" = great master in Japanese] has died (on 19 Jan. 1990 in Pune), they continue to stay and to supply the ashram with good, wholesome foods. They started their company because they were missing certain foods in India, and after staying there for several years it became clear that if they didn't make these foods themselves, nobody would. Seemo's first interest was tahini. He learned how to make tempeh from one chapter in the *Handbook of Indigenous Fermented Foods,* edited by Dr. Keith H. Steinkraus. Books by Shurtleff and Aoyagi were also mentioned there. It took him about 8 months of trials to attain the perfect quality. Of course, Kairava knew tempeh from the Manna shops and Tokos (often run by Indonesians) in Holland. Kairava studied tofu from *The Book of Tofu,* which her brother sent her from Holland. Last week he sent her *The Book of Miso.* They have been unable to locate *The Book of Tempeh.* In the future they hope to make a good quality soy sauce. "You wouldn't believe what they dare to sell and call soya sauce here. It usually isn't even brewed [fermented] at all. Just some colors, taste and a few other ingredients blended together."

Labels for 250 gm and 400 gm sent by Seemo. 5 by 3.25 inches. "Dark spots–if any–are part of the fermentation process and are absolutely harmless and edible. Tempeh is rich in proteins, easily digested, an excellent source of all B-vitamins including B-12." Includes 6 preparation ideas. "2-5 min. deep-frying or 10-12 min. steaming is sufficient for consumption–cut in thin slices and fry crisp and serve with soya sauce."

Letter from Seemo. 1997. May 14. "About our tempeh. We use dry dehulling, using a motorized corn mill at loose setting. The hulls are floated and removed and the

bean soaked for 12-22 hours (depending on season). The remaining hulls are removed. The beans are washed and drained, then cooked in a steel pressure cooker until pressure builds, for 2-5 minutes, then let stand for 10-20 minutes (total time in pot from start to end is never more than 40-45 minutes). Then into a colander for some 30 minutes, then the beans are dried in a big mixing pot using an old German hair dryer; this way they are not exposed too long to air and also a perfect degree of moisture/dryness balance can be achieved (the beans also cool faster). The spore mixture is then mixed well and then put into plastic bags. After the bags are sealed, they are pierced on both sides (by hand, with an ice pick; ready-perforated bags are hot on the agenda), then put into the incubator (set at 32ºC) for 20-21 hours. After 10-11 hours, the door is opened to let heat out. When ready, each bag is packed into a bigger plastic bag with the label inside.

"The tempeh is sold fresh or frozen. Since we are getting orders from far-off places, we will also introduce it in a dry form in the future (we have a good 9,000-volt hot air oven already). We are also thinking about supplying spore powder in Goa where about a dozen foreigners know how to make homemade tempeh, but have to get their spore from abroad. I got this idea from an American woman who lives there. I was trying to get some of her precious spore, and finally got 1-1½ grams (of her total 15 grams), on the promise that I will supply her with spores later on. Anyhow, this will be a very small market, but since we already supply our nut paste [peanut butter], this could be a nice little extra service. Wish you all the best, Seemo."

Letter with Label from Seemo. 1997. Oct. 15. Contains 5 samples of their new and attractive label, printed on glossy paper. The product name has changed to "Soy Tempeh: Delicious fermented soy bean "cake." 5¼ by 4 inches. Read and black on tan. A photo shows many soy beans. "Zero cholesterol. Tempeh is rich in proteins (apr. [approximately] 20%), easily digested, an excellent vegetarian for vitamin B-12. Ingredients: Choice soy beans, no preservatives. Dark spots (if any) are part of the fermentation process, absolutely normal and perfectly edible." Gives six ideas for preparation: (1) 2-5 minutes deep frying or 10-15 min. steaming or boiling is sufficient for consumption. (2) Slice or fry crisp or golden, serve with soy sauce or chutney. (3) Slice or cube, dip in salt water (garlic/coriander), fry golden, use in cooking just as paneer or meats. (4) Saute with mushrooms, onions, vegetables, etc. (5) Cut and cook in your favorite stew/soup. (6) Steam/boil with your spice mix and fry/broil. etc., etc., etc." The letter adds: "Tempeh is happening nicely... Sales are growing, and so are we (our little company as well). We have found a little plot of land a short distance from here and as soon as the formalities are done, we will start contracting for our structure." For the last two months they have been wet-dehulling the soybeans, which gives a much better texture. They soak the soybeans a long time with no vinegar, as this gives the best flavor.

Letter from Seemo. 1999. July 29. In Feb. 1999 Dakini Health Foods Pvt. Ltd. moved into a new and much larger factory at S.N. 33, Bhoiwasti, Keshavnagar, Mundwa, Pune/Puna 411 036, India. There they have continue making tempeh. Two articles about their tempeh recently appeared (which see).

2977. Elliott, Julia. 1997. With a little help from the soybean. New York, NY: SCB–Published by the author. 62 p. No index. 28 cm. Lay-flat comb bound. April.
• ***Summary:*** Contents: Facts and information (p. 1-8): Why the soybean? Areas of health that soy may affect: Heart disease and cholesterol, cancer, osteoporosis, kidneys, Alzheimer's disease, menopausal symptoms. Soyfoods (p. 9-13): Soy milk, tofu, soybeans, soy flour, miso, tempeh, texturized soy protein, soy protein isolates. Isoflavone contents. Recipes (p. 14-61): Appetizers, main dishes, desserts, tofu.

Note 1. There are no references to back up the many medical statements and claims on pages 1-8 of this book. Note 2. This is not a vegetarian cookbook; ingredients include 1 lb. ground beef (p. 14), 6½ oz. minced clams (p. 15), 1 lb. sweet or hot sausage (p. 16). Address: 10 Guyton St., Kingston, New York 12401. Phone: 914-338-6368.

2978. Labbé, Max. 1997. Ces étonnants aliments végétaux fermentés et lacto-fermentés [Those astonishing fermented and lactic-fermented vegetable foods]. Auvers sur Oise, France: Published by the author. 116 p. Preface by Richard Hwei-Ming Bau. Illust. No index. 21 cm. [Fre]
• ***Summary:*** Part III of this popular book, titled "Asiatic Specialties," contains the following sections and subsections (p. 77-103): Chinese and Japanese fermented foods: Shoyu and tamari, miso, umeboshi, nuka pickles, natto, sufu. Characteristics and way of tempeh: Definition, preparation, arrangement of grains before inoculation. Indonesian tempeh: Preparation of the cakes, preparation of the inoculum. Javanese tapé (tapeh) and its culture. American-style tempeh. A color photo on the rear cover shows Max Labbé. Address: 3 rue Emile Level, F- 75017, Paris.

2979. **Product Name:** Smoky Tempeh Strips (Marinated, Vegetarian): Fakin' Bacon.
Manufacturer's Name: Lightlife Foods, Inc.
Manufacturer's Address: P.O. Box 870, Greenfield, MA 01302. Phone: 1-800-274-6001.
Date of Introduction: 1997. April.
Ingredients: Soy tempeh (organic soybeans, water, brown rice, tempeh culture), water, soy sauce, vinegar, honey, spices, beet powder, natural vegetable flavor, salt, natural hickory flavor.
Wt/Vol., Packaging, Price: 6 oz (170 gm) vacuum pack. Retails for $1.99 (1998/02, Lafayette, California).
How Stored: Refrigerated or frozen.

Nutrition: Per 3 slices (57 gm): Calories 80, calories from fat 25, total fat 2.5 gm (7% daily value; saturated fat 0.5 gm), cholesterol 0 mg, sodium 230 mg (9%), total carbohydrate 6 gm (dietary fiber 1 gm, sugars 0 gm), protein 8 gm. Calcium 9%, iron 5%, vitamin A 2%, vitamin C 1%. Percent daily values are based on a 2,000 calorie diet.
New Product–Documentation: Product with Label purchased at Safeway supermarket in Lafayette, California. 1998. Feb. 22. Price: $1.99. The product is a marinated cake of tempeh, about 2½ by 7½ inches, cut lengthwise into thin slices. The bold name at the top of the back panel is "Fakin' Bacon." Label: 4 by 9 inches. Plastic shrink wrap. Red, yellow, and white on brown. Front panel: "Low fat. Cholesterol free." Back panel: Lightlife Fakin' Bacon has no cholesterol, 90% less fat than bacon, 60% less sodium, and no nitrates!

2980. *Might* (*Canada*).1997. Tracking Dead fans through the world without Jerry: Things to do in Telluride when Jerry's Dead. No. 15. March/April. Music section.
• ***Summary:*** This article is written for fans of the rock group Grateful Dead, whose famous and beloved guitar player Jerry Garcia died on 9 Aug. 1995. "Things to do in a parking lot, any parking lot... Eat tempeh burgers... Eat veggie burritos."

2981. Noble Bean. 1997. Tempeh–Noble Bean (Leaflet). McDonalds Corners, Ontario, Canada. 2 p. Front and back. 28 cm.
• ***Summary:*** The top three-fourths of the front of this black-on-tan leaflet shows six tempeh products (packages and labels) made by Noble Bean. On the bottom quarter is a brief description (left column in French, right in English) of tempeh. On the back is a very brief description (in French and English) of Noble Bean and its history since 1979, an illustration of the countryside production facility (in a trailer), and a recipe for tempeh teriyaki. Address: RR#1, McDonalds Corners, ONT, Canada K0G 1M0. Phone: 613-278-0173.

2982. *Nutrition News* (*Riverside, California*).1997. Soy tsunami: The wave of the future. 21(4):1-4. April. [1 ref]
• ***Summary:*** Contents: A wave is coming (introduction). East soy and save your life. Soy vs. cancer. Top ten benefits of soy–According to Earl Mindell's Soy Miracle. Genistein is unique to soy. Soy vs. heart disease. The pause that refreshes: a soy shake. And, by the way, save your planet too. Get on the soy train! If you are a first timer, jump in there with tofu and/or isolated soy protein.

Where the good stuff is–table showing nutritional composition, including isoflavones of 1 serving of: miso, cooked soybeans, soy flour, soymilk, soy nuts (dry roasted), soy protein isolate, tempeh, firm tofu, low fat tofu (aseptic pack), extra firm tofu (aseptic pack), textured soy protein. Note: Good sources of isoflavones provide 30-50 mg per serving.

"This issue of *Nutrition News* is dedicated to partners William Shurtleff and Akiko Aoyagi and to Frances Moore Lappe, pioneers in the promotion of soyfoods and of the concept of kindness of eating."

2983. Hunter, Jean B. 1997. Research on foods for lunar and planetary stations (Interview). *SoyaScan Notes.* May 6. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** In late 1996 Jean received a $500,000 grant from NASA (North American Space Administration) to study foods for lunar and planetary stations. They are going to hire a dietitian; they already have a chef and a link with an institutional food manager. They are going to develop vegan and near-vegan recipes, food processing equipment, and menus suitable for use in the future of space exploration in bioregenerative life-support systems.

The basic assumptions are that crews rotate in and out every 6 months–as on the Russian space station *Mir,* 85 to 90% of the food must be produced in outer space, but 10-15% may be supplied by re-supply operations. These latter foods include fats and oils (incl. as butter), sweeteners, hard cheeses, egg whites, etc. Anchovies and bacon bits will be used as condiments. There will be no live food animals (such as chickens or fish) on board. She will continue her research on fermented food. Foods in which both she and Soyfoods Center are interested include Amazake (sweetener), tempeh–made from whole soybeans or okara (meatlike texture), dawadawa/natto (meaty flavor), soy yogurt (sogurt; dairylike) and other soy dairy replacers, and soy nuggets (salt-cured black beans). She is also studying tofu. Jean has recently become a vegetarian (but not a vegan).

This type of research traces its roots back to the 1960s when food uses of algae were studied. Address: Cornell Univ., Dep. of Agricultural & Biological Engrg., Room 218 Riley Robb Hall, Ithaca, New York 14853. Phone: 607-255-2297.

2984. Spaelstra, J.; Shapira, H.; Donnelly, H. 1997. Re: Introducing Dakini Health Foods Pvt. Ltd., in Pune/Puna, India. Letter to William Shurtleff at Soyfoods Center, May 7. 1 p. Handwritten.
• ***Summary:*** The letter begins: "To whom it may concern: We are a young company. Just started one year ago and *very* enthusiastic. I have come across your *Book of Tofu* and loved it. Started experiments and love it even more now. My friend and partner in business [Seemo] came across some American book [*Handbook of Indigenous Fermented Foods,* edited by Keith Steinkraus] that had 1 chapter about tempeh production. Out of this he developed the way to make tempeh here in India, which was quite difficult at times because the info was far from complete. Meanwhile our plans have changed because of all this and the *very* wholesome atmosphere that we sense around working with

soybeans (and consuming the different products)–the same atmosphere we are picking up from your books too which is very inspiring to us."

They order three books–tofu-, tempeh-, and miso production, plus *The Book of Tempeh*–all by Shurtleff & Aoyagi. "We would really like to set up a complete soyfood line now. So please get in touch!" Signed: J. Spaelstra (Holland), H. Shapira (Israel), and H. Donnelly (Indian). Address: Dakini Health Foods Pvt. Ltd., Vidyut Nagar, Plot A2, Kawdewadi, Pune / Puna 411 001, India. Phone: 0091-212-63-1990 (phone and fax).

2985. Seemo (H. Shapira). 1997. Re: History of Dakini Health Foods Pvt. Ltd., in Pune/Puna, India. Letter (fax) to William Shurtleff at Soyfoods Center, May 13–in reply to inquiry. 7 p. Handwritten.

• ***Summary:*** Seemo is Mr. H. Shapira from Israel and Kairava is Mrs. J. Spaelstra from the Netherlands. Seemo is in charge of tempeh, Kairava in charge of tofu & soymilk. They are making the earliest known commercial soybean tempeh in India. For their first letter see Dakini (1997).

Both Seemo and Kairava are devout disciples of Osho (formerly called "Sri Rajneesh"), he since 1984 and she since 1986. They arrived in Pune to stay in about 1988/89. Initially to support themselves, they had a gem and crystal shop, a wholesale new-age jewelry operation, and a motor bike repair shop. Now they have finally found what they want to do for work. "It's love and Zen." Osho died in Pune on 19 Jan. 1990; they returned to India the next day; the fire was still burning at the burning ghat. In the year before his death, his discourses were mostly about Zen. He died in Pune due to heavy metal poisoning and radiation damages done to him by U.S. marshalls in an Oklahoma jail cell, where he was kept unlawfully in 1985.

Their company started with the idea of making white tahini and possibly Turkish halva [halvah] (in which white tahini is a main ingredient). It was extremely difficult to get started. As foreigners doing business in India, they had to register a "Pvt. Ltd." company. Then they could not find a space for the company, since Pune is a rapidly growing city. So Seemo pulled down the back garden in his rented house, constructed a shed with a floor area of 25 square meters, and moved his bedroom up to the second floor. This gave him an additional 24 square meters where the bedroom used to be. They also have a 25 square meter storeroom where they make the tempeh. He got electrical connections then waited for 8 months while a colloid mill (copy of a 1940 model), hot air oven, and filling machine were delivered. The mill proved to be a technical nightmare; he had to totally rebuild it. Finally their small factory started operation. Then they added peanut butter and brown tahini to their product line–with no additives or preservatives. They had to set aside their plan to make halva.

Spicer College, run by Seventh-day Adventists, is located in Pune. They have a health food store and they make peanut butter–nearly edible, with too much sugar and salt, plus other ingredients. Their sesame butter (brown tahini) is gritty, rancid, and inedible. They also produce grape juices (very, very sweet), pastries (Mmmm good). And they make and bottle soy milk in plain and chocolate flavors, but it is loaded with white sugar and Class II permitted preservatives! They also make pretty good tofu; Seemo used to eat it now and then for the last 8 years. "Besides being actually able to taste the Bible in it, I had no reason to complain." This tofu is now served at the Osho commune. "Pune old timers told me that once–20 years ago–the place was managed by an enthusiastic old American woman and the quality of their products was very good.

At Dakini, they now also make hummus in their kitchen, 15 kg/week in summer and 60 kg/week in winter. They pack it in 200 or 400 gm cups and sell it at various shops in town to foreigners and Indians. They like it.

Seemo started developing the tempeh about 8 months ago. Last year a friend of his found a book titled *Handbook of Indigenous Fermented Foods,* edited by Dr. Keith H. Steinkraus, in a pavement stall for 400 rupees (US$13.00). Since he had been to Bali, Indonesia, many times, he tried making some of the foods but rarely got any edible products. So before leaving Pune, he gave the book to Seemo as a gift. As he read it, Seemo got really excited. He had grown up in a meat-eating family. Even while traveling and living in Europe, he continued to eat meat and junk foods. "Then I understood it was not good for me on all levels, and went vegetarian." Living in Holland later on, he started to learn about tofu, and then tempe, tamari, etc. "So now I was a healthy, well-fed vegetarian." Then he moved to India, but after some years of eating fried foods, lentils and lots of dairy products, he started to eat meat again, 2-3 times a month. "It did not feel too good, but I had no idea how to manage my diet, and living on mostly dairy products did not suit my body. So when Dr. Steinkraus' book fell into my hands, I got excited and realized that it might be possible to make tempe here in India at a small, affordable investment.

"So I first got a small incubator built; its actually like a cool box ½ meter wide and 1½ meters high, made of galvanized sheet metal with insulation and 8 shelves (of which I now use only 3)." At the bottom are heaters, which give 250-540 watts of heat. Two old computer cooling fans distribute the heat, and a thermostat regulates it. "It's not a perfect machine but I can do 5-12 kg/day when I want and, most important, I can produce in it excellent spore powder–since it is difficult to import anything here. Actually, I nearly gave up the project, because I was making sporulated tempeh, then sun-drying it and running in through my spice grinder. The powder looked great. The tempe cakes used to get hot, then very hot, then smelly with funny colors (no white mold). I double-checked everything. In the end, only the grinding was left, so I bought a small hand-turned grain

mill (500 rupees = US$15.00). Since then, perfect tempeh has been happening.

"For starter, I first got a packet of spores from Holland. Later I got 1 gram of white tempe starter from an American friend in Goa (she used to make her own supply down there), and playing with it I found it a bit more suitable for my use. So most of my spore stock now is from this starter, and some is mixed. I still have to study how to make tempe and starter during the different seasons here. Now it is very hot and dry. Next month is monsoon (wet), followed by a month that is hot and humid, and then the 3-month 'cold' season."

About half of all tempe produced is sold frozen; the other half is sold fresh. Seemo also plans to try making dry tempeh. He gives away lots of tempe as samples; most people love it. Starting this July, it will appear on the menu of one restaurant, possibly two–first as Tempeh Stroganoff and Tempeh Shashlik (steamed, then spiced, then barbecued). "When I get *The Book of Tempeh* I will introduce it to more places. Meanwhile, I have totally forgotten about eating meat. I feel strong and light. I find my vision benefits too; I haven't noticed that with tofu. Now that I am a bit more confident working with the mold, I hope to raise some capital, move to a suitable place (possibly well out of town), and then start to make tamari shoyu, and definitely some miso too. So that's a little of our story. Thank you." Address: Dakini Health Foods Pvt. Ltd., Vidyut Nagar, Plot A2, Kawdewadi, Pune / Puna 411 001, India. Phone: 0091-212-63-1990 (phone and fax).

2986. Osho, Sidi M. 1997. Work with soyfoods in Nigeria (Interview). *SoyaScan Notes.* May 22. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** Sidi Osho was born on 19 Aug. 1959 at Ibadan, Western Nigeria; ethnically she is Yoruba. The family spoke mostly Yoruba (but some English) at home; in Nigerian schools only English was spoken. Her first name, Sidi, means "Truth" in Yoruba. Her second name, Modupe, means "I thank God." She was the second child (and the first girl) in the family of 3 boys and 3 girls. Her father (born on 22 May 1927) was a civil engineer, educated in Lagos, Nigeria, at Yaba College of Technology; he has been in the construction business since 1959. Both of her parents believed strongly in the importance of education. They spent all of their money to educate their children, sending four of them to the United States for college and higher education. Sidi received no scholarships to help in her higher education. Today, with the change exchange rate between the U.S. dollar and the Nigerian naira, it is even more expensive for a Nigerian to get an education in America. "After we receive this education, he always reminds us–'Any education you have, if you don't apply it and offer other people opportunities, then it has been a waste of time.'" So Sidi decided to return to Nigeria after she earned her MSc degree at Ohio State University, and to look for work oriented toward development.

In. Jan. 1983 she entered Nigeria's National Youth Service Corps (NYSC) as a volunteer. She was assigned to work at IITA (International Institute of Tropical Agriculture) at Ibadan as a biochemist in the root and tuber improvement program. Then from Jan. 1984 to Aug. 1985 she was employed as a Field Work Specialist with women's groups in Nigeria. She first got interested in soybeans in 1987. Many of the people with whom Sidi worked at IITA were not enthusiastic about her work to teach Africans food uses of soybeans. She always felt under pressure. "They believed that soybeans should be fed to animals. That was one of the reasons my contract was not reviewed. Now IITA is not doing anything on soybeans. Whatever you see in annual reports is descriptions of work they have done before that is just being repeated. The problem is not so much IITA as an organization as specific individuals within the organization; some of these are Americans.

Concerning the proceedings of the Second International Soybean Processing and Utilization Conference: The proceedings have not yet been published–but they probably will be soon. The editor is Alex Buchanan of Australia. The proceedings for the First such conference, held in China, were apparently never published. The second conference was better organized than the first.

Sidi is very interested in both tofu and tempeh. She and a Japanese researcher found a new coagulant to transform soymilk into tofu–the leaves of the *Calotropis proceara,* a bush which has long been used as a coagulant of animal milks to make cheese. This was a major discovery since calcium sulfate and nigari are not available in Nigeria, especially in the rural areas.

Sidi has set up a soybean processing center in a market in Ibadan. She would like to use this as a model and set it up in every market in Nigeria.

Chicken is now more expensive than red meat in Nigeria. Address: Forest Hill Estate, G.P.O. Box 38619, Ibadan, Nigeria. Phone: 234-2-241-3993.

2987. Tibbott, Seth. 1997. The tempeh market in the United States (Interview). *SoyaScan Notes.* May 29. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** A total of about 55,000 lb/week of tempeh is now made in the USA, compared with 34,700 lb/week in Jan. 1984 (based on a Soyfoods Center survey, published in Soyfoods Industry and Market, 5th ed.). This is the result of a major phone survey that Seth has just completed; he interviewed each of the major U.S. tempeh makers by phone, on the condition that their individual production figures would not be revealed–only the aggregate. Seth plans to present this information at a tempeh conference in Bali, Indonesia, on July 17. Seven U.S. companies make more than 1,000 lb/week of tempeh. The top 3 manufacturers are Lightlife Foods, White Wave, and Turtle Island (in

that order). Of these three, Turtle Island has experienced the greatest percentage growth since 1984. The next four are Quong Hop, Surata Soyfoods, Northern Soy, and Cricklewood. In 1984 the four largest tempeh makers had 63% of the U.S. market (by weight); now they have 84%. The best-selling type of product is soy tempeh in an 8-oz package; it sells even better than tempeh burgers.

The average retail price of an 8-oz package of tempeh in the USA is $1.81. Shurtleff suggests that Seth compare this with the price in Indonesia. The yearly per capita income in Indonesia is $560 compared with $18,690 in the USA. The U.S. figure is 33.37 times as large as the Indonesian. Dividing $1.81 by 33.37 we see that if tempeh sold for 5.42 cents per 8 oz in Indonesia, it would be the same relative price as tempeh in the USA.

In terms of packaging, 80% of the tempeh in America is vacuum packed–even though most manufacturers admit that vacuum packaging lowers the product quality by imparting a slightly bitter flavor and less desirable texture. Seth's company is one of the few that does not vacuum pack its tempeh.

By product type, there are: 13 different burgers on the market, 9 soy tempehs, 6 multi-grain tempehs (soy plus several cereal grains), 5 bulk soy tempehs, 4 soy & brown rice tempehs, 2 soy & sea veggie tempehs, 2 soy & wild rice tempehs, 2 soy & millet tempehs, and 2 sloppy joe tempehs.

Seth plans to take his family to the Conference in Bali (he will be there July 11-20; the conference ends July 15), and then to travel to Malang to study how tempeh is made there. They will leave Indonesia on July 29. Address: Turtle Island Foods, Inc., P.O. Box 176, Hood River, Oregon 97031. Phone: (503) 386-7766.

2988. Liu, KeShun. 1997. Fermented Oriental soyfoods. In: KeShun Liu. 1997. Soybeans: Chemistry, Technology, and Utilization. Florence, Kentucky: Chapman & Hall. xxvi + 532 p. See p. 218-96. Chap. 5. Index. [127 ref]
• ***Summary:*** Contents: Introduction. Fermented soy paste (*jiang* and miso): Varieties of miso and jiang, koji and microorganisms involved, koji starter and its preparation, Chinese jiang preparation (traditional household method, pure culture method, enzymatic method), Japanese miso preparation (rice koji preparation, treatment of soybeans, mixing and mashing, fermentation, pasteurization and packaging), principles of jiang and miso preparation, major factors in jiang and miso making (raw materials, cooking temperature and time, conditions during koji preparation, proportions of ingredients, fermentation conditions, novel processing for special products). Soy sauce (*jiangyou* or shoyu): Varieties of soy sauce, soy sauce processing (traditional Chinese household method, modern Chinese method, processing of Japanese shoyu, comparison of soy sauce and *jiang* or miso preparations), principles of making soy sauce (action of koji enzymes, fermentation by lactic bacteria and yeasts, color and flavor formation, glutaminase and glutamic acid), chemical soy sauce, progress in soy sauce preparation (use of defatted soy grits or flakes, improvements in treating soybeans, development of an automatic koji-making system, application of microorganisms with specific activities, techniques to shorten production time, improvements in soy sauce clarification), chemical composition, quality attributes and standardization, mycotoxins. Tempeh: Varieties of tempeh, preparation (traditional method, pilot plant method, petri dish method), microorganisms involved, factors affecting tempeh fermentation (starter, dehulling and aeration, moisture, temperatures, acidity, losses of solids), changes during fermentation (general changes, protein, lipid, carbohydrates and other constituents), production of vitamins, storage, nutritional value. Natto: Preparation, microorganisms involved, factors affecting natto quality (raw material, soybean cooking conditions, storage), changes during fermentation, trends in research on natto and *B. natto* (development of novel strains of *B. subtilis,* purification and characterization of key enzymes, studies into genes encoding key enzymes of *B. subtilis,* studies of possible physiological roles of natto). Soy nuggets (douchi or hamanatto). Sufu: Preparation, types of sufu, microorganisms involved, effect of mold growth, effect of brine aging, references. Address: PhD, Soyfood Lab., Hartz Seed, a Unit of Monsanto, P.O. Box 946, Stuttgart, Arkansas 72160-0946. Phone: 870-673-8565.

2989. Messina, Mark; Messina, Virginia. 1997. Soy: Good food for good health. *Veggie Life* (*Concord, California*). April/May. p. 48-50, 55.
• ***Summary:*** Contents: Introduction. Heart disease. Osteoporosis. Menopause. The many faces of soyfoods: Soybeans, soy flour, soymilk, textured vegetable protein, tempeh, soynuts, miso, tofu.

2990. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Svenska Tempeh [Swedish Tempeh].
Manufacturer's Address: Maraigatan 20A, S-41471 Goteborg, Sweden. Phone: 031-428976.
Date of Introduction: 1997. May.
Ingredients: Soybeans, walter, culture.
How Stored: Frozen.
New Product–Documentation: Call from Betty Stechmeyer of GEM Cultures in Ft. Bragg, California. 1997. Feb. 18. Hans Hulten plans to start making tempeh commercially in Sweden in about March 1997.

Call then letter (fax) from Hans Hulten. 1998. June 5.–He is looking for a European source of tempeh starter. Goteborg is on the west coast of Sweden. His fax states that he started in May 1997 and sold his shop in Goteborg. At

first he borrowed a professional kitchen to make tempeh. Now he uses a part of his house, equipped with the necessary machines, which reduces his costs. He makes about 250 kg/month, but there is more demand than he can fulfill, and it is growing. One third of his out put is regular soy tempeh, about 20% is millet tempeh, and two-thirds are fried and marinated. He also makes burgers and bits. All are sold frozen. He is now looking for distribution in Scandinavia. "Then a lot of things will go faster and more people can eat this fantastic food."

2991. Tibbott, Seth. 1997. Estimates of the retail markets for tofu, soymilk, and tempeh market in the United States (Interview). *SoyaScan Notes.* June 13. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Tofu: Steve Demos, founder and president of White Wave, thinks that the retail value of tofu sold as tofu in the USA in 1996 was about $110 to $130 million. Peter Golbitz estimated that in 1990 the U.S. retail tofu market was $89.6 million, rising to $116 million in 1996. He also estimated that in 1990 the U.S. retail soymilk market was about $54 million, rising to $125 million in 1996.

Tempeh: A total of about 55,000 lb/week of tempeh is now made in the USA, compared with 34,700 lb/week in Jan. 1984 (based on a Soyfoods Center survey, published in Soyfoods Industry and Market, 5th ed.). The average retail price of an 8-oz package of tempeh in the USA is $1.81. Thus the retail value is 55,000 x $1.81 x 52 = $5.18 million.

Note: A detailed survey conducted by Soyfoods Center in Feb. 1984 and published in Soyfoods Industry and Market (5th ed., 1985, p. 41) found the U.S. retail value of tofu and tofu products to be $46.08 million, of soymilk and soymilk products (including soy-based infant formulas) to be $221.97 million; about 6.7% of that value or $14.9 million was "adult soymilk." And of tempeh to be $4.96 million. Address: Turtle Island Foods, Inc., P.O. Box 176, Hood River, Oregon 97031. Phone: (503) 386-7766.

2992. Bean Supreme Ltd. 1997. Price list with sale. Auckland, New Zealand. 1 p. Single sided. 30 cm.
• ***Summary:*** Effective 20 June 1997. Black on yellow. The products are listed in categories except for the first, which is soyfoods. For each is given the product name, weight, price, barcode, outer, and price. Tofu bulk organic. Tofu firm vacuum pack. Tofu firm vacuum pack organic. Tofu soft Asian. Tempeh vacuum pack. Tempeh fr. frozen. Soysage. Luncheon [Traditional, Cajun, Smoke]. Tempeh pattie frozen. Meatfree sausage.

Soymilks: Soyplus 1 liter. LiteLicks [soy ice cream] (Honey Vanilla, Wildberry, Maple Walnut, Chocolate, Fruit Fiesta, Almond Fudge, Bulk packs) (9 or 16 liters).

Biofarm yoghurts (5 flavors). Malabar goat yoghurt. Olive Grove: Falafel mix, hoummus, Souvlaki sauce, tahini.

Koromiko cheese (11 types, of which the first 4 are vegetarian). Koromiko wax selection (private bin). Pacific Harvest: Agar, kelp and karengo granules, fronds, or flakes. Address: Box 12082, 140 Hugo Johnson Dr., Penrose, Auckland, New Zealand. Phone: 64 09 579 0592.

2993. Seemo, -. 1997. Re: Update on tempeh made by Dakini Health Foods in Pune, India. Letter to William Shurtleff at Soyfoods Center, July 16. 1 p. Typed, with signature.
• ***Summary:*** "Our tempeh work is going great." Dakini tempeh is now sold in two shops. They are trying to introduce it to the Osho ashram, but the price is too high. Seemo is trying to find a new location for their shop, but real estate is terribly expensive and making a deal is tricky. He is also starting to make contact with soybean farmers in Madya Pradesh. "It is very difficult to find soybeans, and when we find them they are mostly of bad quality and high price, and the price gets even higher after the sorting and cleaning are done." He asks about Dr. Keith Steinkraus. Address: Dakini Health Foods Pvt. Ltd., Vidyut Nagar, Plot A2, Kawdewadi, Pune / Puna 411 001, India. Phone: 0091-212-63-1990 (phone and fax).

2994. Mueller, Ed. 1997. Brief history of Takoma Soy Inc. (Interview). *SoyaScan Notes.* July 21 and 25. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Takoma Soy was incorporated on 5 March 1992 and started operation on 1 April 1992–sharing the same space as Olive Tree Works in Takoma Park, Maryland. Takoma Soy purchased tofu from Spring Creek Natural Foods (Spencer, West Virginia) and sold it at cost to Olive Tree. Takoma Soy is now a full-line natural foods distributor, carrying products which include Spring Creek Tofu (from Spencer, West Virginia), Miso Master miso (from North Carolina), and tempeh from Cricklewood (Mertztown, Pennsylvania). They recently purchased (using a bank loan) a property that used to be a Bible camp. On the property are a 12,000 square foot building, a lodge house (with 5-8 bedrooms), and 3 cabins. At its peak the camp had 300 to 500 day campers and up to 150 overnight guests. Ed would like to convert the main building into a tofu factory. He is working on a joint venture that would probably set up a new company, with Twin Oaks and Olive Tree involved as partners. Twin Oaks plans to stop making tofu, buy their tofu from Takoma Soy in Maryland, and focus on making second generation tofu products.

Ed was a Peace Corps volunteer in Sierra Leone. His vision for the property is to develop a center where people can come to learn agricultural skills, including how to make tofu, bake bread, etc. Address: 11 South Pennsylvania Ave., Hancock, Maryland 21750. Phone: 301-678-5283.

2995. Tibbott, Seth. 1997. Re: Tempeh in Indonesia (Color postcard). Letter to William Shurtleff at Soyfoods Center, July 19. 1 p.

• ***Summary:*** "Over here in the Tempeh Kingdom where the tempeh in the market costs 500 Rupiah ($0.20) for 250 grams. After speaking with the owner of the Murni Tempeh Shop in Denpassar, Bali, I determined that an Indonesian tempeh worker has to work 72 minutes to buy a 250 gram cake of tempeh, where a worker at Turtle Island can earn one in 14 minutes (at USA retail price).

"The [Tempeh] Symposium was fantastic–well worth the trip–lots of papers on isoflavones & anti-diarrheal properties as well as vitamin B-12 production using mixed cultures. In Ubud [a little town that does arts and crafts in the mountains of Bali] now, then Yogyakarta to visit Pedro's tempeh shop that makes 2½ tons/day employing 3 people + 20 "helpers" with whom he trades work for tempeh. Best regards–Seth."

A color photo on the other side shows "The exciting kecak dance performed at Tanah Lot temple on Bali's western shore."

Talk with Betsy Shipley of Perry, Michigan. 1997. Nov. 28. She and Gunter Pfaff went to this 2½ day tempeh symposium; the proceedings are scheduled to be published soon. Bali was overrun by tourists and overcrowded. All the tempeh production they saw was done under very trying, unsanitary conditions.

Talk with Seth Tibbott. 1997. Dec. 8. Pedro (H. Pedro Sudjono) is a remarkable guy with a remarkable tempeh shop. His shop and office are located at: Jalan Hos Cokroaminoto 136, Yogyakarta. Phone: (0274) 564-378. Seth took photos of the shop. An actor and a politician, he is a character and a real presence in the world of tempeh in Indonesia, involved with many associations. He doesn't incubate any of the tempeh at his shop. Mostly women come in and seal the perforated plastic bags, then they throw the bags into empty soybean sacks, take them home on their bicycles, incubate the tempeh in the bags, then sell the tempeh. They pay him for the bagged, inoculated soybeans then they keep whatever they can make selling the tempeh. Its a clever marketing guy. Address: Turtle Island Foods, Inc., P.O. Box 176, Hood River, Oregon 97031. Phone: (503) 386-7766.

2996. Brody, Jane E. 1997. Diet may be one reason complaints about menopause are rare in Asia. *New York Times.* Aug. 27. p. B10. Health section (Natl).
• ***Summary:*** A table (from the scientific journal *Obstetrics and Gynecology*) shows the content of phytoestrogens (in milligrams) in various soyfoods: Roasted soybeans 165.2. Textured vegetable protein 138.2. Green soybeans 135.4. Soy flour 112.4. Tempeh 62.5. Tofu 33.7. Tofu yogurt 16.4. Soy hot dog 15.0. Soy noodles (dry) 8.5.

2997. Little Tokyo Service Center. 1997. L.A. Tofu Festival, August 9-10. Los Angeles, California. 22 p. Illust. 26 cm. Saddle stitched (stapled).
• ***Summary:*** Contents: 1997 LA [Los Angeles] Tofu Festival committees and volunteers. Schedule of events, Aug. 9-10. Map of events. Letter from Little Tokyo Service Center, with thanks to House Foods / Hinoichi Tofu as the Title Sponsor. List of sponsors by rank. Honorary chairpersons: Sandy Gooch and Rob Fukuzaki. Health education and health benefits of tofu. Tofu: A 2,000 year old health food miracle, compiled by William Shurtleff of Soyfoods Center. 1997 LA Tofu Festival restaurant profiles (20 restaurants, p. 7-9): Aloha Food Factory (Alhambra, CA, started Oct. 1990–Tofu specialty dish: Tofu with cha-shu on stir fried vegetables). Berth 55 (Long Beach, 1988–Tofu poke dish). Buk Chang Dong Soon Du Bu (LA, April 1996–Spicy tofu casserole with oyster, shrimp & clams). Chez Sateau (Arcadia, 1981–Tofu cheesecake, Tofu Caesar Salad. Chef Sato was "Chef of the Year of Los Angeles" and 1980 Chef of the Year of southern California." He was also a member of the 1980 U.S. Team for the Cooking Competition in the Culinary Olympics). Curry House (Beverly Hills, Aug. 1996–Tofu steak {marinated in soy sauce}, Tofu cheesecake). Furaibo (LA, Aug. 1994–Tofu salad with original ginger). Indo Cafe (Los Angeles, 1993–Stuffed tofu cake {tofu filled with ground chicken and shrimp}, Fried tofu {marinated in turmeric and candlenut}). Jozu Restaurant (LA, Dec. 1, 1996–Fried tofu with marinated porkchops). Little Tokyo Lion's Club (LA, 1974–Tofu miso soup, Futomaki sushi). Mr. Ramen (LA, Oct. 1993–Vegetarian {with tofu} ramen). Ocean Seafood Restaurant (LA, 1990–Mabo tofu, Tofu with mixed vegetables, Tofu in clay pot). Papa Jon's Cafe (Long Beach, 1990–Greek tofu salad, Tofu lentil salad, Potato-tofu salad, Sesame tofu salad, Tofu spinach, Lasagna, Tofu broccoli stir-fry, Spaghetti and tofu balls, Tofu/lettuce/tomato {TLT} sandwich, Tofu scramble {breakfast}, Tofu dessert pies, Tofu frosting {on cake}, Tomato basil w/tofu, Teriyaki tofu, and Spinach mushroom pasta w/tofu). Pat Greenberg, "Fitness Gourmet" (Beverly Hills, Renowned instructor of the "Joy of Soy" cooking classes). Southern California Cuisine (LA, 1994–Tofu ravioli served with Curry sauce or traditional marinara sauce). Suehiro Cafe (LA, 1972–Stir-fried eggplant, Bell peppers with tofu braised in miso sauce, Deep-fried tofu with sauce). Three Brothers Restaurant & Catering (Harbor City, 1983–Chinese tofu salad, Tofu seafood salad). Tofutti Brands Inc. (Cranford, New Jersey, 1982–Non-dairy frozen desserts, Tofutti tortellini, Mini ravioli, Tofutti cookies). Unique Catering (Chino Hills, 1995–Tofu patty with shiitake sauce, String beans with tofu dressing, Inari-sushi). Vegetarian Delight (San Gabriel, 1991–Veggie fish in hot braised sauce). Wild Oats Community Market (Santa Monica, 1984–Tofu tempeh deli salad).

Advertisements (p. 10-21), including ads for Tofutti, Patricia Greenberg "The Joy of Soy" cooking classes, JFC International Inc., House Foods America Corporation (full page, inside rear cover). Address: Little Tokyo Service

Center (Resource Development Center), 231 East 3rd St., Los Angeles, California 90013. Phone: 213-473-1600.

2998. *SoyaScan Notes.* 1997. How different types of bacteria reproduce and the amount of heat required to kill them (Overview). Sept. 28. Compiled by William Shurtleff of Soyfoods Center.

• ***Summary:*** What are bacteria? They are tiny, one-celled organisms that can usually be seen only with the aid of a microscope. Millions of them would fit on the head of a pin. Bacteria (and blue-green algae) are distinguished from other living things because of their cell structure: they have no distinct nucleus–that is, their nuclear matter is not enclosed by a cell membrane or wall, and they lack most of the internal cell structures found in the cells of higher organisms. All bacteria have a cell wall surrounding a cell membrane, inside of which lies the unbound nuclear matter and other material. There are three types of bacterial cells, based on shape: spherical (coccus), rodlike (bacillus), and spiral (spirillum). In terms of evolution, bacteria are the most successful of all creatures.

Are all bacteria bad? No! Some bacteria (popularly called germs) cause disease and sickness. Others are responsible for the spoilage of food. Yet many types of bacteria are essential in making foods–called fermented (or cultured) foods–such as yogurt, sour cream, buttermilk, many fermented cheeses, vinegar, sauerkraut, dill pickles, natto, etc. Other bacteria are decomposers of the biosphere; in nature they cause the decay of stumps, logs, leaves, and other vegetation, which eventually would literally choke our forests and fields. Indeed, without bacteria, there would be no plant or animal life on earth.

How do bacteria multiply? Most bacteria reproduce by dividing in the middle to form two cells. After these cells reach maturity, they divide again to make four. In some species of bacteria, such divisions may occur as often as every 15 minutes. Thus billions of bacteria may be formed from a single bacterium in 24 hours. Others divide only once every 16 hours.

What are bacterial spores? Bacteria of the genera *Bacillus, Clostridium, Desulfotomaculum, Sporolactobaciullus* (rods), and *Sporosarcina* (rods) share the ability to form a type of spores, called endospores. Of primary interest to food microbiologists are the spore-forming species of the genera *Bacillus* (aerobic) and *Clostridium* (anaerobic). Endospores, which are formed within the bacterial cells, are very resistant to heat. They are a survival mechanism for the bacteria, because when they germinate, new bacteria are formed–even if the bacteria (vegetative cells) have been killed by heat.

How much heat is required to kill bacteria and their endospores? The heat resistance of microorganisms is usually expressed in terms of their *thermal death time,* which is defined as the time it takes a certain temperature to kill a stated number of organisms (or spores) under specified conditions. The heat resistance of vegetative cells of bacteria varies widely with the species, but even the most difficult to kill (the thermophiles) are killed in several minutes at 80 to 90ºC. Generally, the higher the optimal and maximal temperatures for growth, the greater the resistance to heat. Bacteria which clump considerably or form capsules are more difficult to kill than those which do not. Thermal death times of some common bacterial cells: *Gonococcus:* 2-3 minutes at 50ºC. *Staphylococcus aureus:* 18.8 minutes at 60ºC. *Escherichia coli:* 20-30 minutes at 57.3ºC. *Staphylococcus thermophilus:* 15 minutes at 70-75ºC. *Lactobacillus bulgaricus:* 30 minutes at 71ºC.

Thermal death times of some common bacterial spores: Time (in minutes) to kill all at 100ºC: *Bacillus anthracis:* 1.7 minutes. *Bacillus subtilis* (the natto bacterium): 15-20 minutes. *Clostridium botulinum* (causes botulism): 100-330 minutes. *Clostridium calidotolerans:* 520 minutes. Flat sour bacteria: Over 1,030 minutes (17.1 hours). These hard-to-kill bacterial spores are usually killed by heating in a retort (pressure cooker) which raises the temperature.

Heat resistance of enzymes: Although most food and microbial enzymes are destroyed at 79.4ºC, some may withstand higher temperatures, especially if high-temperature short-time heating is employed.

Bacterial growth in different foods: Very few bacteria grow in acid foods, dry foods, salted foods, or very sweet foods. Thus, it is relatively easy to can tomatoes because they are an acid food. Jams and jellies are protected by their high content of sugar, and often acid. But the amount of heat required to successfully can nonacid foods is very high because of the need to destroy thermophilic bacteria and the very heat-resistant bacterial spores.

Letter from Dr. Keith H. Steinkraus, Prof. of Microbiology, Cornell University, Ithaca, New York. 1997. Nov. 15. "One of the most interesting areas of microbiology today is the 'extremophiles' isolated from volcanoes, and deep pockets in the oceans. Some extremophiles will grow at temperatures above boiling water, for example 220ºF. They are proving to be a good source of enzymes operating at high temperatures.

"Regarding the thermal death times of spores: Using a spore concentration of 60 billion spores/ml of *Clostridium botulinum* (suspended in buffer at pH 7.0) the minutes required to kill them are as follows: 100ºC–360 minutes, 110ºC–36 minutes, or 120ºC–5 minutes."

"D-value-decimal reduction time or the time required to destroy 90% of the organisms (their spores) at 120ºC (250ºF): *Bacillus stearothermophilus*–4.0-5.0 minutes, *Clostridium thermosaccharolyticum*–3.0-4.0 minutes, *Clostridium nigrificans*–2.0-3.0 minutes, and *Clostridium botulinum*–0.1-0.2 minute.

"Source of the above figures–*Modern Food Microbiology,* James M. Jay (D. Van Nostrand, 1978). There

are later editions but it is unlikely that the basic figures have changed much.

"Bacteria suspended in water are more easily destroyed. Suspended in oil or fats or in dried smears are much more resistant to destruction.

"Regarding your inquiry concerning heat treatment of brown rice at 15 psi for 35 minutes, it is very unlikely that any microorganisms in your environment or on the brown rice will survive that treatment. Will it taste 'freshly made' after two weeks in the pot at summer temperatures? Unlikely but only a taste test will answer your question."

One of Dr. Steinkraus' MSc students did her research on "tea fungus–kombucha," and another did his on tempeh bongkrek toxin. He found that bongkrek toxin is formed only in the presence of rather high levels of fat as you would find in coconut residue (left after the extraction of fresh coconut milk with water).

2999. Zacharowicz, Paul Stuart. 1997. Re: Recent developments. New company name, and incorporation. Letter (fax) to William Shurtleff at Soyfoods Center, Sept. 30. 2 p. Handwritten, with signature.
• ***Summary:*** Paul's company has a new name: "Paul Stuart's Food Garden GmbH." The logo has also changed, and the company is now incorporated. The address in Vienna has not changed. It has developed immensely since we were last in contact. "Basically we primarily produce tempeh (soy), marinated tempeh, as well as burgers, roundies, and different vegi spreads and snacks... We will be opening our first fast-food vegetarian restaurant in Vienna next spring in which we intend to really get tempeh mainstream, and out of only being in the Birkenstock natural food stores."

Note: This company, which began making tempeh in Sept. 1983, was originally named "Paul Stuart Zacharowicz." Renamed "Vollwert und Wertvoll" by June 1984. Later renamed "Natuerliche Lebensmittel." Named "Von Anfang an Natur, Paul Stuart's" by Dec. 1992. Address: Paul Stuart's Food Garden GmbH, Staudgasse 70/14, A-1180 Vienna, Austria. Phone: +43 (1) 408 50 03.

3000. Bean Supreme Ltd. 1997. Soy kids: Easy family recipes with children in mind (Brochure). Auckland, New Zealand. 6 panels each side. Front and back. Each panel 10 x 14 cm. Undated.
• ***Summary:*** On the cover, red on pink, is an illustration of 7 happy kinds before a large rayed sun. The first 2 panels are about the health benefits of soyfoods. Then come 6 pages of recipes and tips for using Bean Supreme's Soyplus soymilk, tofu, and Lite Licks frozen dessert (soy ice cream). The company also makes tempeh and Tofu Luncheon. The back panel lists the company's soy products, has a statement about the goodness of soybeans, and states: "Bean Supreme brings happiness." Address: Box 12082, Penrose, Auckland, New Zealand.

3001. Lightlife Foods, Inc. 1997. Now your soy set can be as effective as it is appetizing: Introducing Lightlife's "Eating Healthy Can Be Soy Easy" merchandising program (Leaflet). Greenfield, Massachusetts. 1 p. 28 cm.
• ***Summary:*** This full-color, glossy leaflet shows a shelf set of all of Lightlife's soy products in the produce section, flanked on both sides by celery, lettuce, tomatoes, artichokes, bell peppers, and mushrooms. Products (from top to bottom) include: Smart dogs!, Wunderdogs, Tofu Pups, Lightburgers, Marinated Grilles (barbecue, lemon, tamari), Smart Deli, Lean Links (Italian, breakfast), Soy Gourmet, Gimme Lean (meatless), Tempeh, Savory tempeh strips, and Nasoya tofu. At the top is a booklet (1997) titled "Eating healthy can be soy easy."

The text reads: "As any as 120 million people are on meat restrictive diets–and just about everybody else wants to cut cholesterol and fat. Soyfoods, for many of these people, are becoming one of their basic food groups. These consumers are spending more of their food dollar in the produce department and that's why Lightlife soy set in your produce section makes sense–and sales. Only Lightlife provides a fully integrated, complete merchandising system."

"As a leading producer of meatless soy based products, Lightlife delivers satisfying flavor through an entire line of mouthwatering vegetarian replacements for hot dogs, burgers, sausage, luncheon meats, ground meat, and tempeh."

"Why lightlife? Proven category leader. Merchandising support. No spoilage." www.lightlife.com. Address: P.O. Box 870, Greenfield, Massachusetts 01302. Phone: 1-800-274-6001 Ext. 129.

3002. Lightlife Foods, Inc. 1997. Eating healthy can be soy easy (Brochure). Greenfield, Massachusetts. 12 p. 22 cm.
• ***Summary:*** On the cover of this full-color, glossy brochure is a color photo of a meatless burger (between buns, with onion, tomato, and lettuce), a hot dog (in a bun, with a bead of mustard on top), and a plate of stir-fried tempeh with veggies. In the background are rolling soybean fields. In the foreground are three pods of green vegetable soybeans, and 15 whole dry soybeans.

Contents: Ten reasons to include soyfoods and soy protein in your diet (p. 2-3): 1. You will be in good company. 2. Lower your cholesterol. 3. Lower your risk of cancer. 4. Menopausal symptoms. 5. Soyfoods are nutritious. 6. A quality protein source. 7. Save our precious resources. 8. A variety of alternatives and greater availability. 9. Better quality. 10. Soyfoods are "in."

Glossary of common vegetable protein foods (p. 4-5): Tofu, tempeh, meat analogs, soymilk, soy cheese, soy flour, soy protein, textured vegetable protein (TVP), seitan, miso. A table shows each Lightlife product, serving size, and grams of soy protein (soy tempeh has the most at 24 gm per 4 oz

serving, followed by Gimme Lean at 18 gm per 4 oz).

Products (with a brief definition of each) and mission statement (p. 6-7): Smart dogs. Tofu pups. Wunderdogs (The first low-fat vegetarian hot dog just for kids). Smart deli slices (fat free). Foney baloney (Kids love it). Lean links sausages. Gimme lean (fat free). Marinated smoky tempeh strips ("Fakin' Bacon"). Fakin' bacon bits. Marinated tempeh "grilles" (soy tempeh patties in Tamari, Lemon, and Barbecue flavors). Lightburgers (fat free). Lightsausages (fat free). Tempeh (in 5 varieties–Soy, Three Grain {millet, brown rice, barley}, Garden Vegetable, Quinoa-Sesame, and Wild Rice), Savory seitan, Vegetarian request (100% vegetarian, all-natural entrees). A color photo shows many products in their packages.

Getting started (p. 8-10; how to use key products). About Lightlife (since 1979). Address: P.O. Box 870, Greenfield, Massachusetts 01302. Phone: 1-800-274-6001 Ext. 129.

3003. Milligan, Patti Tveit. 1997. Experience the powerful benefits of soy: Part one of two. *Health Counselor*. Aug/Sept. p. 43-45, 60.
• ***Summary:*** Focuses on the health benefits of phytoestrogens in soy, especially genistein and daidzein. A table (p. 44) shows the content of genistein + daidzein, protein, calories, and calcium in a serving of tofu, soy flour (low-fat), tempeh, cooked soybeans, and green vegetable soybeans (fresh or frozen). Address: M.S., R.D. Corporate dietitian at Henry's Marketplace, a health food chain in California.

3004. Ontario Soybean Growers' Marketing Board (OSGMB). 1997. Overview of the Canadian soyfoods market. Chatham, Ontario, Canada: OSGMB. 44 p. 28 cm.
• ***Summary:*** This excellent, complete, and accurate market study was compiled by the Collège d'Alfred of the University of Guelph, under contract with the Ontario Soybean Growers' Marketing Board (OSGMB). The project leaders were Suzanne Lavoie, Charles Goubau, and Ian Walker. The field research was conducted between Jan. 15 and Aug. 31, 1997. The first study of the Canadian soyfoods market was published in March 1990 (vi + 40 pages).

Contents: Acknowledgments. Summary. Introduction. Research procedures: Methodology, limitations (of the 100 companies in this study, over 75% were visited, interviews were conducted in person, and product samples were collected). The Canadian soyfoods market: History, structure of the Canadian soyfood industry, market highlights by region (The Maritimes, Quebec, Ontario, the Prairies {Manitoba, Saskatchewan, and Alberta}, British Columbia), factors influencing the soyfoods market (A closer look at Canadian demographic trends, a closer look at Canadian immigration trends, a closer look at vegetarianism and family food expenditure trends, research on soyfoods and their health benefits, the American influence). Supply and demand of soybeans for use in soyfoods: Soybean production in Ontario, imports and exports of soybeans, imports and exports of soy products, the soybean crushing industry in Ontario, consumption of whole soybeans by soyfood processors. Opportunities in the Canadian soyfoods market. Soyfood processors and their needs. Market opportunities for food-grade soybeans. Summary comments. Bibliography.

Tables show: (1) Major soyfood companies established in the province of Quebec (p. 13). (2) Major soyfood companies established in the province of Ontario (p. 16). (3) Major soyfood companies established in the province of British Columbia (p. 19).

(4) Percentage of change in units and sales (p. 21). (5) Percentage distribution of population–Canada (p. 22). (6) Percentage distribution of age groups–Canada (p. 22; In the 15-24 age group, 19% did not eat meat in 1992, down from 23% in 1986).

(7) Percentage of population who do not eat meat & share of budget spent on meat, Canada 1986 and 1992 (p. 28). (8) Canadian soybean: Supply and disposition (September–August crop year)–in metric tons (p. 31). (9) Canadian soybean exports by country of destination (p. 32. In 1997-98 some 325,000 tonnes went to the European Union, 145,000 to the USA, 85,000 to Japan, 40,000 to Hong Kong, 75,000 to other Asia, and 15,000 to other places).

(10) Imports and exports–All countries, dollar values (p. 33. The leading imports are soybean meal $202.7 million, crude soybean oil $16.75 million, and whole soybeans for oil extraction $12.59 million. The leading exports are protein concentrates and textured protein substances $9.1 million, soybean meal 6.5 million, and brans, sharps and other residues $4.3 million).

(11) Soybean crushing facilities in Canada (p. 34. All are located in Ontario province; ADM Agri-Industries Ltd., Windsor. Capacity: 3,600 tonnes/day of raw soybeans. CanAmera Foods, Hamilton, 3,000. Helin Oil Packers, Whitby, 250. Started crushing in 1997. Cold Springs Farm Ltd., Thamesford, 100. Started 1995. Sunfield Oil Seeds, Wingham, 100. Started 1994. Dennis Jackson Seeds Services Ltd., Dresden, 40. Started 1994. Tri County Protein Corporation, Iroquois, 100. Not in operation yet).

(12) Estimated quantities of soybean utilized by soyfood processors–1996–metric tons (p. 35. Total volume of whole soybeans consumed: 9,650 tonnes, of which 4,780 are for soymilk, 4,775 are for tofu, and 95 are for other soyfood products). Total volume of whole soybeans consumed by province (by soyfood processors): British Columbia 3,825 tonnes, Ontario 3,050 (excluding crushing plants), the Maritimes and Quebec 2,535, and the Prairies 240.

(13) Major foreign companies in the Canadian soyfood market (p. 37. Soy cheese: Soyco Foods, Sharon's Finest, Cemac Foods Corp. {Nu-Tofu}. Frozen desserts: Tofutti Brand, Inc. Tempeh: Turtle Island Foods Inc. Tetra Pak packaged soymilk: Westbrae Natural Foods, Cenat, Pacific

Select, Vitasoy USA Inc., Eden Food Inc. Tofu: Mori-Nu, Vitasoy USA Inc. Prepared dishes: Amy's, Sharon's Finest. Meat analogs: Fantastic Food Inc. MGM Brands, Northern Soy, Soy Boy, Turtle Island Foods Inc. Salad dressing: Nasoya Foods. Soy sauce: Eden Foods Inc., Kikkoman Foods Inc.).

The Prairie Provinces (Manitoba, Saskatchewan, and Alberta) contained about 16.6% of Canada's population (4.5 million persons) in 1995. "The province of Alberta [Capital = Edmonton] is different from the other two Prairie provinces, due mainly to its larger population base, its growing Oriental population and its proximity to Vancouver. Calgary [a large city in Alberta province] and Edmonton have their own Chinatowns, including small Oriental-owned tofu and soymilk production facilities." Note: According to the Canadian Soyfoods Directory (1997, p. 14), there are 7 soyfoods companies in Alberta province, 2 in Manitoba, and none in Saskatchewan. Address: OSGMB, 180 Riverview Dr., P.O. Box 1199, Chatham, ON N7M 5L8, Canada. Phone: 519-352-7730.

3005. Rahardjo, Grace. 1997. Making tempeh in Canada (Interview). *SoyaScan Notes*. Oct. 6. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Grace, who was born in Indonesia, has been making tempeh at her home in Canada for the last 5 years (i.e. since about 1992). She sells it to her friends and church members, but not in stores. Her emphasis is on quality: it has a whiter mycelium and is more juicy than commercial tempeh. She comes from central Java, about 200 km from Yogyakarta. She will soon be visiting Java and would like to meet Dr. Sastroamijoyo. Address: 1442 West 33rd Ave., Vancouver, BC V6M 1A5, Canada. Phone: 604-264-0181.

3006. Sinzinger, Keith. 1997. Tempeh turkey heads east: Vegetarian innovations. *Washington Post.* Oct. 8.
• ***Summary:*** Until recently, when a roasted bird has been the centerpiece of a holiday feast, vegetarians have either cried fowl, settled reluctantly for side dishes, or perhaps even compromised their principles. But this year several West Coast entrepreneurs are expanding distribution of their "turkey alternatives" eastward. Precooked, stuffed, and sliceable dishes, they contain no animal ingredients, but have a taste, texture, and appearance much like the real bird.

Rhonda Wrobel of Portland, Oregon, offered samples of Tofurky–a tofu and seitan roast–at the Natural Products Expo in Baltimore, Maryland, last month. Wrobel and her husband Hans, a former banquet chef in New Jersey, invented Tofurky in the early 1990s, and have improved their formula each year. This year they have downsized Tofurky to a 26-ounce roast with a stuffing of rice, bread, and sunflower seeds, intended to serve 3 or 4 people. Their company, Turtle Island Foods, is anticipating nationwide retail sales this year of 15,000 to 20,000, up from about 5,000 last year.

Miyoko Schinner, founder of Now & Zen restaurant in San Francisco, first prepared a seitan-based bird one Thanksgiving. Later she published a recipe for her UnTurkey, then began selling it at her restaurant several years ago. Last year she sold about 1,000 UnTurkeys in the Bay Area, and is hoping for sales of 10,000 this year. Address: Washington Post staff writer.

3007. **Product Name:** Tempeh.
Manufacturer's Name: Bean Me Up, Soya Station, Salad Bar, div. of Ooh-La-La Ling [Lingerie].
Manufacturer's Address: 1684 Ouneachem Baht, Anjuna Bardez, Goa, Goa, India 403-507. Phone: 0091-0832-2273648.
Date of Introduction: 1997. October.
Ingredients: Soya beans, Rhizopus spores, vinegar.
Wt/Vol., Packaging, Price: 250 gm. 60 rupees.
How Stored: Refrigerated.
New Product–Documentation: Letter (e-mail) from Lisa Camps of Goa. 2005. May 15-16. This product was introduced in about Oct. 1997. Tempeh went on sale approximately in the season of 1996; seasons here are from October to April. It was vacuum packed with a small table model packer, then that was placed in an outer plastic bag to protect it from moisture in the fridge or deep freeze.

Letter (e-mail) from Lisa Camps. 2005. July 16. Lisa is not aware of anyone who sold tempeh in Goa before she did. *

3008. Book Publishing Co. 1997. Complete '97 fall catalog (Mail order). Summertown, Tennessee. 48 p. 22 cm.
• ***Summary:*** Contains many books about vegetarian cookery (p. 14-29), including books on TVP, gluten and seitan, tempeh, soyfoods, and tofu. Address: P.O. Box 99, 156 Drakes Lane, Summertown, Tennessee 38483. Phone: 1-800-695-2241 or 615-964-3571.

3009. Madison, Deborah. 1997. Vegetarian cooking for everyone. New York, NY: Broadway Books. x + 742 p. Oct. Illust. Plus 24 full-page color plates. Index. 26 x 21 cm. A tenth anniversary edition was published by Broadway Books in 2007, featuring a new introduction by the author.
• ***Summary:*** One of the most comprehensive vegetarian cookbooks ever published; Contains 1,400 recipes. One chapter, titled "The Soy Pantry" (p. 593-609) has the following contents (with many recipes): Introduction (The soybean is the cow of the Orient). Soy milk. Tofu. Tempeh. A sidebar (p. 594) lists more recipes that include soyfoods, by chapter.

Soy-related recipes (not including those on p. 593-609) include: Soy oil (p. 43). Bechamel sauce (p. 53; dairy-free variation uses soy milk). Tofu "mayonnaise" (p. 60). Tofu garlic "mayonnaise" (p. 60). Sesame sauce with tofu (p. 67). Peanut-tofu sauce (p. 69). Spring rolls with napa cabbage

and tofu (p. 107). Tofu salad spread (p. 129). Marinated tofu sandwich (p. 130). Tempeh on rye sandwich (p. 130). TLT–Tempeh, lettuce, and tomato sandwich (p. 130). Buckwheat noodle salad with grilled tofu and roasted peppers (p. 178). Green goddess dressing (p. 190; dairy-free variation with silken tofu). Miso soups (about, plus 5 recipes; p. 231-33). Mushrooms with paprika and sour cream–variation with tofu (p. 255). Thai tofu and winter squash stew (p. 257). Winter vegetable pot pie (p. 259; dairy-free variation can use soymilk). Mushrooms and tofu in Hoisin sauce (p. 269). Stir-fried broccoli, mushrooms, and peppers with caramelized tofu (p. 270). Dried mushroom, leek, and tofu stir-fry with Chinese barbecue sauce (p. 270). Goat cheese enchiladas with corn and red mole (p. 292; silken tofu can replace a portion of the goat cheese to give a less rich version). Soybeans (about; p. 314). Somen in broth with silken tofu and spinach (p. 482-83). Soba in broth with spinach, purple dulse, and silken tofu (p. 483). Udon with stir-fry and five-spice tofu (p. 484). Smoothies (p. 594). Protein drink for breakfast (p. 617, with soy milk). Breakfast burritos with tofu (p. 625). Scrambled tofu (p. 627). Scrambled tofu with herbs and cheese (p. 627). Scrambled tofu with tomatoes and salsa (p. 627). Multigrain waffles (with soy flour, p. 633).

Also used in the recipes are: Quinoa. Sea vegetables. A color photo on the cover shows Deborah Madison.

The dust jacket (and *Jessica's Biscuit Cookbook Catalog,* spring 1998) says: "What Julia Child is to French cooking and Marcella Hazan is to Italian cooking, Deborah Madison is to contemporary vegetarian cooking. At the Greens restaurant in San Francisco [California], where she was the founding chef, and in her two acclaimed vegetarian cookbooks, Madison elevated vegetarian cooking to new heights of sophistication... Madison received the M.F.K. Fisher Mid-Career Award in 1994... She has been a board member of the Santa Fe Area Farmers' Market for the past six years in Santa Fe, where she lives with her husband, Patrick McFarlin."

Marion Cunningham, author of Beard Award winners *The Fannie Farmer Cookbook* and *The Fannie Farmer Baking Book*–"If I could have only one book on the subject of vegetables, *Vegetarian Cooking for Everyone* would be it."

Letter (fax) from Dana Jacobi. 1998. April 26. This cookbook just won the IACP/Julia Child award as the "cookbook of the year" for 1998–the highest honor given, out of 432 books nominated–and a tremendous honor for vegetarianism as well as for Deborah Madison. Note: IACP is the International Association of Culinary Professionals. This book also won the IACP/Julia Child award as the best general cookbook of the year (out of 54 cookbooks nominated, and beating out the new 1997 edition of *The Joy of Cooking*). Two major sets of cookbook awards are given each year: The IACP/Julia Child awards (given in April at a different location each year) and the James Beard awards (given in May in New York City). Each set offers awards in something like 10 different categories. There is surprisingly little overlap among the nominations for both in each category. Address: Santa Fe, New Mexico.

3010. *Soya Bluebook Plus.*1997. Oilseed glossary: Definitions and terms commonly associated with oilseed products or processing. 1998. p. 354-60.
• ***Summary:*** Acidulated soapstock, activated, amino acids, antioxidant, biodiesel, biotechnology, bleaching, bleaching earth, bolls, Bowman-Birk trypsin inhibitor, bran, break material, cake, canola, canola meal, catalyst, coconut, coconut–desiccated, coconut milk, coconut meal, cold pressed soy oil, cold test, confection sunflower, cooking oil, copra, copra meal, corn bran, corn feed meal, corn flour, corn germ meal (wet milled), corn gluten feed, corn gluten meal, corn grits, cotton linters, cotton plant by-product, cottonseed–glandless, cottonseed cake (or cottonseed flakes)–mechanical extracted, cottonseed meal–solvent extracted, cottonseed screenings, cotyledon, cracked corn, cracking, crude cottonseed oil, crude soy oil, defatted soy flour, degermed, dehulled–dehulling, degummed soy oil, degumming, deodorized, desolventizer-toaster, diglyceride, drying oil, edamame, edible crude soy oil, edible refined soy oil, emulsifier, endosperm, esterification, expanded–expanding, expeller, extracted–mechanical, extracted–solvent, extruded, extruder, extrusion, fat, fatty acid, feed (feedingstuff), feed grade, fermented–fermenting, flaking, flour, free fatty acid (F.F.A.), full-fat soy flour (enzyme active or heated/toasted), fully refined soy oil, genetic engineering, germ, ghee, gossypol, grain, green vegetable soybeans, grits, groundnut, gumming, high-fat flour, hilum, hulls, hydrogenated vegetable oil, hydrogenization [sic, hydrogenation], hydrolyzed corn protein, hydrolyzed soy protein, isolated soy protein, kibbled soybean meal, Kunitz trypsin inhibitor, lecithin, lecithinated soy flour, linseed meal, linters, lipoxygenase, low gossypol cottonseed meal, low-fat soy flour, malto dextrins [maltodextrins], margarine, maturity groups, meat analogs [meat alternatives], meat extenders, melting point, methyl esters, miso, monoglyceride, natto, nutraceuticals, oil, okara, once refined soy oil, oxidation, palm kernel oil, palm olein, palm stearin, peanut hulls, peanut meal, peanut skins, pellets, polymerization, processing or extraction of oilseeds (also called "crushers" or oil mill operations–solvent extraction, continuous pressing, batch pressing), protein, pulses, raffinose, rancidity, rapeseed meal–mechanical extracted, refining, refractive index (R.I.), rolled or rolling, salad oil, shortening, soapstock, solvent extracted, solvent extracted soybean flakes, soy flour, soy grits, soy protein concentrate, soy protein isolate, soy sauce (incl. that hydrolyzed with hydrochloric acid), soy sprouts, soya, soya lecithin, soybean(s), soybean ground, soybean cake, soybean curd, soybean fatty acids, soybean feed–solvent extracted, soybean flakes and 44% protein

soybean meal, soybean flakes and high protein or solvent extracted soybean meal, soybean hay sun-cured ground, soybean hulls (or seed coats), soybean meal, soybean meal–dehulled–solvent extracted, soybean meal–dehulled–mechanical extracted, soybean mill feed, soybean mill run, soybean processor, soybean protein product–chemically modified, soybean seeds–extruded ground, soybean seeds–heat processed, soybean solubles–condensed, soybean solubles–dried, soyfoods, soymilk, soynuts, spinning (to texturize soy protein isolate for food or industrial use), stachyose, steepwater, sterols, sunflower hulls, sunflower meal–dehulled–mechanical extraction, sunflower meal–dehulled–solvent extracted, sunflower meal–mechanical extracted, sunflower meal–solvent extracted, sunflower seed–oil varieties, technical grade refined soy oil, tempeh, textured soy concentrate, textured soy flour, textured soy protein, toasting, tofu, transgenic, triglyceride, trypsin inhibitors, unsaponifiable matter, unsaturation, vanaspati–vegetable ghee, wet-milled, whole-pressed cottonseed–mechanical extracted, winterized oil, yuba. Address: 318 Main St., P.O. Box 84, Bar Harbor, Maine 04609. Phone: 207-288-4969.

3011. **Product Name:** Tempeh Drumettes: Delicious Vegan Protein from the famous Tofurky.
Manufacturer's Name: Turtle Island Foods, Inc.
Manufacturer's Address: P.O. Box 176, 601 Industrial Ave., Hood River, OR 97031.
Date of Introduction: 1997. October.
Ingredients: Textured soy protein (soy flour and water), soy tempeh (non-genetically modified soy beans grown without chemical fertilizers, herbicides or pesticides, water, apple cider vinegar, starter culture), grated carrots, wild rice, malt extract, natural vegetarian flavor, dried cranberries, vegetarian Worcestershire sauce, isolated soy protein, carrageenan, herbs and spices.
Wt/Vol., Packaging, Price: 12 oz (340 gm)–4 drumettes.
How Stored: Frozen.
Nutrition: Per 3 oz (85 gm): Calories 105, calories from fat 14, total fat 2 gm (3% daily value; saturated fat 0.5 gm), cholesterol 0 mg, sodium 380 mg (16%), total carbohydrate 11 gm (dietary fiber 4 gm [16%], sugars 2 gm), protein 11 gm. Calcium 2%, iron 2%. Percent daily values are based on a 2,000 calorie diet.
New Product–Documentation: Product with Label sent by Seth Tibbott, owner of Turtle Island Foods. 1997. Dec. 13. 8 by 6 by 1 inch. Paperboard box. Orange, black, green and white on peach. Color photo shows four baked drumettes on a bed of lettuce with cherry tomatoes. "Low fat. Cholesterol free." One circular logo shows three soybeans in an open pod with 3 non-soy leaves in the background. Two of the soybeans are golden yellow, the third is a miniature Planet Earth. Across the top of the logo is written: "The Wide World of Soy." Across the bottom: "Have you had your soy today?"

3012. **Product Name:** Tofurky '97: A Delicious Vegetarian Holiday Feast.
Manufacturer's Name: Turtle Island Foods, Inc.
Manufacturer's Address: P.O. Box 176, 601 Industrial Ave., Hood River, OR 97031. Phone: 1-888-TOFURKY (863-8759).
Date of Introduction: 1997. October.
Ingredients: Each Tofurkey includes: (1) 26-ounce tofu roast, seasoned and stuffed: Water, vital wheat gluten, tofu (water, soybeans, calcium sulfate), white beans, garbanzo beans, natural vegetarian flavor, canola oil, tamari, spices, lemon juice, calcium lactate from beets, salt. Stuffing: Brown rice, wild rice, bread cubes (whole wheat, water, salt, yeast), onion, celery, natural vegetarian flavor, sunflower seeds, roasted garlic powder, seasoning; (2) 4 Drumettes: Textured soy protein (soy flour and water), soy tempeh (non-genetically modified soy beans grown without chemical fertilizers, herbicides or pesticides, water, apple cider vinegar, starter culture), grated carrots, wild rice, malt extract, natural vegetarian flavor, dried cranberries, vegetarian Worcestershire sauce, isolated soy protein, carrageenan, herbs and spices. (3) Golden Mushroom Gravy: Water, nutritional yeast, expeller pressed canola oil, unbleached flour, chopped fresh mushrooms, diced onion, shoyu soy sauce (water, soybeans, wheat, salt), herbs, spices, non-dairy lactic culture.
Wt/Vol., Packaging, Price: 3 lb 4 oz (serves 4).
How Stored: Frozen.
New Product–Documentation: Product sent (without box) and color poster by Seth Tibbott. 1997. Dec. 13.

Full-color glossy leaflet (8½ by 11 inches). 1997. Oct. "We have it! Tofurky–A delicious vegetarian holiday feast" (which see). Box with Label sent by Seth Tibbott. 1997. Dec. 24. This is a very attractive and well-designed box, 10 by 6.5 by 4 inches deep. The top is covered with a color photo of Tofurky, sliced in half, served on a plate, with tempeh drumettes, a gravy boat to the right, and a basket of fruits in the upper left. A snipe across the upper left corner states: "100% vegan." In the lower left is written: Contains: Specialty seasoned stuffed tofu roast. 4 hearty tempeh drumettes. Heavenly golden mushroom gravy. Keep frozen. Net weight 3 lbs. 4 oz. (1474.4 gm). In the lower right corner is a circular logo 1½ inches in diameter. Across the top is written: "The Wide World of Soy." Across the bottom: "Have you had your soy today?" In the middle are three soybeans in pod; the two end ones are yellow and the middle one is a tiny Planet Earth. Behind them are three soybean leaves. On the back are three sets of ingredients and nutrition facts for: Drumettes, Golden mushroom gravy, and Stuffed tofu roast. On one end is information about Farm Sanctuary (Watkins Glen, New York); Turtle Island donates 1% of the gross sales from Tofurky to the Farm Sanctuary's Adopt-A-Turkey program. One side states that "The Wide World of Soy" is a line of natural soyfoods: Tofurky,

Tempeh Drumettes, Vegetaballs, and Now Burgers. "Today, soyfoods are receiving renewed interest from scientists and nutritionists from their supply of isoflavones, a unique type of phytoestrogen (a plant chemical)."

Update: Talk with Seth Tibbott of Turtle Island. 1998. Nov. 18. Last year they sold 15,000 Tofurkys; this year they have already sold 35,000 and expect to sell 50,000 by Dec. 31. The media coverage this year has been even more amazing than last year. White Wave has dropped its tempeh burgers (incl. Lemon Broil) because its tofu business is growing so fast.

3013. Turtle Island Foods, Inc. 1997. We have it! Tofurky–A delicious vegetarian holiday feast (Leaflet). Hood River, Oregon. 2 p. Front and back. 28 cm.
• ***Summary:*** The text at the bottom front reads: "As seen on: ABC (Good Morning America), NBC (Today Show), and CBS (This Morning)." On the front is a full-color photo (on a blue background) of a Tofurky sliced in half, on a bed of lettuce with sliced carrots, on a silver plate, with the drumettes and gravy in a silver gravy boat. In the upper left is a basket with a sunflower, pumpkin, pear, and cherry tomatoes.

On the back is a detailed description of the product: "After three years of product development, testing and listening to customers... We've taken tofu and blended it with vital wheat gluten to create a savory, sliceable roast filled with our own meatless stuffing." Tofurky includes two levels of promotional support. "Option #1: Vegan Super Holiday Demo. Order 25 mixed cases of Tofurky and Tempeh Drumettes plus 3 cases of any size Rice Nog by Grainaissance Natural Foods and receive a $60 demo of Tofurky, Tempeh Drumettes and Rice Nog." "Watch for upcoming blurbs in November Bon Appetit and New Woman magazines. In addition we will again be sending out over 750 press releases to major US media organizations. In-store posters and brochures available at no cost. 1% of all gross sales of Tofurky go to the Farm Sanctuary's Adopt A Turkey Program." Suggested retail price: $19.95 to $24.95. Address: P.O. Box 176, Hood River, Oregon 97031. Phone: 1-800-508-8100.

3014. Adnan, M.; Sudarmadji, S. 1997. Contribution of tempe for the economy and health of Indonesia. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 11-21. [9 ref]
• ***Summary:*** Contents: Abstract. Introduction. Tempe and people's economy: Tempe is a daily necessity, continuity of supplies, simple technology, low cost, wide marketing distribution, income for the people. Contribution to health. Tempe and anemia. Processing consideration. Support for development. Efforts "to reengineer tempe processing into a large scale, sophisticated, high cost and high profit operation must be carefully considered, because it may remove the involvement of the low income population... Tempeh is an example of a food commodity which provides nutritional and health security for the people" (p. 11). Address: Faculty of Agricultural Technology, Gadjah Mada Univ., Yogyakarta, Indonesia.

3015. Agranoff, J.; Markham, P. 1997. Fatty acid components of tempe (and tapeh). In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 205-10. [6 ref]
• ***Summary:*** During the fermentation of soybeans into tempe, the proliferating mycelium has high lipolytic and proteolytic activity. Fatty acids are liberated [transformed into free fatty acids] during fermentation; over 30% of the neural lipid is hydrolyzed, with a preferential utilisation of alpha-linolenic acid.

"Changes in fatty acids were investigated during the fermentation of both whole soybean and oil extracted (cold-pressed) soya meal into tempe, using pure *Rhizopus* sp. inoculum (ragi), commercial Indonesian ragi, a mixture of ragi with *Mucor javanicus* and pure *Mucor javanicus,* and the fermentation of cassava to tapeh." All fermentations reduced linolenic acid and alpha-linolenic acid, and increased the levels of acid; this suggests conversion by a monosaturase enzyme. The levels of palmitic and stearic acid were largely unchanged.

"Pressed soya meal fermented solely with *Mucor javanicus* indicated a significant rise in gamma-linolenic acid (GLA)." Address: Dep. of Microbiology, Kings College, London Univ., United Kingdom (Present address: 27, Oman Avenue, London NW2 6AX, UK e-mail 100712.2274@ compuserve.com).

3016. Agranoff, Jonathan. 1997. Introducing tempe to non tempe-eating societies. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 235-38.
• ***Summary:*** Contents: Introduction. Key questions that must be addressed: Cultural acceptability, need, cost, practicality, sustainability, market.

"First, it is important to appreciate that tempe is a food only native to the Javanese people as well as to those who have lived on the island of Java. It is also not widely accepted throughout Indonesia except among the Javanese communities in other islands. Transferring a food from one society [or culture] to another is not an easy task."

Many other Asian cultures have tastes similar to those of

the Javanese. Is Southeast Asia, tempe has been introduced to Thailand, Burma, and Vietnam on an experimental scale with good acceptability. "In Malaysia, the racial distinction between bumiputera Malays [native-born Malays] and Chinese, segregates tempe along with poorer sectors of the society. It is known as a cheap inferior food of Indonesian immigrants and Malays, therefore it already has a negative connotation."

In the USA, Europe and Australia, tempe is known to the Dutch through the large Indonesian community in Holland. It is also known to and enjoyed by the vegetarian, vegan and health food groups in these three regions. Address: Dep. of Microbiology, Kings College, London Univ., United Kingdom.

3017. Astuti, Mary. 1997. Superoxide dismutase in tempe, an antioxidant enzyme, and its implication on health and disease. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 145-156. [22 ref]
• ***Summary:*** Contents: Abstract. Introduction. Free radicals and lipid peroxidation in the body. Tempe as a source of superoxide dismutase. The role of tempeh on the modulation of superoxide dismutase in the body. Conclusion. Address: Faculty of Agricultural Technology, Gadjah Mada Univ., Yogyakarta, Indonesia.

3018. Astuti, Mary. 1997. Effect of tempe on iron availability of bologna sausage (Abstract). In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 263.
• ***Summary:*** Sausage has a high cholesterol content, which lowers its consumption. Tempe, which contains no cholesterol, and actually lowers serum cholesterol in humans, was added to bologna sausage at levels of 0, 5, 10, 15, and 20%. With increased tempe levels, the flavor, texture, and slicing characteristics all improved, as did the shelf life, but the availability of iron decreased. Address: Faculty of Agricultural Technology, Gadjah Mada Univ. Yogyakarta, Indonesia.

3019. Astuti, Mary; Kartika, Habsari Esti. 1997. Effect tempe powder on the physical and organoleptic properties of cookies (Abstract). In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 263.
• ***Summary:*** When 15% of the wheat flour in cookies is replaced by tempe powder, the taste and crispness of the cookies are acceptable, and the protein, crude fiber, lipid, and ash (mineral) content were all increased. Address: Faculty of Agricultural Technology, Gadjah Mada Univ. Yogyakarta, Indonesia.

3020. Banner, Bob. 1997. Food forum report. *Hope Dance* (*San Luis Obispo, California*). Nov/Dec. p. 29-30. No. 7.
• ***Summary:*** On Sept. 19 a very successful and festive Food Forum took place at the Community Room of the San Luis Obispo Library. It was billed as "Simplifying our food: Keeping it healthy, local, and sustainable." The various speakers included Professor Bud Evans and "Ed Bruehl, co-ordinator of Natural Flavors, one of the healthiest restaurants in the County [now out of business as we go to press]... Ed not only spoke passionately about his food concerns but about the local contribution in this county from local organic growers, persons making tempeh, soy milk..."

Note 1. Marcus Tribelhorn, a local tempeh maker from Upfull and Right, was there to promote tempeh. Note 2. This magazine is subtitled "Making a Difference in San Luis Obispo County." Three is a full-page ad for "Buy Nothing Day: A 24 hour moratorium on consumer spending" and an editorial on voluntary simplicity.

3021. Brady-Robeau, C.B.; Sutardi, -; Ismoyowati, D.; Fairbrother, A.H.; Boughton, T.J.; Petterson, D.S. 1997. Acceptability of lupin-based (Abstract). In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 261-62.
• ***Summary:*** Research in Australia has shown that lupin seed (*Lupin angustifolius*) can be used to make acceptable tempe. Yu (1988) stated that lupin was a better substrate for fermentation than soybean, and that taste panelists preferred the nutty flavor and golden color of lupin tempe. Address: Curtin Univ. of Technology Perth Western Australia (e-mail cbrobeau@health.curtin.edu.au). Phone: 6189-351-2771.

3022. Brata-Arbai, Arsiniati M. 1997. The effect of tempe diet on uric acid and plasma lipid level. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 187-98. [29 ref]
• ***Summary:*** "Few studies have been done to investigate the effect of soybean on uric acid, and the product of purine metabolism. It was assumed that foods containing purine increase uric acid level... The average purine content of beans varies from 50 to 150 mg per 100 gm." Address: Indonesian Tempe Foundation Nutrition, Dep. Faculty of Medicine, Airlangga Univ., Surabaya, Indonesia.

3023. Gandjar, Indrawati; Santoso, Iman. 1997. The role of *Rhizopus* spp. in biotechnology. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 55-63. [37 ref]
• ***Summary:*** Contents: Abstract. Introduction. Soybean tempe. Moulds. Tempe and bioconservation of the genus *Rhizopus.* The nutrition of tempe. Biotransformation by *Rhizopus* spp. Enzymes produced by *Rhizopus* strains. *Rhizopus* spp., agroindustrial wastes, and non-soybean tempe. *Rhizopus* and related genera in biotechnology.

Early studies on tempe conducted before World War II and reports by Gandjar in 1960 showed that *Rhizopus oryzae* and *Rhizopus arrhizus* were the two dominant mold species isolated from the two types of tempe most highly preferred in Java for their delicious taste: Tempeh Malang and Tempe Purwokerto. "However, since Dr. Ko Swan Djien (1961) from the Bandung Institute of Technology went to Peoria [Illinois, USA] to study tempe fermentation at the laboratory of Dr. Hesseltine, and brought with him tempe samples from West Java, *Rhizopus oligosporus* (now: *Rhizopus microsporus* var *oligosporus*) was claimed to be the best tempe mould. This mould was then used by many Indonesian microbiologists for their studies on tempe... At present an inoculum for tempe, composed of *Rhizopus oryzae* and *Rhizopus oligosporus* has been developed by the National Chemistry Institute–Indonesian National Institute of Science (LKN-LIPI) and distributed to tempe makers top prevent failure of their products. This is, of course, a very great success for Indonesia..." Address: Dep. of Biology, Faculty of Science and Mathematics, Univ. of Indonesia, Depok 16424, Indonesia.

3024. Handajani, Sri. 1997. Bioactive compound of *Mucuna* tempe. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 133-142. [22 ref]
• ***Summary:*** *Mucuna* tempe is velvet bean tempeh (*tempeh benguk*). Address: Sebelas Maret Univ., Solo, Indonesia.

3025. Hermana, H; Karmini, Mien; Affandi, Erwin. 1997. Symbiosis of *Rhizopus* sp. and vitamin B_{12} forming bacteria and gastrointestinal pathological findings. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 163-173. [4 ref]
• ***Summary:*** A new and improved type of inoculum was developed using the *Rhizopus oligosporus* mold and two species of bacteria that produce vitamin B-12: *Klebsiella pneumoniae* and *Citrobacter freundii.* These bacteria are contaminants that find their way into the fermentation during the stage of soybean cooking. This study also showed that tempe made with the mixed inoculum resulted in better growth of experimental rats than regular tempe. Address: Center for Nutrition Research and Development, Ministry of Health, Bogor 16112, Indonesia.

3026. Isnijah, Siti; Saragih, Raskita. 1997. Study on vacuum drying of tempe (Abstract). In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 259.
• ***Summary:*** To make tempe flour, fresh tempe can be dried at 70ºC for three hours, then ground and sifted.

Note: This could be done most economically using a solar dryer. Address: 1. Research Development Centre for Applied Chemistry, Indonesia Inst. of Sciences; 2. Industrial Technology of Agriculture, Indonesian Inst. of Technology.

3027. Isnijah, Siti. 1997. Promotion tempe production through development of second stage industry of tempe (Abstract). In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 259.
• ***Summary:*** Making second generation food products, which use tempeh as an ingredient, offers to opportunities for using tempeh and expanding production. Address: S.P., Research Development Centre for Applied Chemistry, Indonesia Inst. of Sciences.

3028. Jha, H.C.; Kiriakidis, Serafim; Hoppe, M.; Egge, H. 1997. Antioxidative constituents of tempe. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 73-84. [15 ref]
• ***Summary:*** Abstract: "The present paper deals with the overall antioxidative activity of tempe constituents and its implication for the human health. An exhaustive investigation of the antioxidative activity of tempe isoflavonoids and their derivatives revealed that they are potent inhibitors of the oxidation of oils and fats, the reduced derivatives of the isoflavonoids being the most active antioxidants. It could be also established that the other constituents of tempe exert synergistic effects on the antioxidative effects of the tocopherols present in tempe.

"We have been able to show that the lipid peroxidation of microsmes and mitochondria could be inhibited by the

tempe constituents and their derivatives. The LDL-oxidation, which aggravates arteriosclerotic risks could be inhibited by tempe constituents.

"Tempe constituents, especially the isoflavonoids function as lipoxygenase and cyclooxygenase inhibitors. The antioxidative role of the tempe constituents has far reaching effect in controlling the proliferation of tumor cells."

Introduction: "Tempe is well known for its antioxidative constituents. The research in this field was initiated by Gyorgy and Murata (1964), after they had isolated a new isoflavone, viz., 6,7,4'-trihydroxyisoflavone from tempe. In the mean time some other antioxidants have been isolated in our laboratory (M. Kolvenbach 1994, M. Hoppe 1993, Hoppe, Jha & Egge 1997) and elsewhere (Esaki et al. 1996) and now it can be definitely said that the antioxidative activity of tempe is the result of the synergistic effect of the individual substances on each other. The hitherto known antioxidants of tempe taking part in the synergistic reaction are: vitamin E, vitamin E-dimer, mixture of a nino acids (Seher & Loschner 1986), isoflavonoids, and 3-hydroxyanthranilic acid."

Contains 6 tables and 7 figures. Address: Inst. of Physiological Chemistry, Univ. of Bonn, Nussallee 11, 53115 Bonn, FRG [Germany].

3029. Karmini, Mien; Affandi, Erwin; Hermana,-; Karyadi, Darwin; Winarno, F.G. 1997. The inhibitory effect of tempe on *Escherichia coli* infection. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 157-162. [4 ref]
• ***Summary:*** Tempe was found to inhibit enteral bacterial infection by enteropathic *Escherichia coli.* Address: 1. Center for Nutrition Research and Development, Ministry of Health, Bogor 16112; 2. Bogor Agricultural Univ., Bogor 16002. All: Indonesia.

3030. Karossi, A.T. 1997. Introduction of Indonesia's tempe centre. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 47-51.
• ***Summary:*** Contents: Abstract. Introduction. The program of ITC. Program of training. Program on R&D activities: Nutrition and health, technology, microbiology. Program on information service. Program on process development. The Indonesian Institute of Sciences (LIPI) in the establishment of ITC.

The writer proposes the establishment of an Indonesian Tempe Center (ITC), which is viewed as "the best way to sustain our food heritage through assisting the local producers to lift up their capabilities in producing standard quality product for global market." Address: Indonesian Inst. of Sciences, Jakarta, Indonesia.

3031. Karyadi, Darwin; Lukito, Widjaja. 1997. Functional characteristics of tempe in disease prevention and treatment. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 199-204. [16 ref]
• ***Summary:*** Tempe was originally developed in Central Java, Indonesia. Address: Regional SEAMEO Center for Community Nutrition, Univ. of Indonesia, Jakarta 10430, Indonesia.

3032. Kiers, J.L.; Schreuder, J.; Nout, M.J.R.; Rombouts, F.M. 1997. Tempe fermentation, using different substrates and pure culture starters, and the effects of substrate modification on *in vitro* digestibility. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 64-72. [10 ref]
• ***Summary:*** Tables show: (1) Name, number and origin of mold cultures used. Six species of *Mucor* and five species of *Rhizopus* from the Wageningen Culture Collection were tested. (2) The potential to create a tempe using different moulds and substrates. Based on growth and fermentation time until spoilage and/or sporulation.

(3) Increase in total free amino groups per gram of tempe after maximum fermentation time. For soybean, cowpea, and greenpea. (4) In vitro digestibility of samples from the different processing stages.

Conclusion: Soybeans make the best tempeh–by far. Address: Dep. of Food Technology and Nutritional Sciences, Agricultural Univ., Bomenweg 2, 6703 HD Wageningen, The Netherlands.

3033. Marseno, Djagal W.; Astuti, M.; Wastoni, A.T. 1997. Intracellular distribution and characterization of superoxide dismutase from tempe fermented by *Rhizopus oligosporus* (Abstract). In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 264.
• ***Summary:*** The superoxide dismutase (SOD) was mainly distributed in the cytosolic fraction. Note: The cytosol or intracellular fluid is the liquid found inside cells. Address: Faculty of Agricultural Technology, Gadjah Mada Univ., Jl. Socio Yusticia, Bulaksumur, Yogyakarta, Indonesia.

3034. Messina, Virginia K.; Burke, Kenneth I. 1997. Position

of the American Dietetic Association: Vegetarian diets. *J. of the American Dietetic Association* 97(11):1317-21. Nov. [44 ref]

• ***Summary:*** Contents: Introduction. Position statement. Vegetarianism in perspective. Health implications of vegetarianism. Nutrition considerations for vegetarians. Vegetarianism throughout the life cycle. Meal planning for vegetarian diets. Food guide pyramid for vegetarian meal planning.

Introduction: "Scientific data suggests positive relationships between a vegetarian diet and reduced risk for several chronic degenerative diseases and conditions, including obesity, coronary artery disease, hypertension, diabetes mellitus, and some types of cancer."

"Position statement: It is the position of the American Dietetic Association (ADA) that appropriately planned vegetarian diets are healthful, are nutritionally adequate, and provide health benefits in the prevention and treatment of certain diseases."

Other features of the paper include: (1) A paragraph on why people choose vegetarian diets, including ethical reasons. (2) A food guide pyramid for vegetarian meal planning, including "zero to three servings of milk, yogurt, and cheese." (3) A list of food sources for certain nutrients, including iron, zinc, calcium, vitamin D, B-12, and linoleic acid. (4) Nutritional considerations for vegetarians and vegans. For example, vegans may have lower calcium requirements than the general population because their diets contain less protein and are more alkaline; high acid diets cause more calcium to be lost in the urine as the body tries to neutralize that acid with calcium from the bones. (5) The position paper once again restates that combining proteins is not necessary and that protein intake in both lacto-ovo-vegetarians and vegans appears to be adequate.

A full-page table (p. 1319) shows food sources of important nutrients. Soyfoods are shown as sources of the following, with the number of milligrams per serving shown in parentheses: (1) Iron: Tofu, ½ cup (6.6), soybeans, ½ cup cooked (4.4), tempeh, ½ cup cooked (1.8), soymilk, 1 cup (1.8). (2) Zinc: ½ cup of the following cooked: Tempeh (1.5), textured soy flour (1.4), tofu (1.0), soybeans 1.0.

(3) Calcium: soymilk, fortified, 1 cup (250-300), tofu, ½ cup (120-350), soynuts, ½ cup (252), soybeans, 1 cup cooked (175), soymilk, 1 cup (84), textured soy flour, ½ cup (85), tempeh, ½ cup (77). (4) Vitamin D: Fortified soymilk or other nondairy milk, 1 cup (1.0 to 2.5 micrograms). (5) Vitamin B-12: Fortified soymilk or other nondairy milks, 8 oz = 1 cup (0.2 to 5.0 micrograms).

(6) Linolenic acid: Soybean oil, 1 tablespoon (0.9 gm), soybeans, ½ cup cooked (0.5 gm), tofu, ½ cup (0.4 gm).

3035. Nout, M.J.R.; Kiers, J.L. 1997. Microbiology of the tempe process, and prospects for utilization. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 36-46. [16 ref]

• ***Summary:*** Contents: Abstract. Manufacture of traditional tempe, and its utilization. Microbiological issues of importance for the wholesomeness of the product, as well as for the successful growth of the fungi: Bacterial interactions, fungal growth. Process and product developments and new uses for tempeh.

Tables: (1) Survey of commercial tempe in the Netherlands (110 samples; Samson et al. 1987). Six genera and species were found including *Staphylococcus aureus* and *Bacillus cereus* which occurred at 10^5 per gram in 13% and 11% of the samples respectively. Lactic acid bacteria dominate during the soaking stage of the traditional product. (2) Effect of carbon dioxide on biomass growth. 5-10% stimulates mycelial growth but levels higher than 25% have an inhibitory effect.

Figures: (1) Traditional tempeh making process (flow chart). (2) Accelerated acidification by "back-slopping" (inoculation of the soak water with 5% soakwater from a previous batch). (3) Mechanism of spore germination (Breeuwer 1996).

(4) Effect of nona-noic acid [nonanoic acid] on pH. (5) Development of substrate temperature in static uncontrolled (traditional) tempe fermentation, compared with discontinuously agitated temperature-controlled fermentations in a rotating drum bioreactor (De Reu et al. 1995). (6) Effect of oxygen on biomass growth. It stimulates it, especially when used in small amounts, but that stimulation levels off as the amount of oxygen increases. Address: Dep. of Food Technology and Nutritional Sciences, Agricultural Univ., Bomenweg 2, 6703 HD Wageningen, The Netherlands.

3036. Ontario Soybean Growers' Marketing Board (OSGMB). ed. and comp. 1997. Canadian soyfoods directory. Chatham, Ontario, Canada: OSGMB. 27 p. 28 cm.

• ***Summary:*** This excellent, complete, and accurate directory was compiled by the Collège d'Alfred of the University of Guelph, under contract with the Ontario Soybean Growers' Marketing Board (OSGMB). The project leaders were Suzanne Lavoie, Charles Goubau, and Ian Walker. The first Canadian soyfoods directory was published in April 1994 (22 pages).

Contents: Foreword–Ontario Soybean Growers' Marketing Board (OSGMB). Acknowledgements from researchers. Table of contents. Soyfood product descriptions: Green vegetable soybeans–Edamamé, meat analogs, miso, natto, okara, soy cheese, soy flour, soy frozen desserts, soy grits, soy isolate fibre, soy lecithin, soy oil, soy protein concentrate, soy protein isolate, soy pudding, soy sauce, soy sprouts, soy yogurt, soymilk (soy drink and soy beverage),

soynuts, tempeh, textured soy flour–TSF, texturized soy protein, tofu, whole dry soybeans, yuba. Soyfoods for your health: Heart disease, cancer, osteoporosis, other conditions. Composition and nutrient value of soyfoods. Soyfood companies by product. Soyfoods companies by province: Alberta (7), British Columbia (21), Manitoba (2), Nova Scotia (2), Ontario (54), Quebec (20). Soyfood companies (105 companies that make or market wholesale soyfoods)–complete listings (address, phone and fax numbers, contact person, products). Soyfoods distributors–complete listings (13). Soybean distributors–complete listings (28). Research information sources–complete listings (24). Soyfoods information sources (23). Canadian soyfoods directory questionnaire.

Spot in *Ontario Soybean Growers' Marketing Board Newsletter.* 1997. Dec. p. 5. The Canadian Soyfoods Directory was launched in November after a two-month delay. "The project was undertaken following numerous information requests from consumers, processors and health professionals." Funded by the Board of OSGMB, it has been mailed to all Registered Dietitians across Canada, and it will soon be available on the Board's website. Address: OSGMB, 180 Riverview Dr., P.O. Box 1199, Chatham, ON N7M 5L8, Canada. Phone: 519-352-7730.

3037. Pawiroharsono, Suyanto. 1997. Prospect of tempe as functional food. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 101-113. [30 ref]
• ***Summary:*** Contents: Abstract. Introduction. Tempe potency. Nutritive value of tempe. Active substances. Formation of active substances and its benefit for health. Isoflavone. Unsaturated fatty acid. Ergosterol. Antibacterial compound. Vitamin. Characterization of strains and improvement of active substances. Strain development (incl. through genetic engineering). Development steps to functional food. Address: Directorate for Industrial Process Technologies, BPP Teknologi, Jakarta, Indonesia.

3038. Petterson, D.S.; Fairbrother, A.H.; Brady-Robeau, C.B.; Sutardi, -; Boughton, T.J. 1997. Lupin as an alternative substrate for tempe manufacture (Abstract). In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 260.
• ***Summary:*** Making tempe from lupins has both advantages and disadvantages. Address: 1. Agriculture Western Australia Locked Bag Bentley Mail Centre, WA 6983, Australia (dpetterson@agric.was.gov.au). Phone: 6189-368-3365.

3039. Pfaff, Gunter; Shipley, Betsy. 1997. The nature of commercial tempeh production in the USA. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 239-46. [4 ref]
• ***Summary:*** As seen by Gunter Pfaff and Betsy Shipley; this is largely a promotional article for their process and equipment. Address: Betsy's Tempeh, 14780 Beardslee Rd., Perry, Michigan 48872.

3040. Rukmini, Herastuti Sri; Subardjo, B; Astuti, M. 1997. Development of superoxide dismutase during pigeonpea tempe fermentation (Abstract). In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 264.
• ***Summary:*** The pigeon pea, pigeonpea or red gram–*Cajanus cajan* (L.) Millspaugh. Formerly *Cytisus cajan*–can be used to make good-tasting tempe using *Rhizopus oligosporus* as a starter / inoculum. Address: 1-2. Jenderal Soedirman Univ.; 3. Gadjah Mada Univ. Both: Indonesia.

3041. Saio, Kyoko. 1997. Global soybean processing and utilization for the 21st century. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 22-27.
• ***Summary:*** Contents: Abstract. Introduction. From traditional to the future via modern: Development of food industry, key words for the 21st century. Conclusion.

The processing and marketing of soybeans in the modern world involves modernization and mechanization, larger scale, the mass market, sped, hygiene and novelty. "However in the 21st century the key words such as healthy, safety, and environment will be much more important..." (p. 22). She believes that our "priority for the 21st century is not always technology-oriented progress like the 20th century." People may prefer to have a more comfortable and peaceful life as human beings (p. 26-27). Note: This embodies the "Small is beautiful" idea of Schumacher and satisfying or fulfilling work. Address: Tokyo Metropolitan Food Technology Research Center, 9-1 Kanda-Sakuma-cho, Chiyoda-ku, Tokyo 101.

3042. Siregar, Effendi; Pawiroharsono, Suyanto. 1997. Inocula formulation and its role for biotransformation of isoflavonoid compounds. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian

Tempe Foundation. xi + 280 p. See p. 85-98. [7 ref]
• ***Summary:*** The addition of *Brevibacterium epidermis* and *Micrococcus luteus* to the tempe fermentation increased the content of isoflavonoids in the finished tempe. Address: Directorate for Industrial Processing technology, Agency for the Assessment and Application of Technology, Jakarta, Indonesia.

3043. Soenarto, Yati; Sudigbia, I.; Hermana, -; Karmini, M.; Karyadi, D. 1997. Antidiarrheal characteristics of tempe produced traditionally and industrially in children aged 6-24 months with acute diarrhea. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 174-186. [23 ref]
• ***Summary:*** Consumption of tempe was effective in treating acute diarrhea. Breast milk also appears to have a protective effect against the negative impact of diarrhea.

3044. Soetrisno, Noer; Sulaeman, Suhendar. 1997. The cooperative production of tempe in Indonesia. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 247-55. [5 ref]
• ***Summary:*** Contents: Abstract. Background. The development of tempe industry. Strategy for modernizing the small scale producer: Increase the scale of production, improvement of processing technology (technological improvement), institutional setting. The Cibitung pilot plant. Conclusion.

The writer is interested modernizing, mechanizing, speeding up and enlarging tempe plants in Indonesia. He believes that large scale of production is the best solution to solving many problems in the tempe industry, however traditional or small-scale tempe makers should continue to exist and to develop according to market demand.

"The Cibitung Project, located about 20 miles east of central Jakarta, is an integrated training center for soy product development. Therefore the center is named the Center for Soy Product Development." Located on 3.4 hectares, its present priority is tempe. It consists of a training center, laboratory, secretariat office, and an integrated plant for making tempe and tempe products. The plant is the result of engineering work done by the Ministry of Food Affairs in cooperation with Parahyangan University of Bandung. "During the preparatory process the project benefitted from the active participation of experts from the Indonesian Tempe Foundation."

Tables: (1) Cost structure of tempe production for different size and mode of production. Mode means individual vs. group. (2) The comparison of benefit from different mode of tempe production. The three modes are individual, group, and factory. The factory appears to have all the advantages, but invested capital is very high and operating capital is high. Address: 1. Office of the Ministry of Food Affairs; 2. Agency for Cooperative and Small Enterprise Research and Development Ministry of Cooperative and Small Enterprise Development. Both: Jakarta, Indonesia.

3045. Sudarmadji, Slamet; Suparmo, -; Raharjo, Sri. eds. 1997. Reinventing the hidden miracle of tempe: Proceedings, International Tempe Symposium, July 13-15 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation [Yayasan Tempe Indonesia]. xi + 280 p. No index. 26 cm. [293 ref]
• ***Summary:*** The cover (see next page) states: This symposium was organized by the Indonesian Tempe Foundation, in cooperation with the Ministry of Food Affairs (Republic of Indonesia), Indonesian Institute of Sciences, and American Soybean Association. The introductory section consists of: Foreword. Symposium highlights. Welcoming address, by Dr. Sapuan. Opening remarks by the Minister of Food Affairs of the Republic of Indonesia at the opening ceremony of the International Tempe Symposium, Bali, 14 July 1997, by Excellency Mr. Joop Ave. 24 papers by various authors (each cited separately), were presented at this conference. They were arranged under the following categories: The global prospects of tempe (5). Progress in tempe fermentation research (4). Development in tempe processing technology (4). Bioactive compounds and health benefits of tempe (8). Socio-economic aspects of tempe (4). In addition, there were ten poster presentations, each with an abstract. Appendixes: List of presenters at the International Tempe Symposium. List of participants in the International Tempe Symposium (directory of 82 people). Address: Indonesian Tempe Foundation, Bulog II building, 2nd floor, Jl. Kuningan Timur M 2/5, Jakarta 12950, Indonesia.

3046. Suharto, I. 1997. Bioprocessing and equipment in the modern tempe industry in Indonesia. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 114-124. [5 ref]
• ***Summary:*** Contents: Abstract. Introduction. Development of modern tempe industry. Framework for bioprocessing development. General bioprocessing. Fabrication of equipment. Techno-economic evaluation. Conclusion. Acknowledgements.

Small scale businesses in the traditional tempe industry need to transform into the modern tempe quality industry using Codex Alimentarius Commission, quality assurance, good manufacturing practices, ISO 9.000 & ISO 14.000,

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REINVENTING THE HIDDEN MIRACLE OF TEMPE

Organized by
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Editors
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Jakarta 12950, Indonesia

total quality management (TQM), and HACCP. This will give Indonesian tempe access to the international market. Address: Faculty of Industrial Technology, Parahiyangan Univ., Bandung 40141, Indonesia.

3047. Susanto, Tri; Sawitri, Meita; Widaryanti, Eni. 1997. Research on the utilization of tempe as raw material in the production of milk and tempe sausage. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 125-132. [7 ref]
• ***Summary:*** To produce good quality tempeh sausage: Cut and grind fresh tempeh to yield 100 gm. Add 3.5% egg white, 2.5% wheat flour, 10 ml water, 1 gm garlic, and spices. Mix well, then mix in 40 gm vegetable oil, fill into a casing, and steam at 100ºC. Cool and serve. Contains 17.3% protein.

To make tempeh milk: Dice fresh tempeh, steam for 3 minutes, add 2 parts boiling water, grind, and extract the soymilk. Filter the milk and mix in a 0.08% agar (to reduce sedimentation) plus 4% skim milk and 7% sugar. Heat to 90ºC for 5 minutes, filter, bottle, pasteurize at 90ºC for 15 minutes, and cool. This soymilk contains 3.25% protein. Address: Research Centre on Traditional Foods, Brawijaya Univ., Malang, Indonesia.

3048. Suyitno, -; Astuti, Mary; Basir, L.I.S. 1997. Moisture sorption isotherm and critical water activity of cookies supplemented with tempe (Abstract). In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 262.
• ***Summary:*** "The critical water activity of cookies was 0.57 (equivalent to critical moisture content of 7.70% db), above which" the cookies lose their crispness. Address: Gadjah Mada Univ. Yogyakarta, Indonesia.

3049. Syarief, Rizal. 1997. Production and marketing of small scale tempe industry in Indonesia. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 221-34. [8 ref]
• ***Summary:*** "Urban population growth has stimulated a rise in the number of tempe processors in many cities throughout the country. Migration from rural areas to urban centres has created a daily need among many working people to eat outside the home. Demand for relatively inexpensive, ready-to-eat food has increased as people, especially women, have less time to prepare meals.

"The significance of the tempe industry has often been ignored because it is considered part of the informal sector. Previously, the informal sector was thought to symbolize a lack of economic development that would and should disappear with modernization. Until more permanent jobs could be provided by the modern sector, the former was expected to absorb unskilled workers who migrated to the city from rural areas.

"However, this phenomenon has lasted longer and may be less transitional in nature than previously anticipated. The informal sector in the urban areas to be growing more rapidly than the formal sector of many countries. Because of the rapid rise in urban populations and increasing awareness of the limited employment generated by large-scale industries, planners are beginning to acknowledge the importance of the informal sector, including small scale tempe industry.

"Tempe was formerly considered an inferior food in part because of its costs, compared to other protein foods such as meats, fish and eggs. Over the last 15 years the attitude towards tempe has changed. Today, more attention has been given to tempe because it is an inexpensive source of proteins, vitamins and calories. However the quality of tempe products should be developed in order to increase the segment market of the product such as supermarket." Address: Community Services Inst., Bogor Agricultural Univ., Bogor, Indonesia.

3050. Tanuwidjaja, Lindajati. 1997. Study on the effect of inoculation techniques in tempe fermentation (Abstract). In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 261.
• ***Summary:*** Using a powdered inoculum, compares two inoculation techniques, namely the dry inoculation and the wet inoculation methods. "There was no significant difference in appearance, taste, texture and aroma of tempeh produced by these two methods." Address: Research and Development Centre for Applied Chemistry, Indonesian Inst. of Science.

3051. Tibbott, Seth. 1997. Current state of the North American tempeh [and tofu] market. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p. 28-35. [7 ref]
• ***Summary:*** This paper is particularly valuable for its update of tempeh history and the tempeh market in North America from 1985 to May 1997.

Contents: Abstract. History of the North American

tempeh market. Current US tempeh market–May 1997: Basic statistics, who is the typical tempeh consumer?, where is tempeh sold?, how is tempeh packaged?, how is tempeh used by the consumer in North America?, what is the future of tempeh in North America?, factors that affect future growth of tempeh (health benefits of soy and label claims, consumer education, development of the food service and industrial market, development of Indonesian cuisine and restaurants in America).

In 1984 some 53 companies in the US made approximately 34,000 pounds/week of tempeh. At that time tempeh was the fastest growing soy product in the US, growing by about 28% a year.

As of May 1997 there are ten tempeh manufacturers in the USA; seven of these produce more than 1,000 lb/week of tempeh, and only one produces less than 200 lb/week. All ten US companies make an estimated 55,580 lb/week of tempeh, and these 7 largest companies make about 95% of the total. Canada has only 3 tempeh makers and they produce a total of about 1,100 lb/week. In Mexico, there are only a few tempeh makers, mostly in tourist areas. All of the 7 largest US and the 3 largest Canadian tempeh manufacturers are owned and operated by Caucasians. Caucasians also consume an estimated 95% of the tempeh made in the USA. In North America, tempeh is marketed in a variety of forms and flavors, of which soy tempeh is the most popular, followed by tempeh burgers and soy & grain tempehs. All of the existing tempeh shops in the USA and Canada trace their roots to The Farm, a spiritual community in Summertown, Tennessee.

By contrast, tofu is much more popular in North America than tempeh. More than 70 manufacturers produce over 1.5 million lb/week. Three of the four largest manufacturers are owned and operated by Asian Americans. Whereas 75% of all Americans know what tofu is, only 14% know what tempeh is.

Although tempeh sales grew very rapidly during the 5-year period from 1980 to 1984, they were stagnant during the next five years, from 1985 to 1989. This was caused in large part by competition from more sophisticated meatless burgers, such as the Gardenburger, launched in March 1985 by Wholesome & Hearty Foods of Portland, Oregon. Also microwavable and ready-to-eat foods became more popular. The period of stagnant sales led to a great consolidation within the industry. By 1990 there was renewed interest in tempeh, which paralleled the new interest in the health benefits of soy, and the rise new "meat alternatives" category. Today, tempeh sales are growing at 10-20% a year. And most Americans still like tempeh very much when they taste it. All US tempeh makers agree that education is the crucial need.

In 1984 about 20% of US tempeh was sold vacuum packed, compared with 70% today. Main advantage of vacuum packing: Longer shelf life. Main disadvantage: Imparts a somewhat bitter taste to the tempeh. A 1992 survey of 400 tempeh users by Turtle Island showed that the number one use was in stir-fried recipes, usually with rice and vegetables.

Tables show: (1) Tempeh market statistics (USA): Average retail price per 8 oz cake of soy tempeh: $1.81. Percentage of tempeh sold refrigerated: 80% (the rest is sold frozen). Total retail dollars spent on tempeh: In 1983 = $4.96 million. In 1996 = $13.15 million. Spent (retail) on tofu in 1996 = $116 million. Spent (retail) on soymilk 1996 = $100 million. Market share of the four largest tempeh makers in 1983: 63%, In 1997: 84%. (2) Number of brands of different types of tempeh on the US market in May 1997: Tempeh burgers 14, soy tempeh 9, multi-grain (mostly 3 or 5 grains) 6, bulk soy tempeh 5, soy & brown rice tempeh 4, sea veggie tempeh 3, wild rice tempeh 2, soy millet tempeh 2, sloppy Joe tempeh 2, other 8.

Talk with Seth Tibbott of Turtle Island. 1999. Dec. 6. The existing tempeh companies with the strongest ties to The Farm in Tennessee are (1) Lightlife Foods (Michael Cohen; see Sept. 1991 interview) and (2) Turtle Island (Seth; in 1977 he learned how to make tempeh at The Farm in Tennessee). Those with weaker ties are (3) Wildwood Natural Foods (Jeremiah Ridenour; he lived at The Farm for a while, has a lot of Farm history, and one of his kids was born on The Farm), (4) White Wave (In about 1980 Alexander Lyon was hitchhiking through Boulder, Colorado, and had no money. He taught Steve Demos how to make starter culture for something like $20 and a good meal), and (5) Surata Soyfoods (Benjamin Hills learned how to make tempeh from his former wife, who learned it from The Farm in Tennessee).

Turtle Island now makes tempeh for: Lean Green Foods (Hawaii; Benjamin Hills), Wildwood Natural Foods, and Quong Hop. It starts out when you're at a trade show and "people saddle up to you" and say "Uh, we're not sure exactly which way we're going with our tempeh, but do you have any extra plant capacity? It's just a thought." Then "If you give any kind of encouragement to them, the next week they're begging you on their hands and knees, they'll pay anything to have you make it for them. It's such a hassle and they have to devote plant space to it. Tofu is now growing so much faster than tempeh, they just keep tempeh to fill out their product line." Seth expects that White Wave and Surata will come to him next, begging him to make tempeh for them. Address: Turtle Island Foods, Inc., P.O. Box 176, Hood River, Oregon 97031.

3052. Wuryani, W.; Subaranti, W.; Yahya, V.J.; Sibarani, S. 1997. The effect of tempe starters and fermentation time on antihemolytic activity of isoflavones. In: Sudarmadji, Suparmo and Raharjo, eds. 1997. Reinventing the Hidden Miracle of Tempe: Proceedings, International Tempe Symposium, July 13-15, 1997, Bali, Indonesia. Jakarta, Indonesia: Indonesian Tempe Foundation. xi + 280 p. See p.

211-18. [7 ref]
• ***Summary:*** The two types of tempe starters (inocula) used in this experiment were: (1) Ragi-pasar, the traditional inoculum, and (2) A starter prepared under strict quality control named ragi-LIPI. Address: 1. Research Development Centre for Applied Chemistry–LIPI, Bandung; 2-4. Dep. of Community Nutrition and Family Resources, Bogor Agricultural Univ. All: Indonesia.

3053. Dechema e.v. 1997. Kurzfassungen: 15. Dechema-Jahrestagung der Biotechnologen [Abstracts: 15th Dechema anniversary of biotechnology]. Germany. Held 4-6 March 1997 at the Westfälische Wilhelms-Universität Münster. [Ger]
• ***Summary:*** The following abstracts are related to tempeh (p. 555-67): The tempeh project in branches of the "Biotechnology Indonesia-Germany" cooperation, by Prof. Dr. H.J. Rehm (Ger). Strategic role of tempeh in Indonesia, by Suyanto Pawiroharsono (Eng). Aspects of the production of vitamins during tempeh fermentation, by B. Bisping, et al. (Ger; 6 ref). Occurrence and metabolism of soy isoflavones in tempeh fermentation, by F. Hein and W. Barz (Ger). Physiological-chemical effect of tempeh constituents and their derivatives, by H.C. Jha, et al. (Ger). Microbial ecology and process control in tempe manufacturing, by M.J.R. Nout (Eng; 6 ref). Accumulation of amino acids during the tempeh fermentation, by U. Baumann, et al. (Ger; 1 ref). Proteases, glycohydrolysates and phytases from making tempeh using various Rhizopus molds, by W. Barz, et al. (Ger). Address: Germany.

3054. Kiriakidis, S.; et al. 1997. Fatty acid esters of sitosterol 3-beta-glucoside from soybeans and tempe as antiproliferative substances. *J. of Clinical Biochemistry and Nutrition* 22:139-47. *
Address: Inst. of Physiological Chemistry, Univ. of Bonn, Nussallee 11, 53115 Bonn, Germany.

3055. Berg, Elizabeth. 1997. Indonesia. Milwaukee, Wisconsin: Gareth Stevens. 32 p. Illust. (color). Map. 26 cm. Series: Festivals of the world. *
• ***Summary:*** One chapter is titled "Make fried tempeh." For elementary and junior high school. Elizabeth Berg was born in 1953.

3056. Campbell, Kristine J.; Mermelstein, Neil H. 1997. Microbiology in food systems. Chicago, Illinois: Institute of Food Technologists, The Society for Food Science and Technology. 28 cm. Series: IFT experiments in Food Science. *
• ***Summary:*** "Activity #3. Tempeh, soy sauce, and other mold-fermented foods."

3057. Cerquetti, Giorgio. 1997. The vegetarian revolution. Badger, California: Torchlight Publishing, Inc. xiv + 243 p. No index. 23 cm.
• ***Summary:*** This book is divided into two parts: Commentary (which includes many quotations about vegetarianism) and cookbook. Contents: Part A–The vegetarian revolution. 1. Join the revolution. 2. The future is vegetarian. 3. Animals deserve to be alive. 4. More evidence. 5. Proteins and vitamins. 6. Vegetarians live longer: Longevity, prana, fasting. 7. Vegetarianism and world religions: Vegetarian Jews, vegetarianism and early Christianity, Jesus was vegetarian, the new Catholic catechism, the oldest teachings, the law of karma, Buddha was vegetarian, was Mohammed vegetarian, Sikhs, Jains, speciesism: The last barrier, thought-provoking facts about vegetarianism. 8. Open letter to McDonalds.

Part B–Recipes (108 recipes). 9. Recipes of famous people. 10. Recipes of vegetarian groups. 11. Recipes of vegetarian restaurants. 12. Recipes from vegetarian cookbooks.

Part C–Resources. Vegetarian international. Alphabetical listing of recipe sources. About the author.

Giorgio Cerquetti, PhD, author and yoga practitioner, was born in Italy in 1946 and has been a vegetarian since age 16. In 1991 started to spend more time in the USA and, with Alister Taylor, he founded Vegetarians International. Address: Italy and the USA.

3058. Grogan, Bryanna Clark. 1997. Twenty minutes to dinner: Quick, low-fat, low-calorie vegetarian meals. Summertown, Tennessee: The Book Publishing Co. 192 p. Index. 21 cm.
• ***Summary:*** This vegan cookbook contains a wealth of soy-related recipes. Also includes soy-free options for recipes with tofu and soymilk. Address: Denman Island, east of Vancouver, British Columbia, Canada.

3059. Keussink, Ruth. 1997. Soja und Sojaprodukte [Soybeans and soy products]. Bonn, Germany: Auswertungs- und Informationsdienst fuer Ernaehrung, Landwirtschaft und Forsten (aid) e.V. 28 p. Illust. (Color photos). 21 cm. [14 ref. Ger]
• ***Summary:*** Contents: Introduction. Market and utilization. Soya in the diet: Protein, fat, carbohydrates, minerals and trace minerals, vitamins. Overview–Soy products: Whole soybeans, soy sprouts, soy oil, soy beverage, tofu, natto, sufu, tempeh, soy sauces, miso, soy lecithin, soy sausages, TVP. Processing soybeans. Soy ingredients and additives: Soy protein isolate, concentrate, soy bulk / fiber (*sojaballastoffe*), fatty acids, lecithin, vitamin E (tocopherol). Product safety. Genetically engineered soybeans. Tips for buying and storing. Recipes. Address: Konstantinstr. 124, 53179, Bonn, Germany.

3060. Kiriakidis, Serafim. 1997. Untersuchungen zur

antibakteriellen- und antitumor-Wirkung von Inhaltstoffen aus fermentierten Sojabohnen (tempe) [Investigation of the antibacterial and antitumor effects of the constituents of fermented soybeans (tempe)]. Thesis, Bonn University, Germany. 96 + [7] p. 30 cm. [Ger]*
Address: Inst. of Physiological Chemistry, Univ. of Bonn, Nussallee 11, 53115 Bonn, Germany.

3061. Messina, Virginia Kisch; Messina, Mark. 1997. Soy to the world. In: 1997 Medical and Health Annual. Published by Encyclopedia Britannica, Inc. See p. 197-202.
• ***Summary:*** In the section titled "Diet and Nutrition" is a long subsection on "Soy to the world." Contents: Introduction. Sacred crop (history). Varied and versatile: Whole soybeans (incl. green vegetable soybeans), traditional soyfoods (soymilk, tofu, okara, yuba, tempeh, miso, soy sauce or shoyu), modern soy products (textured soy flour or TVP), "second-generation" soyfoods. One of nature's most nutritious foods. Health benefits: the evidence so far: Cancer, heart disease, osteoporosis, kidney disease, menopause. Tofu on your table (how to incorporate soy into American diets; incl. TVP, soymilk, soy flour, soy nuts). Address: 1. M.P.H., R.D.; 2. Ph.D. Both: PhD, 1543 Lincoln St., Port Townsend, Washington 98368. Phone: 360-379-9544.

3062. Nabben, Alexander. 1997. Kochen und Backen mit Tofu: Vegetarische Rezepte ohne tierisches Eiweiss [Cooking and baking with tofu: Vegetarian recipes without animal protein]. Darmstadt, Germany: Pala-Verlag. 139 p. Illust. Recipe index. 21 cm. [Ger]
• ***Summary:*** Contents: Tofu–versatile and healthful. The soybean: Cultural history, production, the world and the soybean, nutritional value of soybeans, soyfood products (soy sauce, miso, tempeh, okara, soy coffee, soynuts, soy sprouts, modern western soy protein products–soybean flour, flakes, textured soy flour, soy protein isolates, defatted soybean meal, industrial soy products), genetically engineered soybeans. Tofu. Tips, tricks, and useful information. How to make soymilk at home. How to make tofu at home. Tofu recipes and marinades. Raw foods and salads. Dressings. Sauces. Soups. Main dishes. Soufflés. Pasta. Patties / burgers. Spreads. Party snacks. Cooking and baking. Desserts and sweet delicacies (*süsse Leckereien*). Ice cream. Address: Weigandufer 38, 12059 Berlin, Germany. Phone: 30 / 6808 0686.

3063. Nutrition Education Service, Sanitarium Health Food Company. 1997. Sensational soy cookbook. Sydney, London, Vancouver, New York: Murdock Books. 64 p. Illust. Index. 20 cm. [32 ref]
• ***Summary:*** A saddle-stitched vegetarian cookbook on glossy paper loaded with color photos and lightweight text. The author and nutritionist is Cathy McDonald of Sanitarium. Recipes developed by Wendy van der Veer of Sanitarium. Contents: The story of soy. The soy family: Miso, soy beans, soy breads & cereals, soy cheese, soy drink, soy flour, soy grits & soy flakes, soy 'meats,' soy pasta, soy sauce, soy snacks, tempeh, TVP, tofu, tofu desserts (ice cream and yoghurt). Breakfasts. Soy for health (isoflavones, menopause, breast cancer, osteoporosis, prostate cancer, heart disease). Light meals. The secrets of soy. Main meals. Soy in perspective. Desserts. Sensational soy (sample menus). Snacks. Know your nutrients. Bibliography. Estimated isoflavones in soy foods (table). Address: 1 Sanitarium Drive, Berkeley Vale, NSW 2261, Australia.

3064. Passmore, Jacki. 1997. The vegetarian table: Thailand. San Francisco, California: Chronicle Books. 160 p. Illust. (color photos). Index. 24 cm.
• ***Summary:*** The author dedicates this book to Isobel, her daughter, friend and critic, "who can't pass a day without tofu."

The Introduction notes that Thailand has a strong and living Buddhist tradition. Since Nature provides plenty of food, Thai cuisine has evolved with a moderate use of red meat, following "the Buddhist precepts on the slaughter of animals." But many Thais make an exception for seafood, with this charming rationale: "If a fish is stupid enough to swim into a trap and die, then we may as well eat it!"

This book relies heavily on tofu as a meat alternative. The index has 28 entries at "Tofu," so we will list only a few representative examples below. Contains a wealth of full-page color photos. In place of widely used fermented shrimp and fish pastes, this book uses various salt-fermented soy products such as yellow bean sauce, Chinese bean pastes, fermented tofu in brine, and tempeh (p. 11).

The Glossary defines the following that contain soy: Chili bean paste, fermented tofu, Hoisin sauce, kecap manis, soy sauce (3 types), tempeh, tofu (tao hoo in Thailand); "The soybean is singularly one of the most important food plants in the world." Few other food products can match the versatility and goodness of tofu. Incl. firm tofu, soft tofu, fried tofu and "bean curd sheets" or sticks [yuba], yellow bean sauce.

Soy-related recipes include: Classic Thai rice soup (with 6 oz. firm tofu, p. 74). Sweet and sour pomelo salad (with ¼ cup {3 oz.} cubed tempeh, p. 78). Green vegetable chu chee curry (with tofu or tempeh, p. 97). Vegetarian jungle curry (with fried tofu, p. 102). Tofu and beans with red curry paste (with fried tofu, p. 105). Clay pot of fried tofu and vegetables in brown sauce (p. 107). Stir-fried tempeh with garlic and pepper (p. 108). Stir fry of wheat gluten or tofu with straw mushrooms (p. 109). Tofu & tomato stir fry (p. 131). Thai fried rice with tofu and egg (p. 135). Pineapple fried rice (with firm tofu or tempeh, p. 136). Glutinous rice with peanuts and mushrooms (with diced fried tofu or tempeh, p. 141).

3065. Rombauer, Irma S.; Becker, Marion Rombauer; Becker, Ethan. 1997. The joy of cooking. New York, NY: Simon & Schuster / Scribner. xiv + 1136 p. Illust. Index. 24 cm.

• ***Summary:*** Soy-related subjects include (* = recipe): Soy sauce butter* (p. 77). Asian black bean sauce* (with "3 tablespoons preserved black beans" [soy nuggets], p. 83). Japanese wasabi soy sauce* (p. 83-84). Ginger soy sauce* (p. 84). Soy and sherry marinade* (p. 85). Description of miso soups and their role in the Japanese diet (p. 107-08). Light-colored miso soup with simmered vegetables and dark-colored miso soup with sautéed vegetables and Mongolian Hot Pot–a miso soup based dish* (p. 108). Ginger soy vinaigrette* (p. 238).

One long chapter is titled "Beans and Tofu" (p. 270-294). Lentils with spinach and soy sauce* (p. 280). The section titled "soybeans" (p. 287) discusses their nutritional value, health benefits ("They contain substances thought to help prevent breast and other cancers, as well as Omega-3 fatty acids, which reduce the risks of heart disease"), how to cook yellow and black soybeans, how to dry-roast [to make soynuts], many ways of processing, soy milk, okara, fermented black beans, soy sauce, tamari, miso, soy cream cheese, soy sour cream, and soy cheese. There are also substantial subsections describing the following soyfoods: (1) Soy milk, including a recipe for making it at home (p. 287-88). (2) Tofu, including silken tofu, cottage tofu, frozen tofu, sauteed or fried tofu, and smoked tofu (p. 288-89). Recipes containing tofu include: Szechuan spiced tofu, Southeast Asian curried vegetable stew, Smoked tofu burgers, and Brown rice tofu salad with orange sesame dressing (p. 289-90; the latter recipe calls for toasted sesame oil and adzuki beans, with smoked tofu being optional). (3) Tempeh, including recipes for Moo shu tempeh and Szechuan-style "hacked" tempeh. (4) About soy protein, describing textured vegetable protein and textured soy concentrate, with recipes for Dinner loaf Tex-Mex style and Lion's head (p. 292). This is followed by a subsection describing seitan and with recipes for Root vegetable and seitan stew, and Seitan kibbe (p. 293-94).

Asparagus with mustard miso* (p. 343-44). Baby bok choi with soy ginger sauce* (p. 349). Steamed scallops or shrimp with soy sauce* (p. 513). Grilled or broiled whole red snapper with ginger soy vinaigrette* (p. 548-49). Small fish, fillets, or steaks poached in soy sauce* (p. 555-56). Chinese soy-braised chicken* (p. 601-02). The chapter titled "Know your ingredients" (1059-87) includes short descriptions of bean sauce, Hoisin sauce, miso, nori, salted and fermented black beans, sesame oil, sesame paste, soy sauce, tamari, tonkatsu sosu (dark spicy sauce based on soy), wakame, wasabi, vinegars from fruit and grains, margarines (mentions trans fatty acids, but not soy), and shortenings (p. 1065-69).

Subjects related to vegetarianism include: Discussion of vegetarian diets (positive and accurate, in Chapter 1, p. 3). List of vegetarian side-dishes and main courses in this edition (27 recipes, p. 20). Vegetarian chili* (p. 283). Dairy-free chocolate cake* (vegan, p. 932). Ultra-orange cake* (vegan, p. 932-33).

Irma Rombauer (the grandmother of Ethan Becker) first wrote the *Joy of Cooking* in 1931, "when domestic help was fast becoming a thing of the past and women all over the country were once again heading to the kitchen."

Note: This cookbook was written by a committee of experts, put together by Maria Guarnaschelli. Many controversies and clashes of opinion arose out of this arrangement. Address: 3. Cockaign, Cincinnati, Ohio.

3066. Sullivan, Cheryl; Rhodes, Kathy. 1997. Soyfoods: A healthy profile. Revised ed. Sioux Falls, South Dakota: South Dakota Soybean Board. 118 p. Illust. Index. 22 cm.

• ***Summary:*** Contents: Introducing soyfoods to your diet. The healthful soybean. Exploring soyfoods: Dried soybeans, fresh green soybeans, soy milk, tofu, textured soy protein, soy flour, soy grits, tempeh, miso, soy meat analogs. Where to find soy products. Nutrient information. Recipes: Breakfast, beverages, breads, appetizers & snacks, salads, soups, sandwiches, side dishes, main dishes, desserts. Guide to modifying recipes: A one-for-one substitution.

Talk with Betty Hansen at South Dakota Soybean Board. 2000. May 15. This cookbook (which is undated) was first published in 1996, and revised in 1997. It was reprinted by the Nebraska Soybean Board with their name and phone number on the rear cover.

Talk with Cheryl Sullivan. 2002. Aug. 12. This booklet is basically *Simply soy: A variety of choices,* with a new cover and title, plus a few pages of additional information added by the South Dakota Soybean Board in Sioux Falls. Address: 1. M.A., R.D.; Ph.D., R.D.

3067. Sunarlim, N.; Anwarhan, H. 1997. A synthesis of agronomic results of SYGAP II in Indonesia. In: Napompeth, Banpot, ed. 1997. World Soybean Research Conference V: Proceedings. Soybean Feeds the World. Bangkok, Thailand: Kasetsart University Press. xxiv + 581 p. See p. 500-02. Held at Chiang Mai, Thailand, 21-27 Feb. 1994. [5 ref]

• ***Summary:*** SYGAP is the soybean yield gap analysis; it was conducted in three locations in Indonesia. The objectives were to identify and alleviate yield constraints and to develop a package of improved practices–which is described.

In Indonesia, about 70% of the soybeans are used for human consumption, mainly in the forms of tempeh, tofu, soy sauce, and tauco (fermented whole soybeans). Address: Bogor Research Inst. for Food Crops, Tentara Pelajar 3A, Bogor, Indonesia.

3068. Lang, Susan. 1998. Extraterrestrial food is cooking in lab. *Cornell Chronicle* (*Ithaca, New York*). Jan. 15. p. 7.

• ***Summary:*** "To help NASA plan the cuisine for future

lunar and Martian space colonies, and Cornell chef, nutritionist, food engineer and vegetarian cooking teacher are collaborating to develop and test tasty, nutritious and economical recipes that astronauts can prepare from a limited set of 15 to 30 crops to be grown in future space habitats. Wheat and potatoes are the staples to be complemented with rice, soy and peanuts, salad crops and fresh herbs, all to be grown hydroponically in artificially lit, temperature-controlled space farms.

"The fare now being tested at Cornell by weekly taste-testing panels composed of students, faculty and staff includes seitan tacos with lettuce and tomato sprinkled with earthmade cheese, carrot 'drumsticks,' tempeh sloppy Joes, basil pesto with soy nuts, pasta primavera and tofu cheesecake.

"'Our goal is to develop a database of food-processing information and a menu of at least 100 primarily vegetarian recipes of familiar and new menu items based on crops raised in a bioregenerative life support system,' said Jean Hunter, the food and biological engineer and associate professor of agricultural and biological engineering at Cornell who is heading up the project." Also working on the project are David Levitsky (professor of nutritional sciences and psychology), Rupert Spies (a chef and lecturer in food and beverage management in the Cornell School of Hotel Administration), and Adriana Rovers (formerly a caterer and a teacher of vegetarian cooking who prepares the recipes and runs the tasting panels). The researchers launched the project 6 months ago, with a $507,000 three-year grant from NASA. A photo shows Jean Hunter with some hydroponically grown plants for the project.

Talk with Jean Hunter. 1998. Jan. 22. A news release was issued (which Jean sent) and this story got picked up by the Microsoft News Service, MSNBC Web News, and by Yahoo Web News; both appeared on the Web. The *Cornell Chronicle* article, with photos in color, was also put on the Web at http://www.news. cornell.edu/Chronicles /1.15.98/NASAfood.html. A recent experiment included a 91-day closed-chamber study with 4 crew members at Johnson Space Center. It was checking an advanced life support system which included some air regeneration by plants. For ten days they fed the crew of four vegan foods– including tempeh, tofu, and many other soyfoods. A copy of the menu is available. The crew said it was so satisfying to have food that looked, tasted, and smelled fresh. "It made all the difference." NASA needs to develop meals that can be created from foods grown in space because the cost of transporting food from Earth on long missions is "astronomical."

Note: It costs roughly $1,000 to $10,000 to transport one pound of anything to the moon.

3069. Boyle, Alan. 1998. Recipes for beyond a small planet: Researchers help NASA develop menus for moon, Mars (Web article printout). *MSNBC Web News.* Jan. 19.
• ***Summary:*** This article, based on a news release from Cornell University, appeared on the Web at http://www. msnbc.com/news. It begins: "Carrot drumsticks? Soybean sloppy Joes? Tofu cheesecake? It sounds like a vegetarian's dream and it could be an astronaut's reality on Mars or the moon, if food experts from Cornell University have their way. The Cornell team is developing recipes for long-duration spaceflights as part of a program funded by NASA." Address: MSNBC.

3070. Weber, Thomas E. 1998. Takeout food: NASA is seeking recipes that travel really well. *Wall Street Journal.* Jan. 27. p. B1.
• ***Summary:*** The article begins: "That's one small step for man. One gigantic leap for tofu." A group at Cornell University (Ithaca, New York) is working under a NASA grant to develop meals that can be prepared almost exclusively from vegetables that grow well in space. For long space missions, like a flight to Mars, spacefarers may not be able to carry enough food to last the trip, so they will need to grow and cook their own. Trying to produce meat during the mission is too inefficient. "That has set off a space race to develop vegetarian meals that astronauts can stomach. The researchers believe they have found the right stuff" including tempeh, "a sort of super-tofu made from soybeans, and seitan, a gluten extract from wheat." Jean Hunter, a Cornell professor heading the project, says that Creamed tempeh, cooked in soy-milk sauce, "takes a little getting used to." Includes a recipe for Sloppy Joe Tempeh. Address: Staff reporter.

3071. Welters, Sjon. 1998. Re: Move to Cabot, Vermont. A seitan and a tempeh company in Vermont. Letter to William Shurtleff at Soyfoods Center, Jan. 29. 3 p. Handwritten. [1 ref]
• ***Summary:*** Sjon and his family have moved to central Vermont and purchased a farm. He will be planting oats this year for a local organic farm. The family mail order business, Bread & Stuff, relocated with them. Sjon also opened a sushi bar and natural foods deli (named The Wrap) in Montpelier, Vermont's capital. Nearby are Sheffield Seitan of Lydon, Vermont, and Vermont Soy of Waterbury, Vermont, "which makes the best organic tempeh I've tasted so far in the U.S."

3072. Berghofer, Emmerich; Grzeskowiak, B.; Mundigler, N.; Sentall, W.B.; Walcak, J.J. 1998. Antioxidative properties of faba bean-, soybean- and oat tempeh. *International J. of Food Sciences and Nutrition* 49(1):45-54. Jan. [42 ref]*
• ***Summary:*** Tempeh fermentation increased the antioxidative effects in all three raw materials, but the largest increase was obtained with flour derived from faba beans. Address: Institute of Food Technology, University of Agricultural Science, Muthgasse 18, A-1190, Vienna,

Austria.

3073. Golbitz, Peter. 1998. Tofu & soyfoods cookery: Delicious foods for a healthy life. Summertown, Tennessee: Book Publishing Co. 176 p. Illust. (3 photos). Recipe index. General index. 21 cm.
• ***Summary:*** Contents: Preface and acknowledgments. The history of soyfoods. A closer look at soybeans. Soybeans and health: Introduction, malnutrition, cardiovascular disease, cancer, osteoporosis, menopause, more to come. Using soyfoods: Whole dry soybeans, tofu, soymilk, soy flour, textured soy protein, green vegetable soybeans, tempeh, miso, soy sauce, soy protein concentrate, soy protein isolates, natto, soybean oil, second generation soyfoods, meat alternatives, cheese alternatives, soy yogurt, nondairy frozen desserts, mayonnaise and dressings, instant soups and other dry mixes, margarine, lecithin, soynuts and soynut butter, soy sprouts, okara or soy pulp. Basic recipes. Breakfast. Bread. Salads & dressings. Soups & sandwiches. Main & side dishes. Desserts & drinks. Glossary. U.S. & Canadian soyfoods companies. Sources of information on soyfoods. Nutrients in soyfoods.

Contains 125 of Peter Golbitz's favorite recipes, selected from the works of some of "the world's leading soyfoods chefs." A list of these "leading vegetarian and soyfoods pioneers" (all of whose books have been published by The Book Publishing Co.) appears on the rear cover. Peter (born in 1952) lives with his wife, Sharyn Kingma, and son on a beautiful island off the coast of northern Maine. A color photo of the family appears on the rear cover. Twenty years ago (in 1978) Peter was "first introduced to tofu and the wonders of soyfoods." A photo of Peter with his book appears in the Book Publishing Catalog of Jan. 1999. Address: President and Founder, Soyatech, Inc., Bar Harbor, Maine. Phone: 207-288-4969.

3074. Greenberg, Patricia; Hartung, Helen Newton. 1998. The whole soy cookbook: 175 delicious, nutritious, easy-to-prepare recipes featuring tofu, tempeh, and various forms of nature's healthiest bean. New York, NY: Three Rivers Press (Crown Publishers / Random House). ix + 221 p. Illust. Index. 24 cm.
• ***Summary:*** Contents: Acknowledgments. Introduction. All about soy: Health benefits of soy (reduces the risk of heart disease, lowers the risk of breast cancer, eases the symptoms of menopause, protects against prostate cancer, prevents digestive disorders {when using whole soybeans or soy products containing high levels of fiber}, eliminates the problem of lactose intolerance, prevents the problems of milk allergy, beneficial in diabetic diets), cooking with soy products (meat analogs or meat substitutes {soy sausage, soy bacon, hamburgers and hot dogs}, miso, okara, soy cheese, soy milk, soy sour cream, soy yogurt, soy flour, whole soybeans, soybeans–green, soybeans–roasted, tempeh, textured vegetable protein (TVP), tofu & silken tofu; Soy-based foods (containing little or no protein): Egg replacers, soy margarine, soy mayonnaise, soybean oil, soy sauce) how to get optimum nutrition from soy (protein, carbohydrates, fat, cholesterol, fiber, sodium), nutrition information. Sample menus (for 3 meals a day, 7 days a week). Recipes: 1. Appetizers, dips, and spreads. 2. Salads and vegetables. 3. Brunch and breads. 4. Pizza and sandwiches. 5. Soups and stews. 6. Main dishes. 7. Pastas and grains. 8. Desserts.

This books contains almost 200 delicious and easy ways to add that essential 25 grams of soy protein to your diet. These recipes (each of which includes a nutritional analysis) are based on more than ten years of experience and experimenting (p. 2). Address: P.O. Box 10853, Beverly Hills, California 90213. Phone: (310) 474-4539.

3075. Lehnert, Dick. 1998. Specialty soybean varieties bring premiums for a price: Markets for food-grade varieties are growing. *Soybean Digest.* Jan. p. 64-65, 68.
• ***Summary:*** About 120,000 tons of specialty soybeans are now shipped from the USA to Japan each year–about 10% of the food-grade soybeans the Japanese buy. The soybeans must always be kept separate–"identity preserved." Growers typically get more dollars per bushel, but sometimes get fewer bushels per acre. The soybeans are made into foods such as tofu, tempeh, natto, or miso.

Kim Nill, deputy director for international marketing at the American Soybean Association, keeps tabs on the growing opportunities for specialty soybeans. He says seed companies are finding niche markets for food-grade soybeans.

Last year, Dupont introduced a variety that produces oil high in oleic acid (naturally lower in saturated fats and more heat stable without hydrogenation). Dupont is now working on a low stachyose bean. Pioneer Hi-Bred International grew 7,000 acres of low-linolenic oil beans for a market similar to that of high-oleic acid beans.

A photo shows a combine harvesting specialty soybeans that will be made into tofu.

3076. Mitchell, Paulette. 1998. The complete soy cookbook: More than 150 simple recipes for good health and great taste. New York, NY: Macmillan Publishing (A Simon & Schuster Macmillan Co.). xlix + 270 p. Illust. Index. 24 cm.
• ***Summary:*** A very attractive vegetarian cookbook. Each recipe is marked with one of three symbols: V = vegan, lo = lacto-ovo vegetarian, and l = lacto vegetarian. Contents: Preface: An ancient Asian secret isn't a secret anymore. Introduction: The whys (cancer, heart disease, osteoporosis, menopause, diabetes), the hows, soy food ingredients (soybeans, sweet beans {edamame}, tofu, tempeh, texturized vegetable protein {TVP}, soy milk, soy flour, soy oil, soy sauce), other soybean products (soybean sprouts, okara, miso, roasted soynuts, isolated soy protein {ISP}, dairy

and meat analogs), a note on food allergies. Soy success: Stocking your refrigerator and pantry, using the recipes, kitchen equipment. 1. Appetizers. 2. Soups. 3. Salads. 4. Entrees. 5. Desserts. Appendix: Recipes listed by soy food categories (and within each category by recipe type–such as salads, soups, desserts): Whole soybeans (32 recipes), sweet beans (green vegetable soybeans, 7 recipes), tofu (96), frozen and thawed tofu (14, all entrées), pressed tofu (12), tempeh (14), textured vegetable protein (TVP, 4), soy milk (14). Note that tofu was used in by far the most recipes (96), followed by whole soybeans (32).

Paulette, who lives in Minneapolis, Minnesota, is a cooking instructor, restaurant consultant, and lecturer. Paulette is the author of many Macmillan books, including *The 15-Minute Vegetarian Gourmet, The 15-Minute Single Gourmet,* and *The Complete Book of Dressings.* This book is dedicated to her 14-year-old son, Brett. Address: Minneapolis, Minnesota. Phone: 612-941-7576.

3077. **Product Name:** Smoked Tempeh [Savory Herb, Spicy Peanut, Sweet & Tangy].
Manufacturer's Name: Smoke & Fire Natural Foods.
Manufacturer's Address: 1885 North Main St., Sheffield, MA 01257. Phone: 413-528-6891.
Date of Introduction: 1998. January.
Wt/Vol., Packaging, Price: 6 oz vacuum pack. Retails for $2.15 (1998/07, Massachusetts; Range: $1.89 to $2.50).
How Stored: Refrigerated, 90 day shelf life (at 34-36ºF).
New Product–Documentation: Talk with then form filled out and Label sent by José Antunes (pronounced jo-ZAY ahn-TU-nays), founder and president, who is Portuguese. 1998. June 29. The idea for this pioneering product was sort of a logical extension of smoking tofu. José likes tempeh very much and he wanted to have more products in his line. An invoice [sent to Soyfoods Center] shows that the Savory Herb flavor was first sold on 26 Jan. 1998 and the Spicy Peanut on March 9. A case of six wholesaled for $12.60 (for each product).

Note: This is the first smoked tempeh product seen worldwide.

Leaflet (8½ by 11 inch) from Natural Products Expo East (Baltimore, Maryland). 1998. Sept. 9-13. The company's new registered trademark is "Soy with Sizzle." Gives the ingredients and product specifications for all the company's products including a new product: Sweet & Tangy Smoked Tempeh. Talk with José. 1998. Sept. 16. His company has discontinued the Spicy Peanut and added a new flavor, Sweet & Tangy Smoked Tempeh, which was launched at the Baltimore show. It is now on the market. Its ingredients: Organic soy tempeh (organically grown soybeans, water, tempeh culture), organic shoyu soy sauce, organic apple cider vinegar, organic ground mustard seeds, organic evaporated cane juice, lemon juice, organic orange rind, granulated onion, granulated garlic, spices & natural wood smoke.

3078. Heskamp, Marie-Luise; Barz, W. 1998. Expression of proteases by *Rhizopus* during tempeh fermentation of soybeans. *Food / Nahrung* 42(1):23-28. Feb. [Eng]* Address: Germany.

3079. Indiana Soybean Board. 1998. Indiana soyfoods locator guide: A guide to finding soyfoods in the supermarket and health food store. Lebanon, Indiana: Indiana Soybean Development Council. 48 p. 28 cm.
• ***Summary:*** This is the first edition of this Guide. On the cover is a paper grocery bag resting on a bed of soybeans and chock full of foods: Veggie Slices (soy cheese), soynut butter, veggie burger, tofu, soymilk, soy flour, plus carrots, celery, and cooking oil. Contents: Food pyramid. Soyfoods descriptions–Meat the Bean: Introduction, green vegetable soybeans (edamame), hydrolyzed vegetable protein (HVP), infant formulas–soy based, lecithin, meat alternatives (meat analogs), miso, natto, nondairy soy frozen desserts, soy cheese, soy fiber (okara, soy bran, soy isolate fiber), soy flour, soy grits, soy protein concentrate, soy protein isolate (isolated soy protein), soy protein–textured (textured soy protein, textured soy flour), soy sauce (tamari, shoyu, teriyaki), soy yogurt, soybeans, soymilk–soy beverages, soynut butter, soynuts, soybean oil & products, sprouts–soy, tempeh, tofu & tofu products, whipped toppings–soy-based, yuba. A taste for health–Scientists are learning about soy's health benefits: Heart disease, osteoporosis, menopause, cancer, isoflavones. Soyfood icon chart. Soyfood facts & recipes: Meat alternatives, soybean oil, textured soy protein, whole soybeans, soy flour, soymilk, tofu. Composition and nutrient content of soyfoods. Soyfood conversion charts: description of one serving of soyfoods, guide to modifying recipes, soyfoods substitution chart. Mail order soyfood companies. Soyfoods Web site packed with information. Soy cookbooks. Soy resource books. 1-800-talksoy. Soyfoods market search map; where to find soyfoods in the supermarket (a two page color layout of a supermarket displaying where soyfoods are located). Soybeans... they're in almost everything. Finding soyfoods at the supermarket (store listings by county). Address: Indianapolis, Indiana 46205-1744. Phone: 1-800-275-7679.

3080. INTSOY. 1998. INTSOY course: Soybean processing and utilization. May 26 to June 19, 1998 (Brochure). Urbana, Illinois. 2 p. 8 panels. 22 x 10 cm each.
• ***Summary:*** Contents: Topics to be presented in the 1998 course: Basic processing concepts, nutrition and functionality, extrusion technology, oil extraction, soymilk and dairy analogs (soymilk, soy yogurt, soy ice cream), Oriental soybean foods (tofu, tempeh, etc.), animal feed applications, quality control, animal feed applications, overview of the soybean industry, economics and marketing

of soy products. Cost and travel information (the course costs $4,300 plus about $1,600 for room, board, and other local living expenses. INTSOY is unable to offer scholarships).

The course time consists of 35% lectures, 45% hands-on exercises, and 20% industry visits. This is the 18th offering of the training program. Some 200 persons from 41 countries have attended the course. Danny Erickson is the training officer in charge. E-mail intsoy@uiuc.edu. Address: International Soybean Program, Univ. of Illinois, 35 Environmental and Agricultural Sciences Building, 1101 West Peabody Drive, Urbana, Illinois 61801. Phone: (217) 333-6422.

3081. Lindsay, Shirley H.; Claywell, Lora G. 1998. Considering soy: Its estrogenic effects may protect women. *Lifelines* (*Association of Women's Health, Obstetrics and Neonatal Nurses*) (*Hagerstown, Maryland*) 2(1):41-44. Feb. [14 ref]

• ***Summary:*** Contents: Introduction. Understanding soy. Soy and menopause. Effects on osteoporosis. Soy & breast cancer. Effects of cholesterol. One sidebar, titled "A look at popular soy foods," gives a brief definition of miso, soy cheese, soy fiber (okara, soy bran, soy isolate fiber), roasted soy flour, tempeh, tofu.

A second sidebar, titled "One woman's experience," states that author Shirley Lindsay has been a near vegetarian for two years, using soy protein as her main protein source, but also an occasional serving of fish. She consumes one 14-oz. glass of soymilk and 5-8 oz. of low-fat silken tofu daily. Her diet contains approximately 70 mg/day of isoflavones. She also eats a very low-fat diet that includes low-fat diary products, egg whites, fruits, vegetables, and olive oils. Lindsay also bakes with soy products and flax seed; the latter is rich in lignans.

"Lindsay has successfully eliminated 90 percent of her menopausal symptoms, as well as decreased her serum lipids. When she began the diet, she eliminated animal proteins except skim milk and egg whites, and within 10 days she noted a 90 percent decrease in hot flashes and night sweats. At one point, Lindsay only ate isolated soy protein powder supplements, but her menopausal symptoms returned because a significant amount of phytoestrogen is lost in the processing of powders." Address: 1. Asst. Prof. of Maternal-Newborn Nursing; 2. Director, Associate of Science in Nursing program. Both: Deaconess College of Nursing, St. Louis, Missouri.

3082. Stevens & Associates, Inc. ed. and comp. 1998. U.S. 1998 soyfoods directory. Lebanon, Indiana: Indiana Soybean Development Council. 47 p. 28 cm. [33 ref]

• ***Summary:*** This third edition of the U.S. Soyfoods Directory was produced for the Indiana Soybean Board by Stevens & Associates.

Note: Nasoya Foods has its own listing but Azumaya does not. Azumaya is listed under Vitasoy USA Inc. as a brand. Address: Stevens & Associates, 4816 North Pennsylvania Street, Indianapolis, Indiana 46205. Phone: 317-926-6272.

3083. Carrasquillo, Fausto. 1998. Masao's Kitchen in Cambridge, Massachusetts, wants to make fresh tofu (Interview). *SoyaScan Notes.* March 12. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** Fausto was a soyfoods pioneer in Puerto Rico. Nature Foods Inc., a company he founded and ran in Santurce, Puerto Rico, started making Organic Tofu Rico in Sept. 1980 and Tempeh in Jan. 1981. For the last year, he has been in the United States, working at Masao's Kitchen (run by Masao Miyagi), a macrobiotic restaurant in Cambridge, Massachusetts. Now he and this restaurant would like to make fresh tofu, for in-house used and to distribute elsewhere. He plans to stay at Masao's Kitchen in the USA for at least several more years. Address: Masao's Kitchen, P.O. Box 3812375, Cambridge, Massachusetts 02238. Phone: 617-776-7198.

3084. Schweitzer, Peter. 1998. Plenty International (Interview). *SoyaScan Notes.* March 25. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** Plenty International is now the official name of their organization. This is the named under which they are registered with the United Nations, Canadian International Development Agency, and other government organizations. But "it's a mouthful," so they usually call it just "Plenty" for short. In the past, however, Plenty has sometimes used two names at the same time. In about 1982-83, after the original Plenty split up, the U.S. half usually called itself Plenty USA vis a vis Plenty Canada. In early 1998 the Board officially changed the name to Plenty International, and the organization is incorporated under that name with the state of Tennessee. They had to re-do the by-laws.

There is now also a Plenty Spain in Barcelona started by a guy from Argentina who worked with Plenty in the USA and Lesotho for many years. They do many projects but none of them are soy-related.

Bisi Iderabdullah, the founder and director of the Imani House project and soy program in Liberia, is currently in Brooklyn, New York, trying to raise grant money for her program in Liberia. Plenty recently sent their clinical director to Senegal for medical training. The work is ongoing, run by their local staff people, in Liberia, and Bisi plans to return soon.

Plenty Canada has gone through major changes. They moved their headquarters to an Indian reservation for a while and their whole board of directors was Native Canadian for a while. Peter is trying to find out what is going on; he has heard that some of the original people are now coming back into the organization.

Of Plenty's various soy projects around the world, the one in Guatemala is currently by far the most successful and active. The soy dairy is now on a solid financial footing, managed by Agostine and Elena Xoquic (pronounced cho-KEEK), who have been actively involved since about 1995. Amada del Valle, who worked with Plenty Canada and was close fields with Laurie, is no longer involved. Laurie has worked with both Plenty Canada and Plenty USA. The soy dairy is under the auspices of the *Comité de San Bartolo,* which is the village committee. They have struggled and hung in there during the difficult times, and now things are going much better. Their biggest market is the tourist restaurants in Panajachel and Antigua (Guatemala), but they do have 3-4 outlets in Guatemala City. They now have an outlet right on the village square in Solola, where they sell soy ice cream, tofu, and a soymilk popsicle that is very popular. Suzi and Peter went down to offer assistance in recent years. Plenty bought them a truck so they could start doing deliveries instead of riding buses with their buckets of tofu, and also helped them with some Spanish-language publications. Suzi did many soy demos in restaurants in Panajachel. Chuck Haren has been going there several times a year. Plenty has gotten them grants of roughly $10,000 a year so they could upgrade broken equipment and refrigeration. They have developed some new products, and they are now making tempeh. The ongoing outside help has been essential to their survival, but they have learned how to operate–though they are not that ambitious. Chuck believes they could be much more successful. He feels they have an unlimited market. They earn enough money to pay the staff and put some back into the village. They operate a little nutritional outreach program.

Peter notes that the work with soy has always been very prominent through the history of Plenty's activities worldwide. "It's always been a part of the programs that people seem to like. I see a really healthy future for it."

Plenty had one 3-year period when Chuck was really well funded, with about $50,000 from three public welfare foundations. New programs started in many places, including Liberia. Address: Executive Director, Plenty International, P.O. Box 394, Summertown, Tennesse 38483. Phone: 931-964-4864.

3085. Demos, Steve. 1998. New developments with soymilk and other soyfoods at White Wave. Part II (Interview). *SoyaScan Notes.* March 30. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** Sales of White Wave's baked tofu are growing at 38% a year, while plain tofu is growing at 18-21% a year. White Wave is the leader nationally in the baked tofu category, with more than 60% of the market share. Plain dairy yogurt in America still outsells dairy yogurt with fruits and flavors, but it was the fruit yogurts that introduced consumers to the plain product. Baked tofu seems to be playing the same role with respect to plain tofu. White Wave is about to invest very heavily in the automation of baked tofu. If a company's plant capacity is 250,000 units per week, it makes much more sense to produce baked tofu at $1.80/unit instead of block tofu at $0.70/unit. White Wave is trying to turn the tofu market from block to flavored, in order to gain market share and position–in exactly the same way the company has been trying to turn the soymilk market from aseptic to refrigerated.

One key question concerning baked tofu remains unanswered? How do consumers eat it? Steve thinks they are eating it in the car on the way home from the store as a salted snack food–or perhaps on sandwiches. Until White Wave can be sure of how it is used, they don't want to commit to positioning it against some other product–such as cheese or meat.

White Wave's first goal was to establish its products in the refrigerated dairy section. Whereas many companies still sell tofu to the produce section, White Wave never sells to the produce section any longer. Everything is refrigerated, controlled temperature during distribution and sale. Only rarely does a White Wave product end up being sold in any produce section; they are usually sold in the juice cooler or in the dairy section. 80% of White Wave's revenues come from the natural foods sector, and in natural foods stores all White Wave products are in the dairy section–as part of their shelf-set program, which has been very effective in establishing a beachhead in the refrigerated section. Around that now Lightlife and Yves each have their own sections. So the vegetarian category is emerging, usually located in the store around dairy cheeses, milk, yogurt, and eggs.

The most interesting insight Steve has gained in the last few years is the one that says consumers are picking four product categories that they want to see in supermarkets. So White Wave has been reducing the number of products it offers; it has dropped hot dogs, sausages, all burgers except tempeh burgers and lemon broil. The company is actively evaluating what consumers want and where they want to find it in the store. One new program will be to give consumers a free half-pint carton of Silk asking them to "Try this–It's the new milk."

Steve is very happy with Silk's sales performance over the past two years. "It's been exceptional, but it cost $400,000 just to launch the product." According to data from SPINS, during the May-June 1997 period, the market shares for soymilk brands in the U.S. natural foods market were as follows: Westbrae 34%, Edensoy 32%, Vitasoy 16%, and Silk 7%. Silk's share is now 10%. Sales of Silk grew by 170% during the past year. The soymilk market grew by 21% during the same period, Edensoy grew at 30%, Rice Dream dropped 0.4%, and the rice beverage market contracted by 0.2%.

Tree of Life (which does not share its sales figures with SPINS) is no longer the biggest distributor in the USA.

United Naturals is now the biggest (after they bought Stow Mills) with sales last year of $650 million vs. $520 million for Tree. United Naturals also owns Mountain People's, Mountain People's Northwest (which was NutriSource), Rainbow–Chicago (Illinois), Rainbow–Denver (Colorado), Cornucopia, and Cornucopia–Atlanta (Georgia).

ConAgra is trying again to get into the natural foods industry. They recently tried to buy one big privately owned natural foods manufacturer, and were turned down! ConAgra launched a new "Advantage 10" line of frozen entrees (many of which contain gluten products) that is backed by Dr. Dean Ornish. White Wave is supplying them with some of these gluten products. ConAgra had a huge presence at the Anaheim show–yet they don't understand how natural foods shoppers think and see the world. Address: President, White Wave Inc., 1990 North 57th Court, Boulder, Colorado 80301.

3086. Bertran, Magda. 1998. Pioneros de la soja en España: Locos por la macrobiótica [Pioneers of soya in Spain: Crazy about macrobiotics]. *Vital.* March. p. 66-69. [Spa]
• ***Summary:*** This is the story of a community of about 20 adults and children who live in southeastern Spain, just north of Barcelona, in Moianés, near the towns of Castellerçol and Castellcir. Tofu, tempeh, veggie burgers, and other soyfoods (*derivados de la soja*) form an important part of their diet. Members of the community have created new food companies such as Vegetalia and Natursoy, and become pioneer soyfood processors in Spain. More recently, Luz de Vida has started to import high-quality natural products into Spain.

"The history of the production of soyfoods has diverse origins, according to the version of the protagonists. It can be said that it started about 20 years ago in the little village of Tavertet, due to the efforts of Josep M. Villagrasa, a person who was crazy about macrobiotics (*un "loco por la macrobiótica"*). We must also remember the pioneering work of Javier Arozena [sic. Arocena] and his company Zuaitzo (*Arbolito*) in Vasco region.

In addition, two couples who were also "crazy," Joan Mateu and Lluïsa Playà, and Josep Maria Clapés and Sandra Cano, came together to share a house and experiences in La Floresta (Barcelona). Lluïsa (along with others) was running the restaurant Macrobiótic Zen, the first macrobiotic restaurant in the city of Barcelona, while in the kitchen Joan was preparing tofu for the restaurant, helped by Sandra and Josep Maria. The latter also worked as a homeopathic doctor. Lluïsa maintains that the first tofu manufactured in Spain was made in 1978, in the kitchen of that house named La Floresta.

Little by little the production of tofu grew, and Joan started to make seitan for the first alternative food shops that were created in Barcelona, and then throughout Spain. Address: Spain.

3087. Book Publishing Co. 1998. Catalog–1998 (Mail order). Summertown, Tennessee. 48 p. 23 cm.
• ***Summary:*** This catalog has a glossy color cover with five books pictured on a gold background. In the center is Tofu Cookery. Contains many books about vegetarian cookery (p. 14-29), including books on TVP, gluten and seitan, tempeh, soyfoods, and tofu. Address: P.O. Box 99, 156 Drakes Lane, Summertown, Tennessee 38483. Phone: 1-888-260-8458.

3088. Seemo (H. Shapira); Kairava (J. Spaelstra). 1998. Re: Exciting new developments at Dakini Health Foods Pvt. Ltd. in Pune/Puna, India. Letter (fax) to William Shurtleff at Soyfoods Center, April 10. 1 p. Typed, without signature on letterhead.
• ***Summary:*** "Hello Bill. Greetings from hot, hot India, and some gossips too. 3 months ago we managed to close a deal on a 17,000 square foot plot about 7-8 km from our present place.

"We dug a bore well and found a good spring!!! And yesterday we got our electricity connection–a Big story in India.

"We are trying now for building permits and planning to have 5,000 square feet ready by next year some time. About half of the space will be for our soy project–tofu, soy milk, soyogurt drink, tempeh–and hopefully more. We can get nearly all the equipment built locally–steam boiler, cooking pots, refrigeration, etc. We also want to fabricate a pressure cooker, an okara press, etc.

"For grinders some hammermills are available but I think we prefer to get a sanitary stone grinder so please if you have the address of some manufacturer / stocklist of these. Models sold without motors are best. We will be happy to know as this type of equipment has never evolved in India and importing is the only solution. Taiwan, Japan, or the U.S. are all OK. We may possibly buy a small one for hummus production as well.

"All the best, with love. Seemo & Kairava.

P.S. Tempeh production is running smoothly, 60-80 kg per month, 7-10 per batch for now. Address: Dakini Health Foods Pvt. Ltd., S.N. 33, Bhoiwasti, Keshavnagar, Mundhwa, Pune / Puna 411 036, India. Phone: +91 20-613985.

3089. Brown, Susan; Brown, Allan. 1998. The Noble Bean. *Food for Thought: Newsletter of the Ontario Natural Food Co-op* (*Canada*) No. 17. p. 6. April.
• ***Summary:*** "Noble Bean is owned and operated by Susan and Allan Brown. We manufacture our products out of a 750 sq. ft. production facility on 10 acres of land near Elphin, Ontario, in the Ottawa Valley. We are 22 miles from the town of Perth and 60 miles from Ottawa. Originally we were based in Toronto 18 years ago. Previously, we had spent many years living in the country and after establishing our market in the city, we had an excellent cottage industry that

we could carry on from afar."

"Tempeh had been a part of our diet for years and once we learned how to make this amazing food, we started commercial production in 1980. We made our first major purchase of cooking equipment from a 60-year-old gentleman in Port Perry who had been stocking a few Toronto natural food stores with tempeh for a year. He had a stroke and could no longer continue. With a $500 loan, we paid $200 for a large custom-made cooker, a colander, racks and utensils, which we still use today.

"It was slow going at first, turning the industry and the public on to a new protein source. We made about 48 pounds per day, 4 days a week. While we were based in Kensington Market, we serviced the Toronto stores ourselves. Our production rate steadily increased as people became familiar with this new food. In 1985, when we did make the jump out of the city back to the land, we started producing 120 lbs. per day. It was at this time we took on our first distributor and our product got out much further.

"Through all of these times we were fortunate to be able to make a living at home. Children changed our lives immensely. Our two boys were raised with this business and home-schooled for years as they were growing. They are an integral part of the production line whenever they like and have the opportunity to make some serious pocket money.

"As the demand increased so did our production. We now make 200 lbs. per day, 3 days per week. We offer 6 different tempeh products all made from organically grown ingredients."

Contains 3 tempeh recipes: Ginger tamari tempeh. Lemon broil. Tempeh salad–Our summer favorite! A sidebar describes "What is tempeh?" Address: Owners, Noble Bean, RR# 1, McDonalds Corners, ONT, Canada K0G 1M0. Phone: 613-278-0173.

3090. Haedrich, Ken. 1998. Feeding the healthy vegetarian family. New York, Toronto, London, Sydney, and Auckland: Bantam Books. 305 p. Index. 24 cm.
• ***Summary:*** A lovely vegetarian cookbook. Soy-related recipes include: Mom's hot soy milk (p. 13). Tempeh barbecue, avocado, and Monterey Jack burritos (p. 79). Oriental tofu Reuben (p. 80-81). Tempeh barbecued sandwich topped with coleslaw (p. 82). Baked or grilled vegetable packets (with tempeh, p. 129-30). Spaghetti with tempeh tomato sauce (p. 148-49). Tempeh, onion, and cheese enchiladas (p. 181-82).

We especially like p. 292, titled "Mindful eating, smiling grace." Ken Haedrich is a winner of the Julia Child Cookbook Award. Address: Rural New Hampshire.

3091. Ryan, Nancy Ross. 1998. Oh, boy! soy! Top chefs celebrate the diversity of soyfoods with 8 show-stopping dishes. *Vegetarian Times* No. 248. April. p. 36-43.
• ***Summary:*** Chefs from stylish restaurants sing the praises of tofu and offer their favorite recipes: Jump start smoothie (with soymilk). Veggie Peking 'Duck' (with frozen, dried sheets of yuba). Miso risotto. Curried tofu and sweet potato wakaya. Barbecued tofu. Sweet-and-sour tempeh with cucumber and cauliflower. Golden-fried bean curd with tomatoes. Sauteed eggplant with miso sauce. Note: The word "soyfoods" is misspelled as "soy foods" throughout this article. Address: Chicago.

3092. Sass, Lorna J. 1998. The new soy cookbook: Tempting recipes for tofu, tempeh, soybeans & soymilk. San Francisco, California: Chronicle Books. 120 p. Illust. (25 color photos by Jonelle Weaver). Index. 21 x 23 cm.
• ***Summary:*** Contents: Introduction–The soy of cooking (descriptions of soybeans, black soybeans, soymilk, tofu, tempeh, miso, soy sauce). Appetizers and soups. Entrées. Soy on the side: Vegetables and grains; Salads, slaws and dressings; Scones and a few desserts. Mail order sources. Table of equivalents. A black-and-white photo shows the author. Note: This is not a vegetarian cookbook. Ingredients include swordfish, shrimps, mussels, codfish, clam chowder, etc.

Letter (fax) from then talk with Lorna Sass. 1996. Sept. 8. This trade paperback book, with many full-page color photos, is scheduled to be published in the spring of 1998. Chronicle Books is now publishing a series of books titled *The Vegetarian Table,* with each book featuring the vegetarian cookery of a different country. Address: 46 West 83rd St., New York City, NY 10024. Phone: 212-799-1085.

3093. Sass, Lorna J. 1998. Sensational soyfoods. *Delicious!* (*Boulder, Colorado*) 14(4):50-52, 54-55. April.
• ***Summary:*** Contains recipes using tempeh, silken tofu, black soybeans, and soymilk–excerpted with permission from her latest book, *The New Soy Cookbook.*

Note: The Delicious! website address is written at the bottom of every other page. Readers are invited to visit this website at 7 p.m. Mountain Standard Time for an online chat with soyfoods expert Lorna Sass. Address: Culinary historian, New York.

3094. Soyfoods Association of America. 1998. Soyfoods once a day for life! (Special advertising section). *Vegetarian Times.* April. 12-page color insert after p. 58.
• ***Summary:*** Contains large color ads by Nasoya (tofu and TofuMate), Morningstar Farms (Chik Nuggets), Eden Foods (organic black soy beans) Vitasoy (creamy original natural soy drink), Westbrae (Westsoy soymilks), Westbrae (Vigoraid nutritional drink), Sno Pac (frozen Sweet Beans–organic green vegetable soybeans), and GeniSoy (soy protein bars). On the rear cover are additional small ads (each with a logo) for Lightlife Foods, Lisanatti, Monsanto, Soyco Foods–Div. of Galaxy Foods Co., Soyfoods Association of North America, and United Soybean Board.

Interspersed with the ads is advertorial text and "Soy facts." The text on page 1 begins: "Miracle food. Health insurance in a pod. Nutritional powerhouse. The bean supreme. Nutritionists, physicians, researchers, chefs, and food experts of all kinds are raving about the healthfulness and great taste of soyfoods, and it's no wonder; soy truly is a nutritional and culinary gift from nature.

"Soyfoods are delicious, convenient, and versatile. At breakfast, soy can make an appearance in the form of soymilk, scrambled tofu 'eggs,' or soy 'sausages.' A soy shake or veggie burger makes a great lunch. Try a tempeh stir-fry, or perhaps a creamy tofu dessert.

"So dig in... with the huge variety of soyfoods available at your local natural foods store, it's easy to get your daily intake of soy, and reap the many benefits of the bean supreme."

The inner contents: Food as medicine. Heart health. Fighting cancer. Menopause? What menopause? Strawberry smoothie. Protein punch.

Soy cooking tips (p. 4): Easy ways to incorporate soy into your baking: Use soy flour in your baking. Be aware that soy flour contains no gluten, and therefore yeast breads will not rise without the addition of some gluten-containing flour. About ¼ cup of soy flour per cup of unbleached white flour is recommended for breads, pastas, and pastries. In place of olive oil, try adding a few ounces of Nasoya Silken Tofu and a dash of lemon juice to mashed potatoes. Try mashing miso into your root vegetables in place of butter. When adding miso to dishes, add roughly 1 tablespoon per four servings. Add GeniSoy Natural Vanilla Soy Powder to your baked goods such as muffins or pancakes. Buy Eden Organic Soybeans in a can and use them the same way you would any other canned bean: over rice, with pasta, in stir-frys, etc.

It's not only what you eat; its also what you don't eat. Making healthy eating taste great. Soy fact: soybeans were traditionally considered one of five sacred crops in China.

No time to cook? Try these quick ways of getting soy in your diet.

Strong bones... a matter of calcium retention. Miso.

Soy fact: there is no word for "hot flash" in Japan. Soy beverage.

Miraculous tofu. So soy convenient. Soy fact: Western culture discovered tempeh through the Dutch colonization of Indonesia. Soy fact: tofu was unknown to most people in the United States until Chinese immigrants came to this country in the 1800's. Tofu.

Tempeh. By the handful. Soy fact: miso was developed in China about 2,500 years ago. Where to find it. Address: Washington, DC.

3095. Brown, Allan; Brown, Susan. 1998. The origin of Plenty Canada (Interview). *SoyaScan Notes.* May 11. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** In the late summer of 1974, having met and become engaged on the Wisconsin Farm, Allan and Susan hitch-hiked to The Farm in Summertown, Tennessee, where they were married later that year. Allan was the founder and first director of Plenty Canada. Plenty USA had access to money from the Canadian International Development Agency (CIDA) for their carpenters in Guatemala who were rebuilding after the 1976 earthquake there. But before Plenty could get this money, they had to establish a branch or chapter of Plenty USA in Canada. Allan happened to be the person on the other end of the line when someone from Plenty USA phoned from Tennessee. He and Susan were living on a little farm outside of Halifax, so in about March of 1976, as they passed through Halifax on their way to Lanark, Ontario, Allan incorporated the organization as "The Plenty Relief Society of Canada"; it later came to be known as "Plenty Canada." After doing the required paperwork, Allan and Susan went to Lanark to live on a piece of land with four friends who wanted to help Plenty: Bob Leviton, Ormond Lee, and Larry and Nancy McDermott. There was no "Farm" yet in Lanark and the four friends did not come from the Farm in Tennessee, but they felt akin to it. Starting immediately and for the next two years Allan ran "Plenty Canada" out of his bedroom in Lanark. But he didn't know what to do. So he and Susan would hitchhike 60 miles each way into Ottawa in winter to talk with the Mennonites about what to do and what an NGO (non-governmental organization) is. When the first money came in after about 6-8 months it brought tears to Allan's eyes; it was $50 for an individual donor who had been referred to Allan by The Farm in Tennessee. Allan worked on getting Plenty's credentials and making the organization "respectable." In early 1977 (it was winter) Allan and friends organized a "Plenty Jamboree" (a large benefit for Plenty) in a rented hall at McDonalds Corners (which was 6 miles from the Farm). Not long thereafter, money began to flow from CIDA to Plenty USA's work in Guatemala. In the spring of 1977 the papers for the Canada Farm in Lanark were finalized and signed in Tennessee. The land was in Larry McDermott's name.

In the spring of 1978 Allan stepped down as director of Plenty Canada. Norman Ayerst, Allan's closest and most trusted friend, took the job for the next two years. After that Larry McDermott became the director and continued for many years. In 1984 the Canada Farm disbanded. Larry and Nancy McDermott kept the land (since it was in their name) and continued to live on it.

In the late 1980s, Plenty had a great reputation for delivering good development projects. Adequate salaries were paid to those who put their life into Plenty and the need for additional funds necessitated a shift in focus. More projects were needed to raise more money to pay for an increase in expenses, and Plenty got those projects because of its shining reputation. But soon Plenty became too big for its management to handle. Communication and management

skills were lacking, and Plenty's effectiveness was greatly diminished during this time.

Allan and Susan now own ten acres of land near McDonalds corners and what used to be The Farm in Lanark. They run Noble Bean, a tempeh shop. Allan has been making tempeh commercially since mid-1979. A map of the area (in southeastern Ontario province) looks like this: Lanark is 16 miles east of McDonalds Corners, and Noble Bean is about 8 miles west of the Corners, past Elphin. To get to Plenty (on the former Farm) from McDonalds Corners, drive east about 3 miles, then turn north and drive 3 more miles. The nearest main towns are Perth (on Hwy. 7–Trans-Canadian Southern Route) and Lanark. Address: Founders, Noble Bean, R.R. #1, McDonalds Corners, ON K0G 1M0 Canada. Phone: 613-278-2305.

3096. Roblin, Lynn. 1998. Asian staple soy good for you. *Toronto Star* (*Ontario, Canada*). May 20.
• ***Summary:*** Discusses the health benefits of soyfoods, which may be caused by their rich content of isoflavones, soy sterols, and soy protein. Various soyfoods are discussed: Tofu, soy beverages (brands include So Good and ProSoya So Nice), soy cheese, texturized soy protein (TSP, such as So Soya made by Bay Hill Impex Ltd. and TVP Meatfree made by Health Haven: A Vegetarian Place), tempeh, and most soy flours.

3097. Hainer, Cathy. 1998. Oh, 'soy' wonderful! Shucking its hippie image, the bean goes mainstream. *USA Today.* May 29. p. 08.D. Final edition.
• ***Summary:*** "Over the years, soy products, particularly tofu, have been derided as weird hippie food. But now the soybean is a nutritional star, and baby boomers are integrating soy products such as miso and tempeh into their upscale cooking."

Also discusses miso, tempeh, soynut butter, tofu burgers and soy cheeses.

3098. *Travelin' Light* (*Lightlife Foods, Greenfield, Massachusetts*).1998. It was twenty years ago today... or thereabouts. Spring/Summer. p. 1-2.
• ***Summary:*** This is a nice history of the Tempehworks / Lightlife Foods. "In the late 1970s, in the hill towns of western Massachusetts, a unique mix of socially responsible, alternative lifestyle cottage industries were springing up. Frances Moore Lappé's influential book *Diet for a Small Planet* had just come out, articulating the benefits of a non-meat-based diet on both personal and planetary health. A founding partner in one of America's first natural foods tofu companies, Laughing Grasshopper Tofu, Michael was often asked by customers if anyone was producing tempeh. Sensing opportunity, Michael set out on his own to learn the craft of making tempeh and start a very small business. Initially called Tempehworks, the business was born in early 1979 in an abandoned car wash and soy tempeh was the sole product.

"When Chia Collins joined Tempehworks in 1980 there was no business plan and little structure to the organization. Chia's talents were an immediate asset to the upstart company."

"In the early years of the company, tempeh was still an unusual and unknown food and vegetarian diets were not common or well understood. Struggling to pay the bills, Chia and Michael suddenly realized that utilizing tempeh alone to accomplish their mission of converting people to a plant based, rather than meat based diet would take a tremendous amount of consumer education–far beyond the company's meager budget for such marketing activities. Their innovative solution to this dilemma was marketing products that were already familiar to their customers while still bearing the benefits of protein from plants. Enter, meatless alternatives to America's favorite foods: hot dogs and hamburgers.

"So, in 1984 the company changed its name to Lightlife Foods, moved to a larger location (this time a retired trucking terminal) and Tofu Pup hit the market. A delicious vegetarian hot dog made from tofu, Tofu Pups were an immediate success and Michael and Chia knew that they were onto something big. Vegetarian products were here to stay and the two soy entrepreneurs were more determined than ever to make Lightlife the leader in the field. In 1988 the company took a leap of faith, and with considerable support from the local community, received financing to expand its operations to meet the growing demand. Tofu Pups were soon followed by Smart Dogs, the first fat-free hot dog (and today, the country's best-selling meatless frank) and Smart Deli Slices, Lightburger and more."

Old black-and-white photos show: (1) Michael Cohen holding a jar of tempeh starter Culture, 1980. (2) Employees of the Tempehworks circa 1980. (3) Making tempeh at Tempehworks circa 1980. (4) Chia look over a tray of tempeh, 1981. (5) Chia Collins at her desk in 1985. (6) Michael Cohen on the phone at his desk, 1986. (7) The Tempehworks chorus line, 1987. (8) Three people Lightlife booth at Natural Products Expo, 1995. (9) Nine people Lightlife booth at Natural Products Expo, 1997. Address: Address on envelope: P.O. Box 870, 74 Fairview Ave., Greenfield, M 01302.

3099. **Product Name:** Tofurky Deli Slices [Hickory Smoked, Original Style, or Peppered].
Manufacturer's Name: Turtle Island Foods, Inc.
Manufacturer's Address: P.O. Box 176, 601 Industrial Ave., Hood River, OR 97031. Phone: 1-888-TOFURKY (863-8759).
Date of Introduction: 1998. May.
Ingredients: Hickory Smoked: Water, vital wheat gluten, tofu (water, soybeans grown without herbicides, pesticides,

or chemical fertilizers {and calcium sulfate coagulant}), white beans, garbanzo beans, natural vegetarian flavor, expeller pressed canola oil, shoyu (water, soy beans, wheat, salt), spices, lemon juice, calcium lactate from beets, salt. No nitrates or MSG.
Wt/Vol., Packaging, Price: 5.5 oz (156 gm) vacuum pack. Retails for $2.49 (2002/03, Lafayette, California).
How Stored: Frozen or refrigerated.
Nutrition: Per 1.5 oz (43 gm) serving.: Calories 120, calories from fat 15, total fat 1.5 gm (2% daily value; saturated fat 0 gm), cholesterol 0 mg, sodium 286 mg (12%), total carbohydrate 14 gm (dietary fiber 2 gm [8%], sugars 0 gm), protein 13 gm. Calcium 2%, iron 7%. Percent daily values are based on a 2,000 calorie diet.
New Product–Documentation: Leaflet (8½ by 11 inches, color) sent by Seth Tibbott. 1998. Published in May. "The famous Tofurky. Now available in Deli Slices." The product comes in two flavors: Original and Hickory Smoked. The back contains information on ingredients, nutrition facts, and quotes from satisfied consumers.

Postcard (color, 4 by 6 inches) sent by Seth Tibbott. 1998. "New! Tofurky Deli Slices. 100% vegan. Low fat." The text on the back reads: "Now you can enjoy the great taste and texture of the Famous Tofurky all year long!" Talk with Seth Tibbott. 1998. Nov. 18. Original and Hickory Smoked were introduced in May 1998. The Hickory is smoked in a real smoke house. Product with Label sent by Seth Tibbott. 1998. Dec. 16. Both flavors. 5 by 8 inches. Hickory Smoked is black, yellow, red and white. Original style is Red, black, white, and yellow. At top of front panel: "Low fat. 100% vegan." At bottom: "Tastes great cold or hot."

Product (Hickory Smoked) with Label purchased at Safeway supermarket in Lafayette, California. 2002. March 11. Product evaluation: Excellent taste, texture, and packaging.

Letter (e-mail) from Seth Tibbott. 2009. Jan. 25. Peppered Deli Slices were first sold commercially in Sept. 1998.

3100. White Wave, Inc. 1998. White Wave (Website printout–part). www.whitewave.com. Printed June 21.
• ***Summary:*** Contents: Home page. 1. About White Wave (Mission statement, brief history; 1 p.). 2. About soy (Nutritional benefits; 1 p.). 3. Related sites/links (Vegetarian / soy / natural foods, sites about Boulder, Colorado; 1 p.). 4. What's new. 5. Product info, questions and answers (Name of all products with nutritional, ingredient, and package view information; Frequently asked questions; Questions about allergies; How do I cook with this stuff; 6 p. total). 6. Where to find our products (Directory of retail stores). 7. Special offers (Books and bumper stickers which can be ordered from White Wave; 1 p.). 8. Recipes (8 pages of recipes for tofu, tempeh, and Silk soymilk on 3 x 5-inch cards).

"White Wave's mission is to creatively lead the full integration of healthy, natural, vegetarian foods into the average American diet. 'Our interest is in promoting the use of foods we consider the world better off *with,* rather than without.' Steve Demos, president of White Wave.

"Founded 20 years ago in 1977 as a small tofu company, White Wave, Inc. has grown to become one of the largest soyfoods manufacturers in the United States and a leader in the vegetarian foods industry. White Wave's reputation for quality, consistency and innovation has led its sales to grow 20% annually over the last 6 years." Address: 1990 North 57th Court, Boulder, Colorado 80301. Phone: 303-443-3470.

3101. Brown, Allan; Brown, Susan. 1998. Making tempeh and other natural foods at McDonalds Corners, Ontario, Canada (Interview). *SoyaScan Notes.* June 22-24. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** In June 1985, after about 5 years in Toronto, they bought ten acres of land near McDonalds Corners (not far from The Farm in Lanark, Ontario), and moved Noble Bean onto that land. There they started to make tempeh.

Throughout the 1980s, Allan and Susan trained Plenty volunteers at Noble Bean to make tempeh; these volunteers then took that knowledge abroad–mostly to developing countries. Maya Clarke took it to St. Lucia, Peter Dudding to Sri Lanka, a Canadian lady to Lesotho, and Mario and Laura Rimoldi [not Rimaldi] to Barcelona, Spain. Allan and Susan had met the Rimoldis on The Farm in Lanark in 1983; they later started making tofu as well in Barcelona.

Also during the 1980s, the Browns started some new businesses to bring in additional income. First came a natural cookie company named Casey's Cookies–after their firstborn son, Casey. Soon they were selling 40 to 60 dozen organic Casey's Maple Pecan and Honey Walnut cookies into the Ottawa market. In 1990 they sold the cookie company and took a trip/vacation to Mexico in their camper. On the way, they stopped by The Farm in Summertown, Tennessee, where they stayed with their old friends Cynthia and Albert Bates–who had taught them how to make tempeh and tempeh starter in 1974. Now the Bates were "deep into the Mushroom People trip. They were pumpin' the spores into logs out in front of their home with major rock and roll going on in the woods." Again the Bates taught the Browns a new occupation–how to grow shiitake mushrooms. Back home in Ontario, the Browns grew shiitake on about 25 logs outside their home–but mainly for their own consumption, because it was a very labor-intensive process. Soon, however, they were buying and re-selling shiitake–which they do to this day. Later, they started an incense import business named Soul Scents, which soon became the most profitable of all.

The Browns now make 600 lb/week of tempeh, working 3 days each week. It is still a very hands-on process. Allan and Susan are both active in the tempeh-making process (they also share child care), but now they have hired a

woman who does much of the physical tempeh work. Most of Larry's time is focused on Soul Scents. Allan has always believed that vacuum packaging lowers the quality of tempeh. Their business has not grown in the last 5 years. He thinks it is because of the influx of meat analogs. Seth Tibbott did a survey before the Bali conference which showed that tempeh production in the USA peaked in 1989 or 1990. But several years ago Allan and Susan started an import business which has sales of $250,000 last year, so they are now in good shape financially. Two other tempeh companies in Canada are Soy City Foods in Toronto (they make mostly tofu; their tempeh is sold mostly in large cakes to foodservice) and Sooke Soyfoods in Vancouver, BC (owner Wayne Fatt gets plenty of competition from Seth Tibbott's Turtle Island Foods in nearby Oregon). Address: Founders, Noble Bean, R.R. #1, McDonalds Corners, ON K0G 1M0 Canada. Phone: 613-278-2305.

3102. Clarke, Maya. 1998. Learning how to make tempeh at Plenty Canada and introducing it to Sri Lanka (Interview). *SoyaScan Interview.* June 25. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Maya learned how to make tempeh at Noble Bean in Toronto during a two-week training program in the summer of 1984. She had been close friends of Norman and Sarah Ayerst, who worked with Plenty in Dominica, and who lived in back of the old Kensington Market in Toronto. Through Norman and Susan, Maya first met Susan and Allan Brown in Toronto, and specifically asked for that training–it was her idea, and that idea may have started a new program. She worked about 8-hours a day and soon was able to do the full production cycle. "Allan and Susan were very good teachers and really wonderful, interesting people." Maya went to Sri Lanka in September 1984; there she made tempeh and taught others how to make it. Maya thinks that she may have been the first person to be trained by Noble Bean to make tempeh in a developing country. Chuck Haren was also trained in about 1984, but probably on The Farm in Tennessee. Address: Sun & Sky Foods, 859 Dundas St., London, Ontario N5W 2Z8. Phone: 1-888-441-6680.

3103. Tamang, J.P. 1998. Role of microorganisms in traditional fermented foods. *Indian Food Industry* (*Mysore, India*) 17(3):162-67. May/June. [22 ref]
• ***Summary:*** This article is mainly about the benefits of fermentation and fermented foods. Contents: Introduction (main microorganisms are filamentous fungi, yeasts and bacteria, especially LAB = lactic acid bacteria). Biopreservation. Bioenrichment. Microorganisms that produce enzymes. Microorganisms that destroy undesirable components. Enrichment of the diet. Mixed starter culture. Traditional fermented foods of medicinal value (koumiss, kvass). Conclusion.

The following fermented soyfoods are mentioned: Kinema, hawaijar, miso, natto, shoyu, tauco, and tempe [tempeh]. Koji is also mentioned.

"Fermented foods are defined as foods that have been subjected to the action of selected microorganisms by which a biochemically and organoleptically modified substrate is produced, resulting in an acceptable product for human consumption." Address: Microbiology Research Lab., Dep. of Botany, Sikkim Government College, Gangtok, Sikkim–737 102, India.

3104. *Vegetarian Times.*1998. I can't believe it's not turkey: The name Tofurky may be funny, but its taste sure isn't. June. p. 18.
• ***Summary:*** The name "Tofurky" was designed to be amusing. but the flavor is no laughing matter–it's great. Tibbott, age 46, donates 1% of the company's $1.2 million gross income to the Adopt-a-Turkey program run by Farm Sanctuary, an animal welfare group. Contains a brief history of Turtle Island Foods, which takes its name from Native American Folklore. During 1997 Turtle Island Foods saw a 196% increase in sales over the previous year. Color photos show: (1) Seth Tibbott, with beard and glasses. (2) Sliced Tofurky. Note: Seth Tibbott's name is misspelled as "Tibbot" throughout this article.

3105. Bramblett, Billy. 1998. Company history: Wildwood Natural Foods (Continued–Document part II). Fairfax, California. 10 p. Unpublished typescript.
• ***Summary:*** "The evolution: On January 2, 1982, there was a major flood in Marin County." The company was hit hard. By February Bramblett and Rosenmayr had attended a computer seminar and were convinced the company had better get computerized. "By March the new structure was set. Mr. Orbuch was in charge of production and distribution; Mr. Bramblett was in charge of tofu production, accounting, and administration."

Meanwhile Orbuch and Bramblett continued toward their goal of building sales to $10,000 per week "and started looking into other small manufacturers that made similar products. Our first 'other distributed' product was the Solar Taco made by Rademacher/Worley Farms in Cotati. This product had been on the market for a year or two, but they did not have their distribution together. We also found some sub-distributors to take our products to West Marin and Sonoma County."

Bramblett "arranged for the purchase of an Apple computer along with accounting, spread sheet, and word processing software. The bookkeeping was transferred to the computer and soon Wildwood had timely financial reports that were used to analyze the operations. One of the main sources of financial loss were the returns. Wildwood had a policy from the get-go to guarantee sales. That meant that any product not sold by its 'pull-date' was credited to the store to which it had been sold. It was the job of the

distribution department (Mr. Orbuch & the route drivers) to keep this return rate low by correctly estimating how many sandwiches (and other products) would sell before their respective pull dates and deliver that amount to each store on each delivery day. Unfortunately, this was a difficult task and the return rate was about 15%, which was way too high for WNF to make a profit. Mr. Bramblett tried using the spread sheet program to analyze old sales data in order to make accurate predictions for the future. The computer did not have enough memory to accomplish this task. Fortunately, we had a sandwich maker who was a computer programming school grad and who agreed to write a program for the computer which would do all our invoicing and sales tracking as well as predict future sales and help us lower the return rate. He did so and, although the prediction part was way too cumbersome to deal with, Wildwood soon had a billing and sales analysis tool that we still use today.

"Meanwhile, we increased our product line to include baked and vacuum packed tofu, broadened the sandwich line to include avocado and cheese sandwiches as well as bean and rice burritos, and varied flavors of the BRT. We also refined the salad line and expanded the routes into the peninsula and Santa Cruz areas. By 1984 we were profitable enough to have bought out Mr. Duchesne, return the extra $2500.000 that Mr. Bramblett, Mr. Orbuch, and Mr. Rosenmayr had kicked in, as well as pay a dividend of $12,000 to each remaining partner, effectively returning the entire investment in five years, which is equal to a 20% per year return on investment. The partners decided to form a new partnership to buy a piece of property in Fairfax, on which they could expand WNF. And so they did, right down the street, at 31 Bolinas Road.

"The property was a three lot parcel, which housed a funky car repair facility and which was a major eyesore. The actual purchase and all the trials and tribulations we went through with the town is a-whole-'nother story. Suffice it to say that, it was a major pain in the ass which is well documented in the local paper of the day *The Fax*. We also endured major problems from Sherman Chickering, who lived in a neighboring house, but I won't bore you with that story either.

"Also during 1984 we met Jeremiah Ridenour, who owned a major piece of Santa Cruz Tempeh and who aspired to make 'local tofu' in Santa Cruz. He had seen our products and wanted to join up with us in creating a mid-size tofu operation in Santa Cruz to replace one that was about to fail. He had space for such a project in the building that housed the tempeh factory. The concept was also to be able to bolster tofu production output, which was nearing the limit in Fairfax.

"So a new corporation was formed which included Mr. Orbuch, Mr. Bramblett, Mr. Rosenmayer, and Mr. Ridenour. This was called Wildwood Natural Foods, Santa Cruz, Inc. So, while Frank was renovating 31 Bolinas in Fairfax, Jeremiah was renovating the Mansfield Ave., Santa Cruz, location to house a new, steam cooking, pump-moving, ass-kicking modern hi-tech, but still hand-made, tofu factory.

"We soon realized that the Santa Cruz location would also serve as a distribution point and so it did, and still does. WNF (or 'north') maintains an office and several employees in Santa Cruz and operates four routes from that location. The downside of this whole Santa Cruz trip was that it took twice as along and cost twice as much to get underway as originally planned. Wildwood Natural Foods, Santa Cruz, Inc. did not produce a profit until 1991. Since it was a 'Subchapter S' corporation, the partners were able to take a tax loss on this project, but the grim reality was that north supported south and gave away many things to help it along (e.g. the very profitable soymilk production). This became a bone of contention between the partners.

"Meanwhile, north flourished, saleswise. Taking on new product lines for its distribution line, willy-nilly, sales grew incredibly. Mrs. Wiggles Rocket Juice led the way. Solar Tacos extended their product line and several different salsa lines were tired, with varying success. We also started distributing Brightsong Tofu products, most notably various salads to Diet Centers and a new soy cheese product called Tofurella. We also picked up Grainaisannce's mochi and amazake products. These 'distributed' products or 'manu prods,' as we called them, yielded low margins, 15% to 20% and it became increasingly difficult to manage the inventory. Additional walk-in space was built and purchased. The philosophy was to fill up the trucks that were going to the stores already to maximize the delivery efficiency. The short sighted part of this was that it began to take the drivers much more additional time to drive the route. The upside was that we began to have more clout in the stores and could get more and better shelf space.

"Growth takes a toll on cash flow and, in fact, the lack of that foresight nearly wiped Wildwood out during this incredible growth period. Time and again short term, no interest loans were made by the partners to bolster cash flow while we grew sales to $100,000.00 per week. The administrative burden became much heavier during this period and the office space became cramped and unworkable. Mr. Bramblett left the company in early 1990 and Mr. Orbuch ran the north for the next two years. In 1990, the north suffered losses of nearly $100,000.00 and nearly failed. Mr. Orbuch tried to make the company appear profitable in 1991, by eliminating key positions and programs, e.g. product development and product control. This did effectively save money but the infrastructure was severely damaged." Address: Wildwood Natural Foods, 135 Bolinas Rd., Fairfax California 94930. Phone: 415-485-3940 X-47.

3106. Leading Edge Group. 1998. The health and natural food market: Past performance, current trends, and strategies for the future. 2171 Jericho Turnpike, Suite 200, Commack,

NY 11725. 330 p. July. Price $1,995.00. *
• ***Summary:*** Three past editions of this report have been published by Business Trends Analysts, Inc. (BTA), which is located at the same address as The Leading Edge Group. BTA is the parent company. Since it was founded 20 years ago, it had published reports under two brand names, each of which has a different style. Business Trends Analysts Reports tend to contain mostly secondary research, with an abundance of charts and graphs, and less text and analysis. Leading Edge Reports are conducted by a person with a specialty in that area. The report contains much more primary research and in-depth analysis, and is roughly twice as expensive. This report was conducted by Melina Laverty.

Chapter 5 of this report is titled "Soyfoods and alternative meat products: Market dynamics.

Overall report–Contents: 1. Executive summary. 2. Overall market dynamics (including Soyfoods). 3. The market for soy foods. 4. The market for herbal teas. 5. The market for dairy foods. 6. The market for grains and cereals. 7. The market for frozen foods. 8. The market for snack foods. 9. The market for groceries. 10. The health food consumer. 11. The health/natural food store industry. 12. Competitor profiles. 13. Industry directory. Address: Commack, New York. Phone: 516-462-2410.

3107. Robertson, Robin. 1998. The soy gourmet: Improve your health the natural way with 75 delicious recipes. New York, NY: Penguin/Putnam/Dutton. xv + 191 p. July. Introduction by James W. Anderson, M.D. Index. 21 cm. A Plume book.
• ***Summary:*** Contents: Foreword. Introduction: Health benefits of soy protein, by James W. Anderson, M.D. 1. The soy solution. 2. Soy what? (soybeans, tofu, tempeh, textured soy protein or TVP, soy milk, miso, soy sauce, soy flour, dry-roasted soybeans or soy nuts, soy convenience foods, egg replacers). 3. Making soy protein work for you. 4. Breakfasts. 5. Let's do lunch. 6. What's for dinner? 7. Desserts. 8. Shakes and more. 9. Sample menus. Glossary (In addition to the soy foods described at Chapter 2: Gomasio, soy cheese, soy protein powder, and tamari soy sauce).

The author, who is a woman, worked as a professional chef during the 1980s, when she used large quantities of meat, eggs, and dairy products to prepare dishes in classic cuisines, such as French and Italian. In 1987 she made a dramatic change in her life, when she decided to stop working in professional kitchens, and start to pursue a healthier lifestyle, becoming a vegetarian, eliminating all meat and dairy products from her diet. Having lost both parents to heart disease and stroke, she had a personal interest in helping people learn how to cook and eat properly. Using soy products such as tofu, tempeh, and soy milk, she was able to recreate her favorite old recipes–sautéed dishes with cream sauces, rich pasta dishes, and even delicious cheesecakes–all without cholesterol. But these soy foods actually offered a double benefit, for recent scientific studies show that they actually reduce cholesterol levels.

3108. Yayasan Tempe Indonesia (Indonesian Tempe Foundation) (Leaflet). 1998. Jakarta, Indonesia: Yayasan Tempe Indonesia. 3 panels each side. Front and back. Each panel 21 x 9.5 cm. Undated. [Eng]
• ***Summary:*** The inside left panel states: "Yayasan Tempe Indonesia (Indonesian Tempe Foundation) was founded in Jakarta on April 11, 1995 by Emmy Hartati Yunizar, S.H. Solicitor.

"Founders: 1. Prof. Dr. Mochamad Adnan. 2. Prof. Dr. Darwin Karyadi. 3. Dr. Sapuan. 4. Dr. Noer Soetrisno. 5. Dr. Mary Astuti. 6. Akil Dermawi.

"Advisory board: 1. Prof. Dr. Mochamad Adnan. 2. Prof. Dr. Darwin Karyadi. 3. Akil Dermawi.

"Executing board: 1. Dr. Sapuan. 2. Dr. Noer Soetrisno. 3. Dr. Mary Astuti. 4. Dr. Suyanto Pawiroharsono. 5. Dr. Hermana.

"General Secretary: Tri Hesti Murti. Secretary I : Kiki Partini. Secretary Il : Dr. Suparmo. Secretary III : Mifta Roswita. Secretary IV : Eddy Sukmono. Treasurer 1: Mohamed Hartono. Treasurer 2: Hartini.

"Members: 1. Prof. Dr. Soeharto. 2. Prof. Dr. I. Sudigbia. 3. Dr. Arsiniati M. Arbai. 4. Dr. Slamet Sudarmadji. 5. Danaswara Madjid. 6. Dr. Mien Karmini."

The inside right panel states:

"The objectives: (1) To encourage community attention about the positive value of tempe as a healthy and nutritious food based on economical basis. (2) To encourage the modernization of tempe industry which meet the requirement of general manufacturing practices (GMP) and environmental adaptive. (3) To disseminate knowledge of tempe and its aspects. (4) To accomplish tempe product industrial development in all kinds, even as a first generation, second generation, and third generation. (5) To communicate the information exchange between the experts side and the industrial side. (6) To organize the rewards for people who put the greater interest on tempe development.

"Board activity: (1) To publish the regular issues, books, and to collect the references of tempe on related aspects. (2) To execute discussion, seminars, and meetings at national and international levels. (3) To make an inventory of tempe processing steps, problems faced and proposed solutions. (4) To make an inventory of tempe researches and distribute its related information to the interest groups. (5) To support research initiatives concerning many aspects of tempe. (6) To promote the establishment of industrial tempe plant which has awareness of environmental aspects. (7) To popularize tempe menu through a tourism promotion activity. (8) To organize the event of tempe exhibition in national and international levels. (9) To support training programs for tempe processors, particularly for the new tempe producers. (10) To promote research activities on tempe related matters

for the university graduate students."

The inside center panel concludes: "Tempe is also known as a low-cost source of protein, which traditionally produced by small and medium scale home industries, and characterized as the industry that only required less capital, simple management, and poor handling practices which might neglect standard hygiene requirements.

"More than hundred thousands of tempe producers which are scattered all over Indonesia are able to provide job opportunities in the processing as well as marketing activities. With regards to the attempt of meeting the consumers demand for a modified non-conventional tempe product which is ready to eat, it is recognized that the further development of the tempe in the down stream industry scale plant has a greater prospect.

"Considering these reasons, The Yayasan Tempe Indonesia (Indonesian Tempe Foundation) is established, as the organization of experts and practitioners who put concerns and awareness of the promotion of tempe, through developing its scientific knowledge, industrial aspects and nutritional value."

The back panel shows an overhead view of: "The Center of Legume Product Development, Cibitung Bekasi, West Jawa [Java], Indonesia.

Note: This undated leaflet was sent to Soyfoods Center on 14 Aug. 1998 by Dr. Sapuan. A cover letter was typed with signature on Yayasan letterhead. This English-language leaflet could well have been published as early as 1995 or (more likely) 1996. Address: Secretariat: Bulog II Building, Jl. Kuningan Timur M.2/5, Jakarta Selatan 12950, Indonesia. Phone: (021) 520-7239; email amirh@indo.net.id.

3109. Castillo, Joaquím; Dunn-Meyell, Catalina Mary. 1998. Re: Three pioneering soyfoods companies in and around Barcelona, Spain. Letter to William Shurtleff at Soyfoods Center, Aug. 17. 3 p. Handwritten, with signature. [Eng; Spa]
• ***Summary:*** This letter was written first in Spanish, then sent back with an English translation done by Joaquim's wife, Catalina, who is English. For the last ten years Joaquim has been involved in the sale of a variety of ecological products, such as recycled stationary. He is currently contemplating a change in career and is looking at production of organic foods, which appears to be a very promising field in Spain. The region of Catalunya, of which Barcelona is the capital, has always been the pioneer in Spain with respect to organic products.

The three companies are: (1) Vegetalia S.L., c/ Placa de l'era S/n. 08183 Castellcir (Barcelona). Phone: 93 866-6161. Fax: 93 866-8298. Sr. Salvador Sala. They make tofu, tempeh, seitan, tofu paté, tofu hamburgers. 20 workers. Products sold mostly in health food shops.

(2) Natursoy, c/ Josep Galles, No. 36-52, 08183 Castell Tercol (Barcelona). Phone: 93 866-6042. Fax: 93 866-6250. Sra. Carmen Ascension. Vegetalia and Natursoy used to be the same company, but they separated a few years ago. They make different types of tofu, seitan, hamburgers, etc. They also import organic products; cereals, biscuits, fruit juices, etc.

(3) La Sojeria–also situated in Barcelona. "I have been unable to obtain information about them, but their distributors are: Nutresco S.L., c/ Mossen Lluis David, No. 69. 08180 Moia (Barcelona). Phone: 93 830-0166. Fax: 93 820-8404. Sr. Dionis Guiteres.

Macrobiotic community: Ecole Cuisine et Santé, Fondation Macrobiotique, Pont de Valentine, F. 31.800 St. Gaudens, France. Phone: 61 89-7514. Fax: 61 89-3607. Run by M. René Levy, disciple of G. Ohsawa. The organization continues Ohsawa's work and endeavours to make known the benefits of macrobiotics. Tofu is only produced for use within the community, which has been in existence for nearly 20 years. It is situated in a beautiful spot in the southeast of France. Address: Partida Rosers 26, E-03750 Pedreguer (Alicante) Spain.

3110. Ndungi Khoto, Aubry. 1998. Contribution a l'avant-projet d'une usine de production de *lait de soja* en poudre a Lubumbashi [Contribution to the rough draft for a factory for the production of soymilk at Lubumbashi, Congo]. Civil Engineer thesis, University of Lubumbashi, Polytechnic Faculty, Dep. of Industrial Chemistry. v + 154 + 16 p. Illust. 30 cm. [73 ref. Fre]
• ***Summary:*** Preface and dedication. Introduction. Part I: Review of the literature. 1. General information about soya and proteins: 1.1. The soybean (Botanical, origin and history, soybean production and commerce worldwide, soya in the Democratic Republic Republic of the Congo {Congo, formerly Zaire}, structure and composition of soybean seeds, utilization of soybeans {with diagram}, food uses of soybeans {oil and meal, soy flour (4 types), soy concentrates and isolates, textured soy proteins {TVP, thermoplastic extrusion, spun fibers}, soymilk, tofu, other uses (shoyu, miso, tempeh, yuba)}, industrial uses of soybeans {linoleum, plastics, paints, varnishes, etc.}). 1.2. Proteins (in the human body, in foods), the structure of proteins (amino acids, ionization and acid-base properties of amino acids), protein bonds, denaturation. 1.3. Soya proteins (glycinin or globulin 11S, globulin 7S, hemagglutinins or lectins, protein inhibitors and other antinutritional factors, amino acid composition of soy protein). 1.4 Factors affecting the food value of soya: Acceptability problem (food value of raw soybeans), intolerance to soy proteins, off-flavors in soya and their source, inactivation of lipoxygenase, other treatments affecting the food value of soya: Alkalis.

2. Preparation and properties of soymilk. 2.1. Properties. 2.2. Advantages and disadvantages of soymilk compared with cow's milk. 2.3. Preparation. 2.4. Commercial / industrial production using the Alfa-Laval process.

3. Reminder of certain operations required for the

preparation of soymilk powder: 3.1. Homogenization. 3.2. pasteurization and sterilization. 3.3. Concentration by evaporation. 3.4. Drying by atomization. 3.5. economies of energy in dewatering operations.

4. Some ideas on the methods of sensory evaluation: 4.1. The different methods. 4.2. Results and interpretations.

5. Important ideas in the study of the market, in determining the capacity of production, and in the economic evaluation of a project: 5.1. Study of the market. 5.2. Determining the capacity of production. 5.3. Economic evaluation of a project, incl. estimating fixed capital by adding capital costs.

Part II: Experimental, industrial calculations, economic calculations. Introduction. 6. Origin and characterization of the raw materials, trials for inactivation of lipoxygenase. 7. Determination of the optimal conditions for the preparation of soymilk. 8. Results of pilot plant trials. 9. Market study and determination of the capacity of production. 10. Description and calculations for the installation. 11. Economic evaluation of the project. General conclusion.

Tables show: (1) Number of people that can be supported for 1 year by the production from one acre devoted to certain crops and animals. Fewest: Beef 190. Pork 319. Poultry 457. Most: Potatoes 5,329. Split peas 6,901. Soybeans 9,075. Algae 43,200–154,000. Yeast 3,275,000. (1.1) Leading soya producing countries in 1985 (worldwide, with area, production, and yield; USA, Brazil, China, Argentina, India). (1.2) Leading soya producing continents in 1985 (North and Central America, South America, Asia, USSR, Europe, Africa, Oceania). (1.3) Leading soya trading countries in 1985. Importers: Japan, Netherlands, R.F.A. (Republique Federal Allemagne = Germany), Spain, Italy. Exporters: USA, Brazil, Argentina, China, Paraguay. (1.4) Production of soya in the Congo, by province 1970-1978 (the leading producer by far in 1978 was Western Kasai). (1.5) Production of soya in Katanga [formerly Shaba, before that Elisabethville] (1990-1994; by far the leading producer is Tanganyka). 1.6 Total production of soya in the Congo (1,000 metric tons) from 1970-1995 (increased from 1.7 in 1970-74 to 18 in 1995). (1.7) Average composition of different parts of the soybean seed. (1.8) Physico-chemical composition of soybean seed (ranges and average). (1.9). Mineral content of soybeans. (1.10). Vitamin content of mature soybean seeds and soybean meal. (1.11) Fatty acid composition of soybean oil. (1.11A) Enzymes in the soybean: Lipoxidase, urease, lipases, beta-amylase. (1.12) Properties and characteristics of the water-soluble fractions of soybean seeds. (1.12A) Variations in the solubility of proteins from defatted soy flour at various pH levels. (1.12B) Amino acid composition of soybean protein. Address: Lubumbashi, Katanga Province, Congo.

3111. **Product Name:** Tempeh.
Manufacturer's Name: Avogadro's Number.
Manufacturer's Address: 605 S. Mason St., Ft. Collins, CO 80521. Phone: (970) 493-5555.
Date of Introduction: 1998. September.
How Stored: Refrigerated.
New Product–Documentation: Clute, Mitchell. 1999. "Breaking the mold with tempeh: Praise from the chorus for *Rhizopus oligosporus." Natural Foods Merchandiser.* June. p. 71, 74. At Avogadro's Number, a restaurant in Fort Collins, Colorado, Jon Long now makes 700 lb/month of tempeh; he supplies several local eateries with fresh tempeh patties.

Form filled out by Rob Osborne, owner. 2001. May. Rob has been the owner of this restaurant for 21 years. He began making tempeh in Sept. 1998. In early 1999 he began to sell his tempeh to other restaurants in Ft. Collins. His restaurant uses tempeh in regular menu dishes such as Tempeh Lasagna (vegetarian, with spinach, basil, cheeses, etc.), and Veggie Steak Sub on a homemade baguette. Each day they also have a tempeh special; today it is Tempeh Quesadilla, which is grilled tempeh with onions, cheese, put into a quesadilla, with avocado on top.

3112. Ginsberg, Beth; Milken, Mike. 1998. The taste for living cookbook: Mike Milken's favorite recipes for fighting cancer. Santa Monica, California: CaP CURE. Distributed by Time-Life Books. 118 p. Illust. Index. 26 x 27 cm. [2 ref]
• ***Summary:*** This is a gorgeous, low-fat vegetarian cookbook in which about half the recipes use soy as a major ingredient. It is loaded with color photos (many full page), playful graphics, and good advice. Note: 100% of the proceeds from this book are used to fund prostate cancer research. The book is available at bookstores nationwide, or it can be ordered by dialing toll-free 1-877-884-5433 (LIFE). Contents: Introduction, by Michael Milken. Preface, by Beth Ginsberg. Four nutritional principles of CaP CURE to fight prostate cancer and other hormonal cancers: (1) Limit dietary fat to 15% of total energy intake (calories). (2) Eat 5 or more fruit and vegetable servings per day. (3) Consume 25 to 35 grams of dietary fiber a day. (4) Consume 40 to 60 grams of soy protein a day. "Americans have a five times higher incidence of prostate cancer than people living in Asia and eating a traditional diet. Soups. Exercise. Entrees. Soy and soybeans. Sandwiches and sides. Cruciferous vegetables. Breakfasts and shakes. Desserts. Healthy pantry. Afterword, by Donald S. Coffey, PhD, President of the American Assoc. for Cancer Research and Professor of Urology, Oncology, Pharmacology and Molecular Sciences, Johns Hopkins Hospital, Baltimore, Maryland: We are what we eat, how does food cause or protect us from cancer (ROS = reactive oxygen species), how did we lose our way?, how did our diet change ("The great apes were primarily vegetarian, consuming great quantities of vegetables that are high in fiber"), what should we do? About CaP CURE.

Soy-related recipes include: French onion soup (with

soy cheese and soy sauce, p. 20). Broccoli potato soup (with grated nonfat cheddar-style soy cheese, p. 22). Shiitake miso soup (with silken tofu and low-sodium tamari sauce, p. 22). Taco salad with a chili lime dressing (with 1½ lb fat-free soy meat, p. 26). Chinese roasted tofu salad (p. 33). Orange ginger dressing (with white miso and tamari, p. 33). Chef's salad with miso shallot dressing (and Soy Deli Slices, p. 34-35). Thousand island dressing (with tofu, p. 34-35). Chopped vegetable salad (with 1 cup edamame, p. 36). Teriyaki tofu bowl with Chinese vegetables (p. 40). Tofu dog casserole with a pretzel crust (p. 42). Soy and Soybeans (with a sidebar on "understanding tofu," p. 44-45). Lasagne with "soysage" (with fat-free vegetarian sausage, silken tofu, and soy cheese, p. 46). Spinach cannelloni with fresh tomato sauce (plus soy milk and low-fat tofu, p. 48-49). Vegetable fritatta with roasted tomato salsa (and 2 lb tofu, p. 54-55). Enchilada pie with ranchero sauce (and 1 lb soy cheese). Greek spinach pie in a phyllo nest (with tofu, p. 61; remake of spanakopita). Homemade vegetable pizza with soy cheese (p. 62-63). Vegetable reuben (with tempeh bacon strips, p. 68). Tofu egg salad sandwich (p. 72). New Deli (fat-free hot dog, p. 75). VLT with herb mustard (and fat-free tofu bologna slices, p. 76). Broccoli in soy cheese sauce (p. 78-79). Fruit shake (with soy protein isolate, p. 84). Blueberry banana multi-grain pancakes (with soy milk, p. 87). Strawberry shortcake (with soy milk, p. 96). Carrot cake (with silken tofu, p. 100-01). Devil's "fool" cake with cocoa frosting (plus silken tofu, p. 104). Tofu cheesecake with fresh berry topping (p. 106-07). Banana cream pie (with 3 cups vanilla soy milk, p. 108). Old fashioned chocolate pudding (with 2 cups cocoa soy milk, p. 109). Maple flan (with 2 cups soy milk, p. 110). Address: CaP CURE, 1250 4th St., Suite 360, Santa Monica, California 90401. Phone: 310-458-2873.

3113. Goldbeck, Nikki; Goldbeck, David. 1998. The healthiest diet in the world: A cookbook and mentor. New York, NY: Dutton (Penguin/Putnam Inc.). xiii + 561 p. Sept. Illust. General index. Recipe index. 25 cm. [840+* ref]
• ***Summary:*** This is an excellent book, with a wonderful title that lives up to its promise. Both authors are real professionals, with 25 years in the field. Contains extensive information about the importance of a wholefoods, natural foods diet, with plenty of fresh fruits, vegetables, beans, and soyfoods as sources of the many recently-discovered phytochemicals, which offer promising health benefits. The authors are fans of soyfoods, which are featured in both the text and recipes throughout the book.

In Part I: Goldbeck's Golden Guidelines, No. 5 is "Super Soy Foods" (p. 14-15) which encourages readers to "Make soy foods a regular part of your diet."

Part II is the recipe section, titled "In Nikki's kitchen: Healthiest diet recipes." The main soyfoods used in recipes are tofu (48 recipes!), tempeh (15), soy milk (14), miso (8), soybeans, whole dry (3), and soy flour (2). This book contains so many soy-related recipes that we cannot possibly list all of their names. So here are two samplers of such recipes to give a feeling of their diversity, extent, and inviting names. (1) Salad dressings and salads: Creamy miso-mustard coleslaw (p. 178). Tofu mayonnaise (p. 190). Creamy tofu Russian dressing (p. 191). Creamy tofu ranch dressing (p. 191). Lemon-tahini dressing (with soy sauce, p. 192). Creamy miso-mustard dressing (p. 193).

(2) Tempeh recipes: Tempeh strips (p. 31). Tempeh breakfast links (p. 32). Baked Italian tempeh (p. 38). Tempeh burgers (p. 39). Skewered tempeh with orange-nut crust (mini kebabs, p. 61). Maple-pecan tempeh (p. 98). Baked corn-tempeh hash (p. 98-99). Picadillo (Latin American sloppy Joes with tempeh, p. 99). Tempeh mushroom stew (p. 100). Asian grill (with marinated tempeh, p. 101). Tempeh kebabs (p. 102). Shish kebab in a bag (p. 103). Tempeh-bean chili (p. 114-15).

In Part III: Mentor, one entire chapter is dedicated to soyfoods ("5. In praise of soybeans," p. 408-29). The contents of that chapter: Introduction. Soy's special assets. The phytochemical furor. Protein plus. Soy fiber. Vitamins and minerals. Soy concerns. Soy food selection (incl. Western-style dairy and meat alternatives; soy cheese, soy ice cream, "soy-based imitation meat"). Stick with traditional soy foods: Tofu, tempeh, soy milk, soy nuts, whole soybeans (incl. edamame or green soybeans), soy sprouts, soy flour, soy grits, soy sauce, miso, okara (soy fiber), natto. Soy for health: Introduction, cancer (breast, prostate, and other hormonally influenced cancers), heart disease, diabetes, osteoporosis, women and soy, infant feeding. Nikki's dialog boxes: Mixing and matching soy protein. Just because they call it "milk": Nondairy vs. dairy. The question of salt. How to acquire your anti-cancer soy intake. Twenty-five grams of soy protein a day?

Soybeans are also mentioned in Chapter 6, "The beauty of beans" (see p. 431, 434). The 43-page bibliography of current scientific information on the health benefits of foods is worth the price of the book.

In the chapter titled "Controversial carbohydrates" is a long section about the glycemic index of foods titled "G-Force: A new perspective on carbohydrates" (p. 280-89); it includes a 6-page table showing G-force [glycemic index] ratings for individual foods. "Foods with a high G-Force [55 and above, bad] raise blood sugar levels quickly; this is usually matched by a rapid rise in insulin. Foods with low G-Force cause blood sugar levels to rise gradually. in which case insulin is usually released more evenly." Foods that tend to have a high G-Force are: Desserts and sweets (doughnut 108, graham crackers 106), foods made from refined flours (baguette 136, bagel 103, white wheat bread 100), sweet and refined breakfast cereals (puffed rice 132, Cornflakes 119, Cheerios 106), sugars (maltose 150, glucose 137, sucrose 92). Foods groups that tend to have low G-force are: Fruits (apple 54, apple juice 58, orange juice 63, but watermelon

103), legumes (soybeans 25, chickpeas 47), dairy products (yogurt 20, milk 46). vegetables (non-starchy). Address: Woodstock, New York.

3114. Marandino, Cristin. 1998. Would you like tempeh with that? *Vegetarian Times.* Sept. p. 16. [1 ref]
• ***Summary:*** Mark Tsai, a 53-year-old Taiwanese immigrant, owns a fast-food restaurant in Covina, California. A devout vegetarian, he bought a Tastee Freez franchise in 1984, but 9 years ago he converted it to an all-vegetarian menu–and renamed it Tastee Covina. His chili is made with crumbled tempeh, his hot dogs are all soy, and his burgers all start with "veggie." A color photo shows the front of the restaurant.

3115. *Soya & Oilseed Bluebook.*1998--. Serial/periodical. Bar Harbor, Maine: Soyatech, Inc. Peter Golbitz, publisher and editor. Frequency: Annual.
• ***Summary:*** Preceded by Soya Bluebook Plus. A directory and information book for the soybean processing and production industries. The first issue (shipped Sept. 1998) is subtitled "The annual directory of the world oilseed industry." On the cover, below a map of the world is printed the date "1999" in large letters, followed by "A Soyatech Publication." Crops featured on the front cover and inside are "soya, corn, cottonseed, canola, rapeseed, sunflowerseed, palm kernel, palm, coconut, and peanut."

Contents (the four main sections are marked with a fold-out tab): Translations of oilseed terminology (English, German, French, Spanish, and Portuguese). Organizations and government agencies: Complete listings by country. Oilseeds and oilseed products: White pages (Index, individual crops), catalog pages, yellow pages (complete company listing by country). Equipment supplies and services. Oilseed statistics. Oilseed reference: Oilseed glossary, standards and specifications, oilseed technical charts and tables. Indexes: Comprehensive index, internet address index, brand name index, advertiser index.

Soy-related terms appearing in the translation section (p. 9-15) are: (1) Oilseeds and products: dairy analogs, lecithin–edible, lecithin industrial, meat analogs, miso, organic soy products, soy distillate, soy fiber, soy flakes–defatted–edible, soy flakes–full fat, soy flour–defatted, soy flour–enzyme active, soy flour–full fat, soy flour–low fat, soy flour–roasted, soy flour–textured, soy grits, soy isoflavones, soy livestock feed, soy oil margarine, soy oil shortening, soy oil–crude, soy oil–edible, soy oil–hydrogenated, soy oil–industrial, soy oil–refined, soy oil-based fuel, soy protein concentrate, soy protein isolate, soy protein–hydrolyzed, soy protein–industrial, soy sauce, soy sterols & tocopherols, soy-based foods–other, soybean fatty acids, soybean hulls, soybean meal, soybean meal–full fat, soybean seed breeder, soybean seed (for planting), soybean soapstock, soybeans–food grade, soybeans genetically modified, soybeans–green vegetable, soybeans–identity preserved, soybeans–non-gmo, soybeans–organic, soybeans, whole dry, soymilk beverages, soymilk powder, soynuts, tempeh, tempeh starter cultures, textured vegetable protein, tofu & tofu products, tofu powder. (2) Equipment & services: Coagulants for tofu, soymilk & tofu processing equipment, sprouting equipment. Address: 318 Main St., P.O. Box 84, Bar Harbor, Maine 04609. Phone: 207-288-4969.

3116. **Product Name:** Tempeh Burger.
Manufacturer's Name: Sun Foods Ltd.
Manufacturer's Address: 115 McCormack St., Toronto, ON M6N 1X8 Canada. Phone: 416-766-8214.
Date of Introduction: 1998. September.
New Product–Documentation: Letter (fax) from Jon Kessler of Sunergia Soyfoods. This new product was shown at the Natural Products Expo East at Baltimore, Maryland (Sept. 9-13). The company president is Harry Ha. Fax: 416-766-8309.

3117. Heskamp, M.L.; Barz, W. 1998. Expression of proteases by *Rhizopus* species during tempeh fermentation of soybeans. *Nahrung* (*Die*) (*East Germany*) 42(1):23-28. [32 ref. Eng]*
Address: 2. Inst. fuer Biochem. und Biotech. der Pflanzen, Westfaelische Wilhelms- Univ. Muenster, D-48143 Muenster, Germany.

3118. Byrd, Deborah. 1998. Soy what? Once-bland products touted as tasty, hearty protein sources. *Contra Costa Times.* Oct. 21. p. G1, G9. [9 ref]
• ***Summary:*** Includes a brief review of nine new books that contain soy recipes, a discussion of the health benefits of soyfoods, a talk with William Shurtleff of Soyfoods Center, a glossary and brief description of several soyfoods (edamame, dry soybeans, tofu, tempeh, miso), and 5 recipes: Luscious lemon pie (with silken tofu). Tempeh simmered in red wine with *herbes de provence.* Tofu teriyaki. Chocolate velvet pudding (with silken tofu). Mushroom almond spread (with firm silken tofu). A huge color photo shows Chocolate velvet pudding in a stem glass with a sliced peach. Address: California.

3119. Black, Pam. 1998. Is soy the recipe for what ails you? *Business Week.* Oct. 26. p. 162-E18.
• ***Summary:*** The soybean gained prominence as a health food in the 1970s. Now even former junk-bond king Michael Milken is "promoting soy's potential to fight prostate cancer..." During the past decade, scientists have discovered estrogen-like active substances named isoflavones or phytoestrogens which may be responsible for "soy's health effects."

Researchers have proven that soy has cardiovascular benefits, primarily by lowering low-density lipoprotein, or LDL ("bad cholesterol"). The mechanism is not clear; the

soy may keep LDL from being oxidized to form plaques that clog arteries. Soy increases flexibility of the arteries, which stiffen and harden with age. Thomas Clarkson, professor of comparative medicine at Wake Forest University School of Medicine (Winston Salem, North Carolina) emphasizes that some amount of soy protein must be consumed for the phytoestrogens to exert cardio-protective benefits. Isoflavone pills alone will not be effective. Scientists recommend consuming 30 to 60 mg of isoflavones per day with 7-10 gm of soy protein. A table shows good sources of soy protein, plus their content of isoflavones (mg) and protein (gm): Solgar Iso-Soy powder (1 oz) 103 / 12. GeniSoy natural protein powder (1 oz) 74 / 24. White Wave baked tofu (3 oz): 52 / 19. White Wave tempeh (3 oz) 47 / 18. Edensoy original drink (soymilk, 8 oz) 41 / 10. Soyboy Not Dogs (1.5 oz per dog) 35 / 7.

Soy's effects on cancer are less conclusive; most researchers doubt that soy is harmful. Soy has great appeal to women approaching or past menopause. Nutritionists think soy phytoestrogens may be safer than Premarin–which may increase the risk of breast cancer.

"And for those of you who've always turned up your noses at tofu, there is good news: Soy is available in such guises as hot dogs, burgers, cheeses, and ice cream."

3120. Cowley, Geoffrey; Underwood, Anne; Springen, Karen; Davis, Alisha. 1998. Cancer & diet: Can you eat to beat malignancy? A controversial diet book is just one sign of the revolutionary new thinking about food and health. *Newsweek.* Nov. 30. p. 60-66. [3 ref]

• ***Summary:*** This cover story discusses the many phytochemicals in foods which may reduce risk of various cancers. On the cover is a huge fork piercing a piece of broccoli. The cover text reads: "Eating to beat the odds: What you need to know." On the top half of page 60 is a large color photo of a "low-risk dinner," ready to serve on a table. One of the three portions on the plate is a mixture of beans and tofu cubes. An arrow points to this portion; the caption reads: "The fiber in beans fights colon cancer. And the genistein in tofu appears to pack a disease-preventing wallop." On the facing page (61) is a "high-risk dinner" with advice to omit the grilled steak, french fries, cheesecake, soda, butter on white bread, and salad dressing. The article overstates the health benefits of soy and gives no scientific references for its many glowing assertions.

By 1986 laboratory researchers were already discovering many new chemicals in foods; in test tubes these obscure compounds were showing remarkable ability to disrupt the formation of tumors. Some expert oncologists believe that the future of cancer prevention is food. Yet the cancer death rate in America is roughly the same today as it was in 1970. Americans die of breast, colon, and prostate cancer at five to 30 times the rate of people in many parts of the world. Take breast cancer: The death rate in Thailand and Sri Lanka is 2-5 per 100,000 women; in the USA it is 30-40 per 100,000.

A comprehensive analysis published last year by leading cancer researchers concluded that "poor eating habits account for a third of all cancer–roughly the same proportion attributed to smoking." A spate of brash new books, some by physicians, argue that anyone can eat to reduce cancer risk. They offer specific advice, "from eating the right fats to upping your intake of soy." The best selling of these how-to books is *The Breast Cancer Prevention Diet,* by Dr. Bob Arnot, a nonpracticing physician who covers health and medicine for NBC. It now tops the *New York Times* best-seller list. But Fran Visco of the National Breast Cancer Coalition calls it "incredibly irresponsible." All these new books offer medical advice that is not backed by solid scientific evidence.–And so does this Newsweek article! But interesting questions arise: "Should we live on cheeseburgers until the case for soy burgers is seamless?" Most experts answer "no." If people who eat in accordance with what we know today, cancer rates would definitely drop.

A sidebar titled "Eating to beat the Big Four" gives three statistics on each of America's four leading malignancies: Estimated number of U.S. cases this year, percentage of Americans diagnosed during their lifetime, and potential reduction through diet and lifestyle. Prostate cancer: 184,500 / 17% / 10-20%. Breast cancer: 180,300 / 14% / 33-50%. Lung cancer: 171,500 / 7% / 90-95%. Colon/rectal cancer: 95,600 / 6% / 66-75%. "Breast cancer risk may be lowered by eating soy foods." "Weapons against colon cancer include calcium and fiber."

Tumors arise through a three-step process: initiation, promotion, and progression. Preliminary evidence suggests that compounds found in particular foods can interfere with each of these steps. A two-page sidebar shows each step graphically. (1) Initiation occurs when something alters a cell's genetic makeup, causing it to divide more than it should. The most common cause of such DNA damage is oxygen, from highly reactive oxygen molecules called free radicals. They steal electrons from other molecules, setting off a chain reaction that can damage DNA. Food tips: Antioxidants help neutralize free radicals. Garlic contains allyl sulfides which help limit the production of cancer-causing phase I enzymes, which are produced in the liver and break down procarcinogens. Cruciferous vegetables (such as broccoli) boost production of protective phase II enzymes that cart away chemical debris. (2) Promotion occurs when the damaged cell (a precancerous lesion) multiplies out of control to create a tumor. It soon sends out a network of blood vessels to deliver nutrients and oxygen necessary for further growth. Food tips: Tumor cells seem to grow less aggressively on low-fat diets than on high-fat. But Many experts now agree that, for cancer, the type of fat is as important as the amount. Some types of polyunsaturated fats are protective, others probably harmful. Omega-3 (alpha-linolenic) fatty acids may thwart tumor growth, whereas

omega-6 (linoleic) fatty acids may promote it. "Trans fats: Artificially processed polyunsaturates, they are the worst for heart disease, and one study linked them to increased breast-cancer risk. Found in packaged snacks" [and many margarines]. "Soy products contain... isoflavones, which act as weak estrogens, and leave less room for strong ones. One color photo shows cubes of tofu, with the caption "Soy may protect reproductive tissues." Another shows estrogen receptors on the surface of a cell. (3) Progression occurs when the tumor (a mass of rapidly dividing cells) builds itself a blood supply and starts to invade surrounding tissues. The body's own estrogen promotes fast growth of breast cells in women. "Tumor cells release growth factors that promote the development of new blood vessels a process known as angiogenesis."

A sidebar shows four cancer survivors and their diets: Any Grove of Intel, a prostate cancer survivor, has a daily glass of orange juice with green-tea extract and soy protein. Mike Milken is also a prostate cancer survivor. "A soy fanatic, he eats tofu dogs, 'not-meat' loaf, and soy cheese," plus smoothies spiked with vitamins. Christine Pirello, hostess of PBS's 'Christina Cooks,' was diagnosed with leukemia in 1983. She went macrobiotic, loading up on brown rice, cabbage, tofu, and beans, with no dairy or animal products, except for fish.

On page 66 is a long section of text on soy: "Soy foods are another good bet, especially if you're worried about breast or prostate cancer. One of the strongest promoters of reproductive tumors is estrogen. Women exposed to high levels of the hormone–through early menstruation, late childbearing, late menopause, or obesity–suffer far more than their share of breast cancer. Soy contains weak estrogens, or isoflavones, which compete with the full-strength hormone for access to cells. Isoflavones bind with cell receptors that would normally attract the body's own estrogen, but the growth signal they deliver is only one thousandth as strong. That means less cell division and, presumably, less risk that a small lesion will become cancerous. No one has tested that assumption in a controlled clinical trial, but population studies suggest that tofu, tempeh, and soy milk could have some of the same benefits as the prescription drug tamoxifen, without the side effects. Chinese women on high-soy diets had only half the breast cancer incidence of women on low-soy diets." Soy also contains "compounds known as Cox-2 inhibitors, which can impede the growth of new blood vessels." At least in a test tube, tumor cells doused with Cox-2 inhibitors stop producing growth factors that trigger growth of blood vessels.

This is another article about "magic bullets." But the big, new message from Newsweek seems to be their realization that low-fat plant-based diets can reduce one's risk of cancer–as well as heart disease, stroke, and obesity. The article ends: "The real gamble is to stick with fast food [or a standard American diet] and assume you'll be all right."

Note: This is the earliest (and only) English-language document seen (April 2003) that uses the term "soy fanatic."

3121. *Newsweek.*1998. Perspectives: Tofurky. Nov. 30. p. 23. Typed, without signature.
• ***Summary:*** This is a page of quotable quotes. "Since we didn't have the anatomy to limit us, we decided everyone can get a drumstick."

Source: "An unnamed employee at Turtle Island Foods, which makes Tofurky, a stuffed roast made from tofu and wheat gluten, with gravy and four drumsticks." Note: The drumsticks are made from tempeh.

3122. Fisher, Kate. 1998. Soy isoflavones charge onto supplement scene: Disease-preventing compounds are available in tablets. *Soybean Digest.* Nov. p. 24.
• ***Summary:*** Soy isoflavone tablets are now available from many supplement companies. Novasoy, a soy isoflavone compound made by Archer Daniels Midland Co., is the active ingredient in many of them. While many studies have shown the health benefits of soyfoods and soy protein products, few studies have been done using isoflavone tablets as supplements.

Soy isoflavones are fairly stable and able to withstand normal cooking without breaking down. There is presently no recommended daily allowance, but 30-50 mg per day seems to be beneficial, especially for post-menopausal women.

A bar chart from the University of Kentucky shows the isoflavone content of soybeans and various soyfoods (in mg per serving (svg)): Mature soybeans (170), roasted soybeans (165), green soybeans (70), tempeh (60), soy isolate (57), soy flour (45), tofu (35), textured soy protein (30), soy beverage (20), and soy concentrate (15).

3123. Oser, Marie. 1998. Soy of cooking: Easy-to-make vegetarian, low-fat, fat-free, and antioxidant-rich gourmet recipes. New York, NY: John Wiley & Sons. xviii + 264 p. Nov. Illust. Index. 23 cm. [55 ref]
• ***Summary:*** The contents of this book is identical to that published by Chronimed in Oct. 1996. John Wiley & Sons began publishing it in Nov. 1998. Talk with Marie Oser. 2000. Oct. 4. The book is now in its 7th printing. John Wiley has excellent distribution and is doing a fine job with the book. Address: Agoura Hills, California 91391. Phone: 818-707-7353.

3124. Denter, Jutta; Rehm, H.J.; Bisping, B. 1998. Changes in the contents of fat-soluble vitamins and provitamins during tempeh fermentation. *International J. of Food Microbiology* 45(2):129-34. Dec. 8. [21 ref]
• ***Summary:*** The total amount of vitamin E remained constant during fermentation, but the content of free tocopherols decreased. Figure 3 (bar chart) shows the

decrease in vitamin K-1 (34 hours vs. 96 hours) in 7 different *Rhizopus* strains during tempeh fermentation. Address: Institut fuer Mikrobiologie, Westfalische Wilhelms-Universitaet Muenster, Germany.

3125. Hills, Benjamin. 1998. New developments at Lean Green Foods in Hawaii, and moving to Chico, California (Interview). *SoyaScan Notes.* Dec. 21. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Benjamin calls from Walnut Creek, California, and would like to visit. We have lunch together, and enjoy his Ginger Teriyaki Tempeh Burger. In June of this year, Benjamin moved his tempeh manufacturing operations to Oregon, where Seth Tibbott of Turtle Island is now making all of Benjamin's tempeh. He intended to keep Lean Green Foods in Hawaii as a tempeh importer and distributor. He is making more money now than when he was making the tempeh himself in Hawaii–but not enough money to live on.

After 6 years in Hawaii, he is planning to move to Chico, California. He will keep his involvement with soy, but not as a manufacturer. He may try to market tempeh burgers at concerts on the West Coast. His girlfriend, Jean Green, a Rolpher and dancer in Hilo, plans to sell her house there and move to Chico with Benjamin.

Tempeh burgers have lost market share to the meat alternative burgers from Gardenburger and Worthington largely because of fat content, but also a little because of flavor, price, and availability (in supermarkets). Though the price difference is small, the meat alternative products are sold at a much bigger margin, which allows the manufacturers to spend much more advertising their products.

His son Bo (Bodhi), age 22, won a full athletic scholarship to Gonzaga University in Spokane, Washington, where he now plays shortstop on the baseball team. He fully expects to get drafted into the major leagues this year after graduation. He has been an outstanding athlete since he was a child, including an excellent tennis player. Address: Lean Green Foods, P.O. Box 534, Volcano, Hawaii 96785. Phone: 808-985-8563.

3126. Calhoun, Pat. 1998. New developments at White Wave (Interview). *SoyaScan Notes.* Dec. 31. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** White Wave's capacity is always being pushed to the max nowadays. Baked Tofu has really taken off in popularity, and the company is also doing more with seitan; they will soon have a line of dinners containing seitan.

White Wave still makes basic tempeh but they have decided to discontinue their line of tempeh burgers, including their popular Lemon Broil Tempeh (introduced Oct. 1986), Veggie Life Burger (May 1993), and Chicken and Prime Burgers (Oct. 1995). They have to focus on their strongest products and make best use of their production capacity.

Pat is already looking for a new building, but they probably won't need it for another two years. Major issues are: Will it be in Boulder or not. Water quality and disposal.

Jonathan Gordon of England left the company after basically promising to stay. White Wave helped him prepare his papers so he could get a Green Card. Address: Chief Financial Officer, White Wave Inc., 1990 North 57th Court, Boulder, Colorado 80301.

3127. Astuti, Mary. 1998. Soy and heart disease–Effects independent of cholesterol reduction: The role of tempe on liquid profile and lipid peroxidation (Abstract). *American J. of Clinical Nutrition* 68(6S):1522S-23S. Dec. Supplement.
• ***Summary:*** As well as being a good source of protein and vitamin B-12, tempe is also a source of iron, antioxidant isoflavonoids, and the enzyme superoxide dismutase (SOD). In vitro studies show that tempe is able to inhibit lipid peroxidation.

The effect of tempe on lipid profile and peroxide of 21 male anemic rats was also studied in vivo, by feeding 1/3 of them with tempe, unfermented soybeans, or casein diets for 11 days. Then the lipid profile, SOD enzyme, and malondialdehyde (MDA) were analyzed. In the blood serum rats fed with tempe and unfermented soybeans, the total cholesterol and triglyceride concentrations were lower than in the rats fed a casein diet. Thus tempe and unfermented soybeans both had a hypolipidemic effect. The lowest concentration of MDA was found in the rats fed tempe, and low concentration of MDA was correlated with greater activity of SOD enzyme.

The relation of tempe diets and iron to lipid profile and peroxidation was investigated using 36 rats of the Wistar strain. Diets were formulated to have high, normal, and low levels of iron. In these diets, the protein sources were tempe, casein, and a mixture of tempe and casein. After 1 month, lipid profile, iron, and MDA levels in the rats were analyzed. "The results showed that total cholesterol, triglyceride, and MDA levels decreased with the increasing amount of tempe in the diets. These studies indicate that tempe may contain substances that inhibit lipid peroxidation." Address: Faculty of Agricultural Technology, Gadjah Mada Univ., Bulaksumur, Yogyakarta, Indonesia.

3128. Golbitz, Peter. 1998. Proposed labeling rule may turn soy to gold. *Newsletter of the Soyfoods Association of North America* (*Washington, DC*). Dec. p. 1-2.
• ***Summary:*** A proposed health claim for food labeling, now under review by the S.S. Food and Drug Administration (FDA), would authorize the use of a health claim on food products which contain soy protein. The rule, published for comment in the U.S. Federal Register on 10 Nov. 1998, resulted from a petition originally filed on 4 May 1998 by Protein Technologies International (PTI) of St. Louis, Missouri. This petition summarizes years of clinical studies

related to the cholesterol-lowering effects of consuming products that contain a significant amount of soy protein. The comment period ends on 25 Jan. 1999.

According to FDA, "studies show 25 grams of soy protein per day have a cholesterol-lowering effect. Therefore, for a food to qualify for the health claim, each serving of the food must contain at least 6.25 grams of soy protein, of one-fourth of the 25 gram amount shown to have the cholesterol-lowering effect. The exact wording to be allowed on packages won't be finalized until after the comment period ends, but an example of how the health claim might be used on a package is: "Diets low in saturated fat and cholesterol that include 25 grams of soy protein per day may reduce the risk of heart disease. One serving of (name of food) supplies ___ grams of soy protein.

Since a typical serving of most soyfoods (such as tofu, soymilk, tempeh) etc. contain the required 6.25 grams of soy protein, manufacturers and marketers of these foods will clearly benefit if the rule is approved. But perhaps even more important, food processors will probably consider including soy protein products as an ingredient in a wide variety of foods ranging from breakfast cereals to pasta.

The last four proposed health claim rules were all approved by the FDA, which has up to 540 days from the original filing date to complete action on the proposal. So the two key dates to watch are January 25 and late October 1999.

3129. Arends, Hardy. 1998. Untersuchung der sekundaeren Metaboliten der mit drei neuentwickelten Inocula fermentierten Sojabohnen (Tempeh) [Investigation of the secondary metabolites of soybeans (tempeh) fermented with three newly developed inocula]. PhD thesis, Rheinische Friedrich Wilhelms Universitaet zu Bonn. 65 leaves. 30 cm. [Ger]*
Address: Germany.

3130. Allison, Karen Hubert. 1998. The vegetarian compass: New directions in vegetarian cooking. Boston, Massachusetts: Little, Brown & Co. xiii + 383 p. Illust. Index. 24 x 20 cm.
• ***Summary:*** One chapter (p. 163-210) is titled "Tofu, tempeh, and seitan." The index contains 28 entries for tofu, 23 for tempeh, 17 for seitan, 2 each for miso and for texturized vegetable protein (TVP), and 1 each for milk–nondairy and for soy grits.

On the inside rear dust jacket is a portrait photo of the author and a brief biography. Karen "was the former owner, with her husband, Len Allison, of the three-star New York City restaurant Huberts. She taught at the Culinary Institute of America and was the author of the novel *How I Gave My Heart to the Restaurant Business* (1997). She lived in New York and Maui until her death in 1997." She is the mother of three children. Address: New York and Maui.

3131. Astuti, Mary. 1998. Wanita dalam mata rantai perdagangan dan industri tempe: Laporan penelitian [Women in tempeh production and marketing (in Indonesia): Research report]. Yogyakarta, Indonesia: Lembaga Penelitian, Universitas Gadjah Mada, Departemen Pendidikan dan Kebudayaan. vii + 41 leaves. Illust. 29 cm. [Ind; eng]*
• ***Summary:*** Mary Astuti was born in 1948. Includes bibliographic references (leaf 41).

3132. Burnham, Trudie. 1998. Innovative soy cooking. Freedom, California: The Crossing Press. 95 p. No index. 15 x 18 cm.
• ***Summary:*** Contents: Preface. Introduction. Appetizers, snacks, and side orders. Salads. Dressings and toppings. Main dishes. Beverages. Desserts and treats.

The introduction begins: "Let's face it. In a society like ours, obsessed with fast, low-fat food, tofu is the ultimate answer." This is a "user-friendly guide to a soya-based vegetarian diet. Many recipes are vegan, or use a minimum of dairy foods.

The glossary of ingredients includes kelp, kudzu, lecithin, mirin, miso, nutritional yeast, oils (use expeller pressed), sea vegetables, seeds (Sunflower, pumpkin, poppy and sesame are used for eating; alfalfa, radish, red clover, and fenugreek are for sprouting), slippery elm powder, soy milk, soy sauce, soysage, sweeteners, tahini, tempeh, tofu, umeboshi plums, vinegars.

"Missing egg salad: I invented this and word seemed to travel fast and wide, because I saw it in a California deli a year later with the same name." Address: New Zealand.

3133. Fike, Rupert. ed. 1998. Voices from The Farm: Adventures in community living. Summertown, Tennessee: Book Publishing Co. xii + 164 p. No index. 23 cm.
• ***Summary:*** This excellent book (a collection of short vignettes written by various Farm members) captures the spirit and essence of The Farm, a large spiritual in Summertown, Lewis Co., Tennessee–a community that has changed the world (for the better) in many areas.

The Farm traces its roots to the late 1970s with "Monday Night Class," which was led by Stephen Gaskin, an English teacher at San Francisco State College, in California. He held free, open meetings which focused on putting the shared psychedelic experiences of those who attended into the perspective of the world's major religions. He emphasized eternal spiritual values–compassion, self-reliance, development of personal character, and an awareness of the interconnectedness of all life. After talking, Stephen answered questions from the floor, and these sometimes led to broad-ranging discussions. At each meeting there was meditation and often chanting to quiet the mind and nourish the spirit. By 1969 several thousand people were regularly attending this weekly class, and a core group of them began to consider Stephen as their spiritual teacher.

In the winter of 1969 the American Academy of Religion held its meeting in San Francisco. A group of ministers and theologians happened to wander in; they stood at the back of the class and were moved by what they saw and heard. After the meeting several of them stepped forward to invite Stephen to speak at their own congregations and classrooms across America–believing that he might be able to help heal the rift between generations. Stephen agreed and a tour was arranged. Two hundred or so of his students asked if they could come along; any who could put together living quarters on wheels joined the tour. In brightly painted school buses, Volkswagen vans, trucks and campers they left San Francisco in 1970, following Stephen as he spoke on college campuses and in churches from coast to coast. Along the way the group attracted other young people who "were searching for identity, mission, and tribe." After four months and thousands of miles, the Caravan (as it was called) returned to San Francisco. But after their shared Odyssey, the group had become a tightly-knit community–a church. They agreed to pool their money, head back to Tennessee, and buy some land.

Thus, in May 1971, at the height of the counter-culture movement, several hundred young people drove their school buses into Lewis County, southern Tennessee. They had been given permission to park (free of charge) on the Martin Farm until they could find their own land. They stayed on the Martin Farm all that summer, then in the fall purchased the Black ranch (1,000 acres)–less than ¼ mile away. They founded America's largest modern-day intentional community–The Farm. It soon became known and admired by people around the world.

It is said that The Farm had two phases–the Letting Go, which was Monday Night Class, the Caravan, and the Martin Farm. Then there was the Taking Hold–everything after that.

Farm members organized themselves on a communal basis according to a passage in the Bible's *New Testament, Book of Acts,* 2:44-45, which says: "And all that believed were together and had all things in common; and sold their possessions and goods, and parted them to all as every man had need." Each member of the community had to sign this vow of personal poverty. They ate a vegetarian diet–in fact a vegan diet, which contained no animal products, and showed many others how such a diet could be healthful, delicious, and ethical. They started a "Soy Dairy" and used soyfoods (such as soymilk, tempeh, tofu, soy yogurt, soy flour, and whole cooked soybeans) as a key protein source in their diet. They generally used what extra money they had to help impoverished people around the world–both in Third World countries and in the USA. In the late 1970s they worked with people in the village of Solola, Guatemala, to build an innovative Soy Dairy (see p. 78-80, by Doug Stevenson), then helped others start soyfoods businesses in the Caribbean. They did pioneering work in spiritual midwifery, publishing, and many other areas.

By 1977, there were 1,100 farm members and 14,000 visitors–many of whom spent the night. At the peak of its population in 1982, The Farm was home to over 1,500 optimistic young people and the young at heart; about half of these were children, since The Farm offered to raise the child of any woman who was considering an abortion. The community received 20,000 visitors that year alone, as many as 200 on any given night.

But The Farm had one major problem: How to financially support its many members, visitors, and activities. By the late 1970s The Farm had a large and rising debt, and the interest on that debt was starting to get out of hand. By 1980 morale was definitely beginning to suffer. In 1983, after much soul-searching, The Farm decided that no longer would all things be held in common, except for the land. Many people left; it was a diaspora. Each family (or person) who remained would now be responsible for its own economic survival.

From its beginnings in San Francisco in 1970, The Farm has been an experiment in spiritual communal living. This book tells the story of that experiment (up to the early 1980s) in 66 short chapters, told by many different community members. Its a magnificent, moving story, told in an "energy-based" language invented by The Farm but easily understood by all. Some members recount more than one chapter. Note: This book could be greatly improved by an index. Address: P.O. Box 99, Summertown, Tennessee 38483. Phone: 1-888-260-8458.

3134. Keuneke, Robin. 1998. Total breast health: The power food solution for protection and wellness. New York: Kensington Publishing Corp. xxviii + 416 p. Foreword by Lendon Smith, M.D. Index. 24 cm. [200+* ref]

• ***Summary:*** The key to total breast health (and preventing breast cancer) is a healthy traditional diet and lifestyle. Chapter 7, "Soybeans protect against breast cancer, has this contents: Two pro-soy quotations. Introduction. Some phytochemicals in soy and their properties. Phytic acid. Other benefits of soy for women: Osteoporosis, symptoms of menopause, symptoms of PMS, heart disease, anti-aging benefits, gallstones. Update on the politics of soybeans: Will quality be sacrificed for commercial purposes? Fermented soy foods are especially beneficial. The magic of miso: Folklore was right. The National Cancer Institute is spreading the word about soy's ability to protect against breast (and prostate) cancer. Phytochemicals in soy: (1) Inhibit the growth of tumor cells. (2) Convert cancer cells back into normal cells. (3) Block the entry of estrogen into breast cells; this is beneficial in preventing cancer. "Research shows that soy isoflavones may protect against high levels of synthetic estrogen in the diet." Soy foods include: tofu, tempeh, miso, edamame, soy sauce, soymilk, natto (fermented soybeans), soybeans and second-generation soy foods such as cheese, textured vegetable protein, and meat

alternatives such as soy breakfast links.

Contains over internationally inspired 125 recipes, incl. Tofu Cote D'Azur, and Dilled Salmon in Miso-Lemon Sauce.

A portrait photo of Robin (a woman) appears on the inside rear dust jacket. The last page of the book (unnumbered) is "About the author." Address: Norwalk, Connecticut.

3135. Ling, Kong Foong. 1998. Food of Asia: authentic recipes from China, India, Indonesia, Japan, Singapore, Malaysia, Thailand and Vietnam. Singapore: Periplus. 160 p. Illust (color). Index. 31 cm.

• ***Summary:*** A very attractive book printed on glossy paper with at least one color photo on almost every page. The introduction and essays are by Kong Foong Ling. The index, which is poor, makes the book hard to use if you are looking for particular foods found throughout Asia such as soybeans, soy sauce, miso, salted / fermented black beans, yuba [bean curd skin], etc.

Contents: The flavors of Asia. Ingredients. The Asian kitchen. China. India. Indonesia. Japan. Malaysia & Singapore. Thailand. Vietnam. Appendix.

The "Ingredients" section includes: Bean curd (incl. cotton or momen tofu, silken bean curd, deep-fried bean curd or aburage, grilled bean curd or yakidofu, fermented bean curd or nam yee). Bean curd skin [yuba]. Black beans, salted (and fermented). Hoisin sauce ("A sweet sauce made of soy beans, with spicy and garlicky overtones"). Miso (incl. red miso and white miso). Salted soy beans (incl. "yellow bean sauce"). Soy sauce (incl. light soy sauce, black soy sauce, red soy sauce, Kikkoman, tamari, thick sweet soy sauce (kecap manis–Indonesian)). Tempeh. Also: Red beans (dried azuki). Seaweed (incl. dried kelp, golden kelp, mozuku, salted dried kelp, laver or nori, wakame). Sesame (black and white seeds, tahina {tahini}). Sesame oil. Sesame rice crackers.

Beancurd or bean curd is mentioned on pages 12, 29-30, 34, 36, 88, 94, 101, 155.

Fermented bean curd: p. 25.

3136. Marcus, Erik. 1998. Vegan: The new ethics of eating. Ithaca, New York: McBooks Press. xi + 211 p. Illust. Index. 23 cm. [406 endnotes*]

• ***Summary:*** An excellent, very important book. The New Four Food Groups (p. 194-95) are vegetables, whole grains, fruit, and legumes. Legumes includes soy milk, tempeh, texturized vegetable protein, and tofu.

Dedicated to Henry Spira, a tireless defender of animals. Eric Marcus was born in 1966. Address: Bay Area, California.

3137. Rinzler, Carol Ann. 1998. The healing power of soy: The enlightened person's guide to nature's wonder food. Rocklin, California: Prima Publishing. xiv + 194 p. Illust. Index. 24 cm. [119 endnotes]

• ***Summary:*** Contents: Preface. Introduction: Not your ordinary bean, the first soybeans (history), how to talk soy (glossary of soyfoods–miso, soybean oil, soy concentrates, soy flour, soy isolates, soy milk, soy "nuts," soy sauce {shoyu, tamari, teriyaki}, tempeh, texturized soy protein {TSP}, tofu). 1. The nutritional wonder bean: Vitamins, minerals, proteins, fats, carbohydrates, fitting soy into your diet, summing up. 2. Something special in the bean: Hormones and people and plants, fabulous phytoestrogens, the safety of phytoestrogens, summing up. 3. Soy and your heart: Heart Disease and its victims, cholesterol and your heart, soy versus cholesterol, soy's cholesterol busters, beyond cholesterol, summing up. 4. Soy, the cancer fighter: The statistics of cancer, diet and hormone-related cancers, the Asian experience, how soy fights cancer, is soy safe?, a practical guide to your personal war on cancer, summing up. 5. Building better bones with soy: Your hormones and your bones, the hormone dilemma, soy and your bones, getting the calcium you need, summing up. 6. Hot news about hot flashes: What a hot flash is, soy and hot flashes, other plants that may relieve hot flashes, vitamins, minerals and hot flashes, simple lifestyle changes, summing up. 7. Cooking with soy: The joy of soy, whole soybeans, tofu, tempeh, texturized soy protein (TSP), soy flour, soy milk, soy sauces, soybean oil, miso. Appendix A: Shopping for soy through the mail. Appendix B: Directory of soy manufacturers. Appendix C: Directory of soy researchers whose studies are included in this book. Sources.

The author has written seventeen books, including *Nutrition for Dummies* (IDG) and *Estrogen and Breast Cancer* (Hunter House Books). A frequent contributor to publications such as *American Health, Woman's Day,* and the *New York Times,* she lives in New York.

Note: Another quick, generic book about soy and good health by one who is not very familiar with the subject–though the footnotes show that she consulted many publications; nothing new. The history chapter is full of errors. Address: New York.

3138. Solomon, Charmaine; Solomon, Nina. 1998. Charmaine Solomon's encyclopedia of Asian food. Boston, Massachusetts: Periplus Editions. xiv + 480 p. Color illust. ([28] p. of plates). 29 cm. [67* ref]

• ***Summary:*** An outstanding book; the color illustrations of many ingredients are spectacular and very informative. The author has an insatiable curiosity.

Contents: List of illustrations. Introduction. How to use the *Encyclopedia of Asian Food.* Acknowledgements. A-Z of Asian Food. Bibliography. Illustrated index of selective ingredients. Index of recipes. Index of alternative words and main entries.

Soy related entries: Bean curd (p. 26-28, incl, all the different types, yuba, deep-fried tofu types, fermented tofu

incl. ch'ou doufu: "Despite its overpowering aroma, slimy texture, unappetizing color and the unfortunate odor it leaves on the breath, those brave enough to partake of it consider it a delicacy").

Bean paste, sweet (p. 29. The three colors and types are red {from adzuki beans}, yellow {from mung beans, husked and split}, or black {from black soy beans}. "The pastes are usually available ready-made sweetened in cans. It is possible to make your own, starting out with dried beans." Name in Chinese: dow sa, tau sa {sweet bean paste}).

Bean paste, yellow (p. 29. Despite what the label says, this thick, salty condiment is brown, not yellow, in color).

Bean sauces (p. 29. "Made from fermented soy beans," they range in color from yellow to brown to black [sweet black bean paste]. Their consistency is more like a pastes that must be spooned from the jar than pourable tomato ketchup).

Beans, salted yellow (p. 31. Canned yellow soybeans which have been salted and fermented).

Beef (p. 31-37 incl. Teriyaki steak, Sukiyaki, Beef with black bean sauce, incl. "2 tablespoons canned salted black beans [soy nuggets]").

Black bean (p. 43-44. Black soy beans which are fermented and salted. "Some are sold in cans in a salty liquid, others in plastic bags, covered with salt crystals." Also called "preserved black beans").

Flours & starches (p. 157-61). Incl. soy flour, which is "used mostly in Japan [where it is called kinako] and China. In Korea roasted soy bean flour and fermented soy bean flour are used to make a variety of bean pastes."

Legumes & pulses (p. 206-18). A long and interesting section. All entries have a scientific name. Many have an illustration. Those found in many Asian countries (e.g., green bean, green pea) have the name in each country. Includes: Introduction, adzuki bean, asparagus bean (see winged bean), asparagus pea, black-eyed pea (a variety of cowpea), black gram, blue pea, broad bean, butter bean (see lima bean), chick pea, cowpea (see yard-long bean), fenugreek, green bean, green pea, hyacinth bean (see lablab bean), lablab bean, lentil, lima bean, long bean (see yard-long bean), moong bean (see mung bean), moth bean, mung bean, parkia, peanut, pigeon pea, red bean (see adzuki bean), red kidney bean, rice bean, sataw bean (see parkia), snow pea, soy bean (short entry), sugar snap pea, tamarind, white gram (see black gram), winged bean (China: su-ling dou; India: Goa bean; Indonesia: kecipir; Japan: shikakumame; Malaysia: kacang botor; Philippines: sigarilyas; Sri Lanka: dara-dhambala. Thailand: thua pu). Yard-long bean (this is the fresh bean known by a host of names). Recipes: Adzuki bean soup.

Master sauce (p. 232). "Also known as 'flavour pot' or 'lu,' this sauce has a base of soy sauce, water, sugar and Chinese wine or sherry, with a few variable additions..." Cooking with it is similar to 'red-cooking.'

Miso (see soy bean products). Mushrooms & fungi (p. 237-40, incl. recipe for Braised bean curd, cloud ear and vegetables, and Braised soy mushrooms). Natto (see soy bean products).

Oils (p. 258-59, incl. coconut oil, gingelly oil [sesame oil], mustard oil, palm oil, palm kernel oil, peanut oil, perilla oil, sesame oil). Note: Soy oil is not mentioned here! Okara (see soy bean products). Salads, incl. recipe for Indonesian vegetable salad (gado-gado), that calls for 4 oz. fried bean curd. Shoyu (see soy sauce).

Soy bean, dried (349). China: da dau, wong dau, hak dau, tai dau. Indonesia: kacang kedelai. Japan: daizu. Korea: jaa jang. Malaysia: kedelai. Philippines: utaw. Thailand: thua lueang.

Soy bean, fresh. China: mao dau. Indonesia: kacang soja. Japan: edamame. Malaysia: kacang soja. Recipe: Fresh soy beans with bean curd.

Soy bean products (p. 350): Miso (incl. recipe for miso soup). Natto. Soy bean paste (go). Soy milk. Tahuri (Philippine fermented tofu). Tokwa (tokwan; very firm square tofu).

Soy bean sprouts, with recipe for soy bean sprout salad. China: dai dau nga choi. India: bhat. Indonesia: kacang kedele, taugeh. Japan: daizu no moyashi. Korea: Kong namul. Malaysia: kacang soja, taugeh. Philippines: utaw. Thailand: thua-lueang.

Soy sauce (p. 351-52). Chinese soy sauce: Dark soy sauce. Light soy sauce ("Usually labeled 'superior soy'"). Mushroom soy sauce (Dark soy sauce that has been flavored with straw mushrooms). Japanese soy sauces: Koikuchi (regular shoyu), tamari, usukuchi. Korean soy sauce ("About the same colour as Chinese light soy sauce, but not as fiercely salty and with a sweet malted aroma"). Thick and flavoured soy sauces: Kecap asin ("A dark, salty soy sauce, from Indonesia, a little thicker than the dark soy of China"). Kecap manis (A thick, sweet soy sauce from Java, Indonesia). Kicap cair: "The Malaysian equivalent of light soy sauce." Kicap pekat: "The Malaysian equivalent of dark soy sauce, though thicker than the Chinese version, but not as thick as kecap manis." Ponzu shoyu. Toyo mansi (p. 352): "A soy sauce used in the Philippines soured with kalamansi juice."

Tempeh (p. 386). Incl. recipes for Savoury Tempeh and Thai style tempeh. Tofu (see bean curd).

Also discusses: Adzuki bean, agar-agar (incl. almond bean curd, awayuki), almond, amaranth, cowpea, crab in black bean sauce (recipe at crab), daikon, millet, monosodium glutamate ("I would strongly recommend omitting it"), Nonya (pronounced 'Nyonya.' The unique cookery found in Malaysia and Singapore resulting from the fusion of Malay and Chinese cuisine during the last century), peanut, peanut sauce, sago (this palm flowers only once in its life, at about age 15. Just before flowering, it builds up a large reserve of starch in the pith. The tree is felled, the pith scooped out, ground and washed to make sago starch),

seaweed (incl. agar-agar, hijiki, kombu / konbu, mozuku, nori / laver, wakame), sesame paste, sesame seed, vegetarian meals ("By far the most important vegetarian food in the Far East... is bean curd"). Address: Australia.

3139. Yeager, Selene. 1998. The doctor's book of food remedies: the newest discoveries in the power of food to cure and prevent health problems, from aging and diabetes to ulcers and yeast infections. Emmaus, Pennsylvania: Rodale Press. xiv + 610 p. Illust. Index. 24 cm.
• ***Summary:*** The chapter titled "Soy foods: Help for your hormones–Healing power" (p. 490-95) notes in the subtitle that these foods "Can help: Prevent heart disease, relieve menopause symptoms, reduce the risk of breast and prostate cancer." Contents: Introduction. In the kitchen (using tofu). Good for your heart. The joy of soy: Brief definitions of meat substitutes, soy flour (kinako–made from roasted, ground soybeans), soy milk, tempeh, texturized soy protein, tofu. Turning down the heat (hot flashes and menopause). Powerful breast protection. Protection for men (prostate cancer). Nutritional extras (Good sources of protein and other nutrients). Getting the most: Add soy products last when cooking, shop for power (it's best to eat soy foods in their unadulterated form), look for full-fat soy milk–which contains 50% more phytoestrogens than the low-fat kind. Two recipes: Soy fruit smoothie (with soymilk). Mocha tofu pudding.

Also contains chapters on sea vegetables (p. 477-81), and Thyroid disease: Foods for hormonal health (p. 528-31).

3140. Warmuth, Manfred. 1999. A quick and easy way to make a week's supply of tempeh at home using a closet as the incubator (Interview). *SoyaScan Notes.* Jan. 15. Conducted by William Shurtleff of Soyfoods Center. [1 ref]
• ***Summary:*** Manfred was born and grew up on a farm in Germany. He is interested in microbiology, likes to make his own tempeh at home, and has developed a very efficient way to do this using a closet as an incubator. He pressure cooks the soybeans to 10 psi, drains them, spreads them out on dish towels to dewater and cool, inoculates, puts into plastic (Tupperware) containers then puts into a closet. The closet should not be too small–so it is well buffered to avoid heat buildup. It is essential to put a fan in the closet to cause air circulation, leading to even heat distribution. Never grow onchom in the same place as tempeh; the onchom mold (*Neurospora*) is a terrible contaminant that is almost impossible to eradicate.

He uses a special thermostat used in growing houseplants or mushrooms that has a probe (30-inch capillary tube with sensing bulb) to measure the air temperature and can be plugged into any electric heater. He uses the GC-1 Gro-Control Thermostat assembly ($44) made by: Pro-Grow Supply Corp., 12675 West Auer Ave., Brookfield, Wisconsin 53005. Phone: 1-800-331-0590 or 414-781-1150. Fax: 414-781-6907. Temperature setting: 40-100ºF. Has a 6-foot cord with a series tap plug. The plug handles heaters up to 720 watts.

Talk with John Prasser, plant manager at Pro-Grow. 1999. Jan. 27. This thermostat, which sells for $44, is most widely used with a heat blanket, made by Pro-Grow, to regulate soil temperature for starting seeds in greenhouses and nurseries; the probe is put into the soil and the heat pad is put under the containers of soil. It is also used to control water temperature in an aquarium or fish hatchery, or air temperature in a terrarium (reptile tank). Address: Professor, Computer Sciences, 111 Overlook Dr., Santa Cruz, California 95060. Phone: 831-425-0461 or manfred@cs.ucsc.edu.

3141. Golbitz, Peter. 1999. Re: Follow-up letter concerning FDA proposed health claim for soy protein. Letter (fax) to members of the Soyfoods Association of America, Jan. 25. 1 p.
• ***Summary:*** This fax is on Soyfoods Association letterhead. "It has been brought to our attention that the proposed rule would exclude soy products that don't fit FDA's definition of 'low fat,' which is equivalent to 3 grams of fat per serving. Unfortunately, this would exclude most tofu sold in the market today, as well as soymilks that have more than 6 or 7 grams of protein per serving. This is due to the soybean's natural ratio of approximately 2:1 for protein to fat. Naturally processed soyfood products that have the minimum 6.25 grams of soy protein per serving are likely to have at least 3 grams of fat per serving. Tofu, soymilk, tempeh and soy flour products that contain more than 7 grams of protein per serving might not be able to get the proposed health claim. I don't believe that this was the original intention of FDA in proposing this rule, as they actually used tofu and soymilk in their example of products that may qualify for the health claim."

"I urge all of you to carefully examine your product's nutritional profiles, and if you feel it is important to your company, please send a comment to FDA regarding this potential problem right away... today!" Address: Soyatech, P.O. Box 84, Bar Harbor, Maine 04609. Phone: 207-288-4969.

3142. Wasserman, Debra; Mangels, Reed. 1999. Simply vegan: Quick vegetarian meals. 3rd ed. Baltimore, Maryland: Vegetarian Resource Group. 224 p. Illust. General index. Index of tables. Jan. 23 cm. 1st ed. March 1991. 2nd ed. June 1995. [29 ref]
• ***Summary:*** More than a cookbook (with over 160 vegan recipes that can be prepared quickly), this is a guide to a non-violent, environmentally sound, humane life-style. Contents: Acknowledgments. Definition of vegan. Foreword. Time-saving cooking suggestions: Microwave cooking. Introducing fat as a percentage of daily value. Sample

menus: Menu analysis. Top recipes for calcium and vitamin C. Top recipes for iron. Recipes: Beverages, breakfasts, sandwiches, snacks, salads, soups, side dishes, main dishes (pasta dishes), soy products (tempeh dishes, tofu dishes), desserts. Food definitions. Herbs and spices. Vegan nutrition: Introduction, nutrition is a science, recommendations for vegans, calories, weight gain, and weight loss, protein, fat, calcium, iron, zinc, vitamin D, riboflavin and vitamin B-6, vitamin B-12, sources of vitamins and minerals, pregnancy and the vegan diet, lactation and the vegan diet, feeding vegan kids, nutrition glossary, recommended reading list. Cruelty-free shopping by mail: Vegan food through the mail, cruelty-free cosmetics, environmentally sound household products, clothing containing no animal products, personal care vegan products, educational materials, vegan books and cookbooks, vegetarian groups and internet resources. The vegetarian resource group. Address: Vegetarian Resource Group, P.O. Box 1463, Baltimore, Maryland 21203. Phone: 301-366-8343.

3143. White Wave, Inc. 1999. Soyfood recipes for the American table: Favorite dishes from the folks at White Wave–America's soyfood company since 1977. Summertown, Tennessee: The Book Publishing Co. 96 p. Illust. with full-page color photos. Index by product. General index. 23 cm. [13 ref]

• ***Summary:*** Contents: About White Wave: Brief company history ("Entrepreneur Steve Demos founded White Wave, Inc., in 1977..."), healthy soil means healthy food (White Wave has supported organic farming practices for over 20 years). About soy. About White Wave products: Tofu, tempeh, Silk soymilk, Silk dairyless soy yogurt, Soy A Melt (cheese alternative), Seitan. Breakfast. Appetizers. Soups. Salads. Main dishes. Desserts.

A very disappointing, overly commercial "quickie" book with two main problems. (1) Every recipe calls for the use of "White Wave" soy products. (2) Many of the recipes in this book are taken from other 11 other books published by The Book Publishing Company–but we are not told which recipes are copies and which are original, or (on each page) where a particular copy came from. The color photos are attractive. This book would be fine if it were given away by White Wave to promote its products. Address: Boulder, Colorado.

3144. Soyfoods Association of North America. 1999. Soyfoods Association of North America celebrates April as Soyfoods Month (News release). Washington, DC. 2 p. Feb. 15. 28 cm.

• ***Summary:*** According to HealthFocus, a research firm located in Des Moines, Iowa, that tracks consumer trends: (1) In 1998 some 16% of U.S. shoppers use soyfoods such as tofu, tempeh, tofu hot dogs, etc.–up from 13% in 1996. (2) 10% of shoppers in 1998 are eating more soy specifically because they believe it will reduce their risk of disease–this is an increase of 3% from 1996 data.

What forces are driving this increased interest in soyfoods? (1) The double-digit increase of Asians in America. (2) Baby boomers (now in their 50s and more interested in longevity and health) fighting death, disease, and aging. (3) More and more teens and young adults are vegetarians or partial vegetarians, choosing more plant-based foods. An ADM survey found that 97% of colleges and universities now offer meatless entrees on their menu. Address: 1723 U Street, N.W., Washington, DC 20009. Phone: 202-986-5600.

3145. Demos, Steve. 1999. New developments with seitan and tempeh entrees at White Wave (Interview). *SoyaScan Notes.* Feb. 24. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** White Wave will be introducing an aseptically packaged entree line based on seitan or tempeh. The value-added tempeh product will be tempeh in a marinara sauce for use on pastas. White Wave is still making tempeh, but it has become a "back burner" product. Now, with all its value-adding equipment (ovens, texture processors, coders, flavor adders, etc.), White Wave will begin working more with tempeh.

White Wave dropped their Lemon Broil Tempeh (launched in Oct. 1986) because the product's life cycle had somewhat spent itself. The company dropped out of the burger and cutlet businesses because the competition was too fierce. White Wave wants to go more after the center of the plate rather than the luncheon-type products. "We feel the center of the plate is up for grabs. People put rice or noodles down, then what do they put on top of it?" To date, the answer has been stir-fries and sauces with proteins. White Wave will be giving them some new alternatives. In the past, the company has made the basic protein ingredient–such as tempeh–then had the rest of the product made outside of White Wave by value-added companies. In the future, they will try to make the whole value-added product in-house. Address: President, White Wave Inc., 1990 North 57th Court, Boulder, Colorado 80301.

3146. Jack, Alex. 1999. Let food be thy medicine: 750 scientific studies, holistic reports, and personal accounts showing the physical, mental, and environmental benefits of whole foods. 3rd ed. Becket, Massachusetts: One Peaceful World Press. 304 p. Index. 23 cm. [8 ref]

• ***Summary:*** This book, organized alphabetically by subject, is a very original and creative source of information, with hundreds of interesting bibliographic references. The author believes in a natural, whole-foods diet. Includes the following subjects: Alternative medicine, amasake (amazake), Asia Diet Pyramid, azuki beans, bovine growth hormone, cancer, cholesterol, coffee, complex carbohydrates, dairy food, estrogen, evolution, exercise and fitness, fats,

fiber, genetically engineered food, genetic model of health and disease, genistein, global warming, heart disease, hiziki, hunza diet, isoflavones, Japanese diet, kombu, kuzu, lignans, longevity, macrobiotics, Mad Cow Disease, meat, menopause, microwave cooking, miso, mochi, natto, nori, osteoporosis, Paleolithic diet, phytochemicals, phytoestrogens, polyps, potatoes, Price–Weston, prostate cancer, protein, rice, Schweitzer–Dr. Albert, sea vegetables, seitan, sesame, shoyu, soy foods, tempeh, tofu, umeboshi plum, vegans, vegetarians, wakame, wartime restricted (diets, incl. World War I and II), whole grains. Resources. About the author. Address: Box 10, Becket, Massachusetts 01223. Phone: (413) 623-5742.

3147. Nutrisoy Pty. Ltd. 1999. Nutrisoy: Certified organic (Sell sheet). Banksmeadow, New South Wales, Australia. 1 p. Front and back.
• ***Summary:*** A large color photo on the top two-thirds of the front panel shows a young man and woman holding hands, walking in the woods, looking at each other. Below that, the text reads: One of the healthiest foods in the world. Across the bottom are three color photos, each 2½ inches square, showing the company's tofu, tofu dessert, and tempeh products.

On the back: "Nutrisoy: Fitness food." There is a brief history of the company and information about the health benefits of soyfoods. "Nutrisoy is an Australian family-owned company dedicated to producing high quality, good tasting, healthy foods. It was established in 1984." Color photos show: (1) The company's tofu and tempeh products. (2) The outside of the brick factory with three delivery vans. (3) Three stainless steel sinks containing cakes of tofu cooling in water. (4) Tofu being packaged in a heat-sealing machine. (5) A secretary typing at a computer.

Letter from Tony Wondal of Nutrisoy. 2007 Aug. 3. This leaflet was published in Feb. 1999. Address: Lot 1, 19a Baker St., Banksmeadow, NSW 2019, Australia. Phone: +61 2 9316 5171.

3148. Nutrisoy Pty. Ltd. 1999. Nutrisoy: Fitness food (Sell sheet). Botany, New South Wales, Australia. 1 p. Feb. Front and back. 30 cm.
• ***Summary:*** A large color photo on the bottom half of the front panel shows the company's tofu and tempeh products. Three paragraphs above that are titled: Nutrisoy. Tofu. Tempeh.

The back is titled "Nutrisoy products range." A color photo shows each of the company's products, by category. Plain and pre-marinated tofu: Plain Firm Tofu, Tofu Vegies, Tofu Tempeh, Tofu Herbs. Pre-cooked tofu and tofu burger: Tofu Spicy, Tofu Teriyaki, Tofu Vegies Burger, Tofu Tempeh Burger. Tofu deserts and silken tofu: Tofu cups in strawberry, apricot, mango, and tropical flavors. Silken tofu. Tempeh and tempeh burger: Plain Tempeh. Seasoned Tempeh. Mildly Spiced Tempeh. Tasty Tempeh (marinated in ginger and soy sauce). Tempeh Burger.

An attached, 1-page product list, gives the name and weight of all the company's products, including those under special or private labels such as Soyco, Nutal, and a few Indonesian names. They also sell hommus (hummus), chickpea veg. burger, spirulina juice, and berry juice.

Letter from Tony Wondal of Nutrisoy. 2007 Aug. 3. This leaflet was published in Feb. 1999. Address: 15 Hannon St., Botany NSW 2019, Australia. Phone: +61 2 9316 5171.

3149. Nutrisoy Pty. Ltd. 1999. Tofu & tempeh: For a high energy breakfast, quick lunch, or hearty main meal (Leaflet). 255 Forest Road, Arncliffe 2205, NSW, Australia. 3 panels each side. Feb. Front and back. Undated.
• ***Summary:*** This undated color leaflet contains recipes for tofu and tempeh, and shows color photos of the front panel of the company's products. One panel is dedicated to a short company history and descriptions of tofu and tempeh.

Letter from Tony Wondal of Nutrisoy. 2007 Aug. 3. This leaflet was published in Feb. 1999. Address: Arncliffe, NSW, Australia.

3150. Nutrisoy Pty. Ltd. 1999. Tofu & tempeh: The healthiest foods. Recipes (Leaflet). 15 Hannon St., Botany NSW 2019, Australia. 3 panels each side. Feb. Front and back. Undated.
• ***Summary:*** This undated color leaflet (Nutrisoy's 2nd) contains recipes for tofu and tempeh, and shows color photos of the front panel of the company's products. One panel is dedicated to a short company history and descriptions of tofu and tempeh. A color photo on the front panel shows a young man and woman holding hands, walking in the woods, looking at each other.

Letter from Tony Wondal of Nutrisoy. 2007 Aug. 3. This leaflet was published in Feb. 1999. Address: Arncliffe, NSW, Australia.

3151. Stevens & Associates, Inc. ed. and comp. 1999. U.S. 1999 soyfoods directory. Lebanon, Indiana: Indiana Soybean Development Council. 48 p. 28 cm. [23 ref]
• ***Summary:*** This is the fourth edition of the U.S. Soyfoods Directory. Page 2 states: "And a special thanks goes to the Soy Protein Partnership for sponsoring this project." For a list of farmers and companies that grow soybeans organically, see p. 28. This 1999 Soyfoods directory is now available online at www.talksoy.com. Address: Stevens & Associates, 4816 North Pennsylvania Street, Indianapolis, Indiana 46205. Phone: 317-926-6272.

3152. Warmuth, Manfred. 1999. Experiments using *Neurospora intermedia* instead of *Rhizopus* mold for making tempeh (Interview). *SoyaScan Notes.* March 14. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Manfred was born and grew up on a farm

in Germany. He is interested in fermented foods and has managed to get some *Neurospora* culture from a friend who uses it for genetic experiments. He found that Americans generally like the taste of tempeh made with *Neurospora* better than that made with the typical *Rhizopus*–because the tempeh has a nutty, more bland flavor. Americans like bland tastes; that is why they import mostly bland European cheeses (which Europeans call "green" cheeses) rather than the more strongly flavored, ripe European cheeses. Manfred believes that most U.S. tempeh is sold "green" to get around the stronger taste, Moreover, there is not much orange sporulation on *Neurospora* tempeh; sporulation generally occurs only under adverse conditions–when the fermentation undergoes stress. *Neurospora* also has another advantage: it prefers to grow at a lower temperature (30ºC) than *Rhizopus* (34ºC). Manfred found that tempeh made with a mixture of *Neurospora* and *Rhizopus* is also very nice; if allowed to sporulate, it becomes orange rather than black.

Why don't Indonesians make tempeh with *Neurospora?* Perhaps because they like the stronger flavor produced by *Rhizopus.*

Manfred found that it is very hard to obtain *Neurospora,* perhaps because of the belief (which Manfred thinks is an "old wives' tale") that it is potent contaminant, and that once it gets started in a laboratory or business, it is almost impossible to eradicate.

Note: *The Old Wives' Tale* is the title of a novel by Enoch Arnold Bennett, published in 1908.

Update: Talk with Manfred. 1999. April 10. He has just finished experiments growing *Rhizopus* and *Neurospora* molds on peanuts. Neither mold would grow well on whole peanuts. So he sliced the peanuts. *Rhizopus* grew well and fast on the thin peanut slices. *Neurospora* grew more slowly but Manfred found the final taste to be better. However, the big problem for someone wanting to make a commercial product is that peanuts, even when purchased in bulk, are about twice as expensive as soybeans. Address: Professor, Computer Sciences, 111 Overlook Dr., Santa Cruz, California 95060. Phone: 831-425-0461 or manfred@cs.ucsc.edu.

3153. Brown, Allan. 1999. Brian Stutt of Gilford Marketing in Canada is interested in Buying Noble Bean and taking tempeh to mainstream markets (Interview). *SoyaScan Notes.* March 24. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** Allan and Susan Brown have put a price tag of $300,000 on their company but they do not really want to sell it; they like the work. They sell about $50,000 of tempeh a year and about 40% of that ($20,000) is profit. The company is worth about $100,000 on the books. Instead of selling the company, Allan plans to work as a consultant (at $150/hour) for Brian to teach him about how to make tempeh; in exchange Brian will agree not to compete with Noble Bean in the organic market. Brian now buys Noble Bean tempeh from a distributor for about $3.25/kg; he wants to create a larger tempeh factory to get the price down.

Brian now works with a company named Commensal which is big in fresh entrees (both vegetarian and non-vegetarian); Brian is helping them get into frozen entrees to reach bigger markets. He is also talking with airlines about serving these meals. Cara Foods owns Beaver Foods, which is a huge distributor to supermarkets. Two companies that are big in frozen vegetarian entrees and private-labeled vegetarian products (such as meatless franks made by Yves) are President's Choice and Too Good to Be True–apparently both owned by the same people.

Allan has discovered one trick about making better tempeh; he blows air through the soybeans to reduce their moisture content before dehulling them. This makes it easier to dehull in a mill, and it also improves the quality of the final tempeh–for some reason that Allan does not understand clearly. Address: Co-founder, Noble Bean, R.R. #1, McDonalds Corners, ON K0G 1M0 Canada. Phone: 613-278-2305.

3154. Gustafson, Karen. 1999. Tempeh: This protein-packed fermented soyfoods can lower your cholesterol. *Natural Health.* March. p. 136.

• ***Summary:*** Contents: What it is. Nutritional value. Health claims. Evidence. How it works (soy protein plus isoflavones). Recommended serving (70 gm or 13 oz of soy protein a week). A photo shows two cakes of tempeh on a plate. A table gives the nutritional composition.

Note: Most tempeh made in the USA does not contain grains and is not a reliable source of vitamin B-12. Address: Freelance writer and M.P.H., Riverside, Illinois (near Chicago).

3155. Liu, KeShun. 1999. Oriental soyfoods. In: C.Y.W. Ang, K. Liu, and Y-W. Huang, eds. 1999. Asian Foods: Science & Technology. Lancaster, Pennsylvania: Technomic Publishing Co., Inc. 546 p. See p. 139-99. Chap. 6. March. [60 ref]

• ***Summary:*** Contents: Introduction. Soymilk. Tofu. Soymilk film (yuba). Soybean sprouts. Green vegetable soybeans. Other non-fermented soyfoods: Okara, roasted soy powder. Fermented soy paste (Jiang and miso). Soy sauce (Jiangyou or shoyu). Japanese natto. Indonesian tempeh. Soy nuggets (Douchi or Hamanatto). For a biography of Liu see p. 544. Address: PhD, Soyfoods Lab., Hartz Seed, A Unit of Monsanto, Stuttgart, Arkansas.

3156. Mangels, Reed. 1999. *Vegetarian Journal's* guide to tofu and tempeh. *Vegetarian Journal* (*Baltimore, Maryland*) 18(2):20-21. March/April.

• ***Summary:*** A full-page table gives the nutritional composition of many different brands and products per 3 ounce serving. Data is given for calories, protein, fat,

calcium, and iron. Tofu brands/makers include: Azumaya, Kikkoman, MoriNu. Nate's Easy Tofu (smoked), Nasoya, Smoke & Fire, SoyBoy Baked and seasoned (all varieties), White Wave, Whole Foods. The three tempeh makers are: Lightlife, SoyBoy, and White Wave.

For tofu: Calories range from 30 (MoriNu Lite) to 130 (Nate's). Protein ranges from 20 gm (White Wave baked) to 4 gm (MoriNu Soft). Fat ranges from 1 gm (MoriNu Lite) to 9 gm (White Wave baked). Calcium ranges from 600 gm (Nate's) to 20 gm (MoriNu–4 types). Iron ranges from 0.7 gm (MoriNu–4 types) to 9 gm (Nate's). Address: PhD, RD.

3157. Warmuth, Manfred. 1999. Update on vitamin B-12 and tempeh (Interview). *SoyaScan Notes.* April 1. Conducted by William Shurtleff of Soyfoods Center. [1 ref]

• ***Summary:*** Manfred just talked with Dr. Keith Steinkraus who said he isolated a harmless strain of *Klebsiella pneumoniae* that produced vitamin B-12 in tempeh, and had it tested in a medical laboratory. Then he sent samples to people at The Farm in Summertown, Tennessee, but they never added it to their commercial tempeh starter–for fear that something might go wrong and they would be held responsible and possibly sued.

Manfred found 5-6 recent articles on MEDLINE concerning tempeh and vitamin B-12. Apparently *Bacillus subtilis* [the main bacterium used in the natto fermentation] can also produce vitamin B-12.

Update: Talk with Manfred. 1999. April 10. Manfred just finished experiments using a mixed inoculum (containing approximately equal parts of *Rhizopus, Neurospora,* and *Bacillus subtilis*) to try to make soy tempeh at three different fermentation temperatures (29ºC, 34ºC, and 41ºC). At the lower two temperatures, the tempeh came out very nicely, but at the higher tempeh the *Bacillus* predominated. Manfred has not yet measured the vitamin B-12 content of the three types of tempeh. One basic question arises: If such an inoculum is used and grown on tempeh at 32-34ºF, will the *Bacillus* eventually mutate so they grow well at the lower temperature and take over the fermentation, ruining the tempeh? For a case study of this type of problem, see the following article, which describes a terrible problem experienced by a tempeh manufacturer in 1982. Shurtleff, William; McBride, G.; Robertson, G.V.J.; Burgeson, T. 1982. "Dealing with tempeh contamination." *Soyfoods.* Winter. p. 29-32. Address: Professor, Computer Sciences, 111 Overlook Dr., Santa Cruz, California 95060. Phone: 831-425-0461 or manfred@cs.ucsc.edu.

3158. Simonds, Nina. 1999. A spoonful of ginger: Irresistible, health-giving recipes from Asian kitchens. New York, NY: Alfred A. Knopf. xii + 322 p. April. Illust. Index. 24 x 21 cm. [53 ref]

• ***Summary:*** This beautiful hardcover book and cookbook, printed on glossy paper with many color and black-and-white photos, looks at food in two ways: As medicine, and as the source of delicious recipes. The Asian holistic approach is relaxed and non-rigid; it emphasizes balance. Soyfoods appear throughout. Tofu is used to "increase body energy, produce fluids, and lubricate the system. It is said to have yin, or cooling, properties" (p. 23). Miso chicken soup with snow peas and tofu (p. 34). Grilled miso fish fillets (p. 66). Pan-seared halibut with garlicky black bean sauce ("Seasonings: 3 tablespoons fermented or salted black beans, rinsed, drained, and minced, 2 tablespoons minced garlic, 2 tablespoons minced fresh ginger,... p. 71; "Black soybeans have been used by the Chinese for medicinal purposes for over 2,000 years"). Baked black bean shrimp (with fermented black [soy] beans, rinsed and drained, ginger, garlic, and dried chile [chili] flakes, p. 75). Stir-fried saucy shrimp (with sweet bean sauce or *jiang,* one of the earliest Chinese seasonings; if unavailable, substitute hoisin sauce, p. 81). Grilled hoisin scallops (with ½ cup hoisin sauce, p. 83). Spicy grilled squid with warm greens (with ½ cup hoisin sauce, p. 86-87). Broccoli or cauliflower with a soy-lemon dressing (p. 173). Grilled leeks in a garlic-soy dressing (p. 174). Grilled wild mushrooms with a teriyaki dressing (p. 178). Black bean acorn squash (with fermented black [soy] beans. Describes how to make "black bean sauce," p. 179).

One chapter, titled "Soybeans and tofu" (p. 192-215), begins with a discussion of the work of Dr. Albert Leung, author of various books on Chinese herbs and food, and creator of a computerized database on Chinese herbal medicine for the National Cancer Institute. "Like a growing number of doctors, Dr. Leung feels strongly that an integrated approach should be taken in the treatment of many diseases, one that draws from the strengths of both conventional and alternative therapies. He also concurs with Henry Lu that fortifying the immune system is critical to good health. 'Our immune system is the key to health and longevity and there are many factors that throw off our yin/yang balance,' Dr. Leung says. 'When this happens, Traditional Chinese Medicine often uses herbal tonics and food to help restore the balance.'

"Tofu is such a food. Chinese doctors classify its nature as cool and sweet. It is credited with clearing heat from the body, detoxifying the system, and strengthening the spleen and stomach."

A full-page color photo (p. 192) shows tempeh being fried. Simonds notes that the earliest known recorded use of black soybeans dates back to the middle of the eighth century.

A table titled "Soybeans and their byproducts" (p. 196) lists ten products, how each is used, and how long they will stay fresh in a refrigerator. The foods are: Fresh soybeans [as a green vegetable appetizer], soybean sprouts, miso, soybean milk, silken tofu, soft tofu, firm tofu, extra-firm tofu, 5-spice pressed tofu, and tempeh. Recipes are from many Asian countries": Japanese-style silken tofu. Soybean sprouts

and leeks in hot chile sauce. Rainbow salad with spicy peanut dressing (and tofu). Spicy garlic bean curd noodles. Vegetarian roll-ups (with tofu). Fragrant steamed pearl balls (with tofu and glutinous rice). Spicy ma po tofu. Cantonese style tofu in black bean sauce (incl. fermented black beans, garlic, ginger and hot chile paste). Vegetarian kung pao with broccoli and peanuts (with tofu. Note: Kung pao is a style of food preparation associated with Szechuan and Hunan). Curried tofu. Braised cinnamon tofu. Simmered tofu with black mushrooms. Fried tempeh with sweet and sour sauce. Spicy stir-fried tempeh with basil. Ginger teriyaki tempeh.

Also: Chicken-black bean brown rice (with fermented black [soy] beans, garlic, and fresh ginger, p. 231; Dr. Albert Leung says that making fermented black beans is a complicated process, in which small black soybeans are first soaked in water with mulberry leaves and wormwood herb, then they are fermented with salt). Vegetarian pad thai (with tofu, p. 245). Almond soy jelly with litchees and melon (with soy milk, p. 266). Two-spice vanilla tapioca pudding (with soy milk, p. 269; Soy milk lubricates the body, clears the lungs, and is often prescribed for urinary disorders and constipation). Coconut rice pudding with berries (with soy milk, p. 272). Address: Salem, Massachusetts.

3159. Seshan, Sekhar. 1999. No milk–we're veg! *Business India.* May 3-16. p. 158.
• ***Summary:*** Dakini Health Foods, run by Seemo (H. Shapira) and Kairava (J. Spaelstra), has a gleaming new plant on the outskirts of Pune [Puna], where they make vegan products–peanut butter, brown and white tahini, and the soy foods tempeh and tofu. All are high protein, natural and healthy. They also use none of the "Permitted Class II preservatives." Shapira notes that the unusual versatility of tempeh, which can be textured like any meat, enables it to be used as a meat substitute in a wide range of Indian, western, and oriental-style recipes. Dakini produces two tonnes per year (tpy) of tempeh, 5 tpy of peanut butter, and 6 tpy of tahini.

Shapira is an Israeli who was being groomed to be an admiral, "escaped" and got into catering, especially vegetarian foods, in Germany, before coming to India. There he tried his hand at making New Age jewelry, but got bored after a few years, and the "business got too serious." In 1995 he decided to get into the food business in India; he noticed that although India is a vegetarian country, many of the good vegetarian foods found in the West are not available in India. He started with tempeh, then expanded into peanut butter. Dakini is now expanding its tofu production capacity to be 100 tpy by June, and tempeh to be 12 tpy by the end of 1999. Dakini now also has a recipe book. Marketing is not a problem, insists Shapira. He sells mainly to the import substitution market, like "Osho-ites" [disciples of Rajneesh] and other transient foreigners who want vegetarian food but can't get the quality they are used to. Moreover, a network of hotels all over India contacts him for non-perishables. His perishable foods, like tempeh and tofu, he sells locally.

A photo shows Shapira and Spaelstra (his female partner) seated at a table behind samples of their many innovative products. The caption: "Health is a major commitment for Shapira (and Spaelstra)."

Note: Dakini does not yet have a recipe book.

3160. Nilsen, Laura. 1999. The best to soy. *Veggie Life* (*Concord, California*). May. p. 22-28.
• ***Summary:*** Their "Cooking with Soy" department debuted in May 1996. This article begins: "Soy is hot. Like a cult movie that eventually shows up on prime time TV, soy has become a mainstream American commodity, an ingredient in everything from hot dogs to apple pie... The boom goes on, and for good reasons–Nutrition and taste; versatility and economy... It's no fairy tale–soy is a magic bean worth swapping a cow for." This article is a collection of recipes from other sources, or from back issues of Veggie Life. Address: Food editor, Veggie Life.

3161. Schinner, Miyoko Nishimoto. 1999. Japanese cooking: Contemporary & traditional–Simple, delicious, and vegan. Summertown, Tennessee: Book Publishing Co. 176 p. Illust. Index. 21 cm.
• ***Summary:*** Contents: Introduction (incl. Japanese attitudes towards nutrition, vegetarianism and animal rights, the recipes, the Japanese meal). Sample menus (by season). Glossary: Ingredients, kitchen concepts, and tools. Rice dishes. Soups and stews. Cooking with tofu. Fried dishes. Salads and cold vegetables. Noodles. Meals in a pot. Stewed and braised dishes. Meals in a bowl. Everyday favorites. Nouvelle Japanese cuisine.

Terms in the Glossary include: Abura-age, agar agar, atsu-age, azuki, fu (made from wheat gluten), goma (sesame seeds), goma-dofu (a tofu-like cake made from sesame butter), hijiki, Inari-zushi (sushi), kanten, konbu, kuzu & kuzu-ko, miso, mochi, natto, nori, okara, sesame oil (goma abura), shoyu, soba, soy sauce, tofu ("Perhaps the most misunderstood food in Japan... American might call it bland; the Japanese prefer to think of it as delicate in flavor"), umeboshi, wakame, yaki-dofu, yuba.

This vegan cookbook is filled with many soy-related recipes, both traditional and new. Examples of new: "Fishy Tempura Tempeh. Crispy Fried Tempeh (Kara-Age).

"Trying to dine out in a strictly vegan fashion in Japan can present challenges. Although dairy products are not found in traditional Japanese cuisine, fish-based stocks appear in a range of dishes from appetizers to soups to entrees... My advice to vegan or vegetarian visitors to Japan: find a temple or restaurant that serves traditional *kaiseki*-style *shojin-ryori* (Buddhist vegetarian cooking)–and splurge big time. You won't regret it" (p. 10).

On the rear cover is a biographical sketch of Miyoko.

"She was born in Yokohama, Japan, and graduated from St. John's college in Maryland. Her bilingual bicultural background has endowed her with the creativity and originality of the West and the aesthetic sense of the East." She has been a vegetarian since age 12. Address: Owner, Now and Zen Bakery and Vegetarian Restaurant, San Francisco.

3162. Shurtleff, William; Aoyagi, Akiko. 1999. The book of tofu. 2nd ed. Revised. Berkeley, California: Ten Speed Press. 336 p. May. Illust. by Akiko Aoyagi Shurtleff. Index. 28 cm. [321 ref]

• ***Summary:*** This edition contains a completely new "Appendix B–Directory of Tofu Makers" (p. 313-316, updated to 1 Aug. 1998). The page "About the Authors" (autobiographical) has been updated, and the original photograph has been replaced with two more recent ones–reflecting the fact that Bill and Akiko separated in Nov. 1993 and their marriage ended in May 1995.

After the first printing in Oct. 1998, the Preface was quite extensively revised (but not updated) to include more about how this book came into being (early dates and names), including the important contributions on Jeffrey and Gretchen Broadbent, and of Nahum and Beverly Stiskin. These Preface changes first appeared in the second printing of May 1999.

On page 336 is "The Best of Vegetarian Cooking from Ten Speed Press" (descriptions of eight cookbooks, with price and ISBN). The inside rear cover has been updated, and now includes current information about SoyaScan, the unique computerized database produced by Soyfoods Center. This database now contains more than 55,000 records from 1100 B.C. to the present, and more than 73% of all records have a summary / abstract averaging 128 words in length. A description of the four different types of records (published documents, commercial soy products, original interviews and overviews, and unpublished archival documents), and the number of each type, is given.

The front and rear covers, title page, table of contents, and the first page of each section have been redesigned to give the book a much more contemporary look. Still contains 500 vegetarian recipes–both western and eastern style.

Ten Speed Press gave this book a new ISBN: 1-58009-013-8. Yet despite the many changes described above, the authors preferred not to have this called a "new edition" or "revised edition." Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549. Phone: 925-283-2991.

3163. Tibbott, Seth. 1999. Adventures in tempehland: American tempeh maker visits the motherland [Indonesia]. *Vegetarian Journal* 18(3):8-9. May/June.

• ***Summary:*** Seth, who has been making tempeh professionally for 18 years, was invited to present a paper on the American tempeh market at a recent International Tempe Symposium in Bali. He traveled there with his wife, Sue, and 5-year-old son, Luke. The symposium was held at the Five-star Kartika Plaza Hotel on Kuta Beach, Bali. He learned that one-sixth of the world's languages are spoken in Indonesia, the world's fifth most populous country. Two factors distinguish Bali from the rest of Indonesia: (1) It's cultural roots are Hindu, whereas the rest of Indonesia is predominantly Muslim. (2) The impact of tourism is greater.

In the conference keynote address, Mr. Joop Ave, the Indonesian Minister of Telecommunications and Tourism, tried to create a new image for tempe "He told of a recent movement to 'Indonesianize' the presidential palace and proudly serve tempe to heads of state as an example of Indonesian ethnic food. He fervently extolled the virtues of eating tempe and tahu (tofu)."

While in Indonesia, Seth visited three different sized tempe shops. The smallest, in Ubud, Bali, makes about 100 lb/day of tempe. The middle-sized shop, Tempe Murni, in Denpassar, Bali, makes 1,650 lb/week (about 275 lb/day). The largest, Pak Pedro Sudjono's factory in Yogyakarta, Java, makes 5,000 lb/day in a 1,500 square foot area. Seth gives details on each shop he visited, and on the Pasar Bedang market in central Denpassar. He found that, on a per ounce basis, relative to average per capita income, tempe in Indonesia is about four times as expensive as it is in the USA.

At the symposium, Seth learned that Yogyakarta has the highest per capita consumption of tempe of any city in Indonesia–200 gm/week compared with only 75 gm/week on Bali. He found the local market in Yogyakarta to be "totally inundated" with a large variety of tempe products, but uncooked cakes of tempe and prepared tempe in various sauces. The main supplier of these products is Pedro Sudjono, a local actor and politician, as well as the owner of the most innovative tempe factory Seth visited. A unique barter system exists here. The main business is run by a paid staff of 24 people, but the filling of inoculated soybeans into small plastic bags is almost all done by local women who sit on the floor as they fill, then seal the bags–sometimes over an open flame. The women then load the packages onto their bicycles, pedal home, incubate them for several days, then take the finished tempe to market and sell it! Address: CEO, Turtle Island Foods [Hood River, Oregon].

3164. Clute, Mitchell. 1999. Breaking the mold with tempeh: Praise from the chorus for *Rhizopus oligosporus. Natural Foods Merchandiser.* June. p. 71, 74.

• ***Summary:*** At Avogadro's Number, a restaurant in Fort Collins, Colorado, Jon Long now makes 700 lb/month of tempeh; he supplies several local eateries with fresh tempeh patties.

"As a result of recent health bulletins about the benefits of soy, as well as changing dietary habits, the world seems awash in soy foods of every stripe–soy milk, soy proteins,

and of course, the ubiquitous tofu. But American palates have been slower to embrace tempeh, the Cinderella of soy foods."

Long has many years of experience as a baker; he used to run his own business, Jon's Natural Bread, but he never considered making tempeh until restaurant owner Rob Osborne suggested it. He is now in the "postexperimental stage." The process he uses is described in detail.

His fascination with tempeh had led him to create a Web site (www.home.att.net/~tempehinfo/) devoted entirely to information about tempeh. Contains a recipe for Barbecued Southern Tempeh. A color photo shows Jon Long carrying two trays of freshly made tempeh.

3165. Seemo (H. Shapira). 1999. Re: Dakini Health Foods Pvt. Ltd. recently moved into a new factory in Pune/Puna, India. Letter to William Shurtleff at Soyfoods Center, July 29. 1 p. Typed, without signature on letterhead.
• ***Summary:*** Seemo (Mr. H. Shapira from Israel), Kairava (Mrs. J. Spaelstra from the Netherlands), and the "Dakini crew" have been "intensively busy setting up our factory." They raised money through loans, brought in a new partner, got all the required government approvals, bought a plot of land, "navigated between impossible contradicting rules and regulations and corrupt officials." Then, with the help of an architect, they put of a 6,000 square foot building. They dug the first foundation in May 1998 and moved in in Feb. 1999. The process has been frustrating at times. To get an electrical connection, for example, took months, involved hundreds of signed documents, and "thousands of dollars in baksheeshes" [bribes].

They set up a pressure cooker plant for making tofu, first tested it on 17 July 1999, and "got a huge fantastic delicious cake of tofu." They plan to do a "soft launch" on Aug. 2 to some hotels, restaurants, institutions, etc., while getting their packaging systems ready. They plan to start selling to the retail trade in about two months. Their tofu production capacity is now about 200-400 kg/day.

"All this time we kept our little incubator busy supplying a small but loyal and growing clientele about 10-30 kg of tempeh weekly." Their new incubation room (12 by 11 feet) started operation today, with the first 15 kg batch of tempeh. They estimate a capacity of 60-70 kg maximum and are planning to start with 20-25 kg batches. They also have new clients waiting. Le Meridian in Pune has already put tempeh on their buffet, and will soon include it on their menu; now they want tofu as well! "It's a great adventure." Address: Dakini Health Foods Pvt. Ltd., S.N. 33, Bhoiwasti, Keshavnagar, Mundhwa, Pune / Puna 411 036, India. Phone: +91 20-613985.

3166. Murphy, Patricia A.; Song, T.; Buseman, G.; Barua, K.; et al. 1999. Isoflavones in retail and institutional soy foods. *J. of Agricultural and Food Chemistry* 47(7):2697-2704. July. [27 ref]
• ***Summary:*** Gives the content of daidzein, genistein, glycitein. Isoflavone levels ranged from 1 microgram per gram in soy sauces to 540 micrograms per gram in tempeh. "Soymilk and tofu represented the major portion of the soy foods evaluated."

Also includes: Tofu, different kinds (raw and cooked), soy sauce, miso (white and red), tempeh (raw and cooked), FriChik (soy chicken, raw and cooked), meatless frank (raw and cooked), Harvest Burger (raw and cooked), Meatless links (raw and cooked), Soy/beef burgers (raw and cooked). Address: 1-4. 2312 Food Science Building, Food Science & Human Nutrition Dep., Iowa State Univ., Ames, Iowa 50011.

3167. Kairava (J. Spaelstra); Seemo (H. Shapira). 1999. Re: Update on Dakini Health Foods Pvt. Ltd. in Pune / Puna, India. Letter (fax) to William Shurtleff at Soyfoods Center, Aug. 22. 1 p. Typed, without signature on letterhead.
• ***Summary:*** Gives details on their work with tofu and tempeh. They do not yet have a recipe book nor do they vacuum pack their tempeh. They are, however, developing a nice label. They have contacted Raj Gupta of ProSoya by e-mail about soymilk equipment.

"The nutrition situation in this country and on all income levels is no good–from severe protein deficiency on the lower income rungs to fancy diseases for the rich. Developing soyfoods production here is most crucial, urgent, and possibly also a good investment!

"At a later stage, to avoid spreading ourselves too thin right now, we are interested in trying our hand at more fermentations such as Taucho, Miso, Soysauce. We are looking for more material to study." A copy of the recent article from *Citadel Pune* (full of errors) is attached. Address: Dakini Health Foods Pvt. Ltd., S.N. 33, Bhoiwasti, Keshavnagar, Mundhwa, Pune / Puna 411 036, India. Phone: +91 20-613985.

3168. Seemo (H. Shapira). 1999. Re: Another update on Dakini Health Foods Pvt. Ltd. in Pune / Puna, India. Letter (fax) to William Shurtleff at Soyfoods Center, Aug. 24. 1 p. Typed, without signature on letterhead.
• ***Summary:*** Their company started business in April 1996 making white tahini. Sometime later they introduced peanut butter.

The third partner in their business is Bodhi Yahaan; they call him Yahaan, and he has been with the company for nearly two years. Like Seemo, he is from Israel where his name was Mr. Natan-Ran Diamant; now he lives in Pune. He does not work in the factory, but he does get the computer to work. He brought in the much-needed finance and also organizes loans when the banks fail. "He owns 50% of the company's shares and a very good friendship is growing."

"Mr. Donnelly (our Indian partner) resigned near the end of 1996, and since last year we got all government

permissions to run the company without any Indian partner."

In Goa, "a friends couple of ours, Lisa Camps and her French friend Richard, are making tofu and tempeh on a small but interesting scale. This year they are growing and opening their own retail outlet with a delicatessen counter and a salad bar. We managed to convince them to invest in a good grinder, a small screw press, and a simple dehulling device for their tempeh. Also, I am building them an incubation cabinet so they will no longer mysteriously lose so many cakes of tempeh. Also, since last year, we are supplying their tempeh starter, and, from this year, their soybeans. Their address: Lisa Camps, H.S. No. 1684 Ouneachem Baht, Anjuna Bardez, Goa, India." Address: Dakini Health Foods Pvt. Ltd., S.N. 33, Bhoiwasti, Keshavnagar, Mundhwa, Pune / Puna 411 036, India. Phone: +91 20-613985.

3169. Tapuria, Nidhi. 1999. Nourishing, nutritious & natural. *Citadel Pune* (*India*). Aug. p. 76-78.
• ***Summary:*** The subtitle reads: "They are adding a new flavour to the Indian taste buds. Dedicated to manufacture quality natural foods, they propagate the healthy way of living that has taken the world by storm. 'Citadel' has a slice of the action at Dakini Health Foods."

Besides tahini, sesame butter, and peanut butter, Dakini manufactures a product range that includes soya foods like tempeh and tofu. Contains a brief description of tempeh.

Seemo tried his hand at everything before getting bitten by the vegetarian bug. He used to have the best-selling felafel shop in Israel, but he gave it up and moved to Germany where he finally got into catering vegetarian food. When he came to India he learned patience. The response from his customers has been very encouraging, especially from the Oshoites at Koregaon Park, who keep thanking him for making foods that are not available in India, and asking him to make more. In Pune, a restaurant named Zen has at least 20 items on their menu made from tempeh. Seemo wants to expand his tofu capacity to 100 tons per year; that will make big news. He believes that Indian food lacks the proteins which tofu can supply–in a vegetarian form. Five photos show Seemo, Kairava, and their new food factory.

3170. **Product Name:** Vegetarian Entrees: Sloppy Joe Sandwich Filling.
Manufacturer's Name: White Wave, Inc.
Manufacturer's Address: 6123 E. Arapahoe Rd., Boulder, CO 80303. Phone: 303-443-3470.
Date of Introduction: 1999. August.
Ingredients: Water, soy tempeh (cultured organic soybeans, water), seitan...
Wt/Vol., Packaging, Price: 10 oz box.
New Product–Documentation: Leaflet (color) sent by Mia Fox, Marketing Manager of White Wave. 1999. Aug. "Easy and delicious vegetarian entrees–Just heat 'n' eat!" A color photo of each product appears on the front of the leaflet. The ingredients are listed on the back.

3171. **Product Name:** Vegetarian Entrees: Tempeh Marinara.
Manufacturer's Name: White Wave, Inc.
Manufacturer's Address: 6123 E. Arapahoe Rd., Boulder, CO 80303. Phone: 303-443-3470.
Date of Introduction: 1999. August.
Ingredients: Water, tomatoes, soybeans, brown rice, organic raw cane crystals...
Wt/Vol., Packaging, Price: 10 oz box.
New Product–Documentation: Leaflet (color) sent by Mia Fox, Marketing Manager of White Wave. 1999. Aug. "Easy and delicious vegetarian entrees–Just heat 'n' eat!" A color photo of each product appears on the front of the leaflet. The ingredients are listed on the back.

3172. Grogan, Bryanna Clark. 1999. Soyfoods cooking for a positive menopause. Summertown, Tennessee: Book Publishing Co. 192 p. Sept. Index. 23 cm. [31 + 49 websites ref]
• ***Summary:*** On the front cover: "Reduce the discomforts of menopause naturally. Lower your cholesterol. Reduce your risk of heart disease and cancer. Over 150 family pleasing recipes." Eating a diet rich in soyfoods may alleviate many of the discomforts of menopause.

Content: Introduction. Glossary. 1. The soy prescription. 2. Soy for strong bones and weight loss. 3. Preventing the number one killer of women-heart disease. 4. Can soy prevent cancer? 5. A soyfoods primer. 6. Baking and cooking with soyfoods. 7. Breakfast foods and beverages. 8. Condiments, sauces, dips, dressings, and spreads. 9. Appetizers, salads, and soups. 10. Lunch, supper, and side dishes. 11. Dinner entrees. 12. Desserts. Bibliography and websites. Sources for ingredients.

3173. Ontario Soybean Growers. 1999. Canadian soybeans (Ad). *Soya & Oilseed Bluebook* 2000. p. 104.
• ***Summary:*** This one-third page black-and-white ad states: "High quality, food grade soybeans for the production of tofu, miso, natto, soymilk, soy sprouts, soy sauce, tempeh and other soya products. Soybeans for the crush market. Identify preserved (I.P.)–Specialty soybeans. Organic and transitional soybeans. Container–Bag/bulk. Bulk vessel.

"Trusted, reliable, supplier of soybeans to the world for over 25 years.

"For more information or a list of suppliers contact: Canadian Soybean Export Association." Address: P.O. Box 1199, Chatham, Ontario, Canada N7M 5L8. Phone: 519-352-7730.

3174. Food and Drug Administration, U.S. Department of Health and Human Services. 1999. FDA Approves new

health claim for soy protein and coronary heart disease. *FDA Talk Paper* T99-49. Oct. 20.

• ***Summary:*** "On October 26, 1999, the FDA will authorize use of health claims about the role of soy protein in reducing the risk of coronary heart disease (CHD) on labeling of foods containing soy protein. This final rule is based on the FDA's conclusion that foods containing soy protein included in a diet low in saturated fat and cholesterol may reduce the risk of CHD by lowering blood cholesterol levels.

"Coronary heart disease, one of the most common and serious forms of cardiovascular disease, is a major public health concern because it causes more deaths in the U.S. than any other disease. Risk factors for CHD include high total cholesterol levels and high levels of low density lipoprotein (LDL) cholesterol.

"This new health claim is based on evidence that including soy protein in a diet low in saturated fat and cholesterol may also help to reduce the risk of CHD. Recent clinical trials have shown that consumption of soy protein compared to other proteins such as those from milk or meat, can lower total and LDL-cholesterol levels.

"Foods that may be eligible for the health claim include soy beverages [soymilk], tofu, tempeh, soy-based meat alternatives, and possibly some baked goods. Foods that carry the claim must also meet the requirements for low fat, low saturated fat, and low cholesterol content except the foods made with the whole soybean may also qualify for the health claim if they contain no fat in addition to that present in the whole soybean.

"Scientific studies show that 25 grams of soy protein daily in the diet is needed to show a significant cholesterol lowering effect. In order to qualify for this health claim, a food must contain at least 6.25 grams of soy protein per serving, the amount that is one-fourth of the effective level of 25 grams per day. Because soy protein can be added to a variety of foods, it is possible for consumers to eat foods containing soy protein at all three meals and for snacks.

"An example of a health claim about the relationship between diet and the reduce risk of heart disease is:

"Diets low in saturated fat and cholesterol that include 25 grams of soy protein a day may reduce the risk of heart disease. One serving of (name of food) provides ____ grams of soy protein.

"This new health claim rule responds to a petition submitted to the FDA by Protein Technologies International. This rule is based on the proposed rule that was published in the Federal Register on November 10, 1998, and comments received by the FDA. Use of the claim in food labeling is authorized immediately." Address: Public Health Service, 5600 Fishers Lane, Rockville, Maryland 20857.

3175. Riccardi, Victoria Abbott. 1999. Enjoying soy: You know it's good for you. Now learn to like it. *Boston Globe.* Oct. 20.

• ***Summary:*** When people hear the word "soy," different images come to mind. "For devotees of sushi, it might be emerald green soybeans. For the Woodstock generation, it could be custardy blocks of tofu. And for juice bar addicts, it might be soy milk for smoothies." But whoever you are, soy has "likely crossed your radar screen. And pretty soon its going to be on every channel."

Peter Golbitz, president of Soyatech Inc. (Bar Harbor, Maine) has just completed a market study. In 1998 total soyfoods sales were $1.78 billion, up 18% from 1997. They are projected to be $2.6 billion by the year 2000.

Gives a good profile of two local mom-and-pop companies: Health-Trip Foods Inc. of Concord, owned by Eileen Moriarty and Dan Sanford, makes soynut butter. 21st Century Foods Inc. of Jamaica Plain, owned by Rudy and Lovin Canale, makes 800 lb/day of tofu. Before coming to the USA, Rudy ran a health food restaurant in Italy. He came here in 1977 to study macrobiotics at the Kushi Institute in Becket, Massachusetts. In 1981 he and an Italian friend started making tempeh in Brookline. Soon they added tofu products, using tofu made by another company. When the cost of the tofu became prohibitive, they started making their own. Now he and his wife, Lovin, do all the work and delivery. Last year they had $175,000 sales, and even with no advertising they make a profit.

3176. Egan, Jeanette Parsons. 1999. Soy! Soy! Soy! Enjoy soyfoods' benefits in delicious recipes. Tucson, Arizona: Fisher Books. xxx + 162 p. Oct. Illust. Index. 23 cm. Simply Healthy Series.

• ***Summary:*** This is a soyfoods cookbook. Contents: Dedication. Acknowledgments. Why I love soyfoods: Why eat soyfoods?, soy's health benefits, reduces heart disease, helps prevent cancer, soy for your bones (osteoporosis), to flash or not to flash (menopause), what about soyfoods allergies, how much soy should I eat? (soy protein, isoflavones), where to purchase soyfoods, how to add soy to your diet, important notes about eating soy. A soyfoods glossary: Black soybeans and yellow soybeans, green soybeans (edamamé), meat alternatives or analogs, miso, soy cheeses, soy cream cheese, soy flour, soy grits, soy milk (soy beverages), soybean oil, soynuts, soynut butter (roasted soybean butter), soy protein concentrates, soy protein isolates, soy sauces (tamari, shoyu), soy yogurt, tempeh, textured soy protein (TSP), tofu. Appetizers. Soups. Salads. Main dishes. Side dishes. Breads. Breakfast dishes. Desserts. Mail order sources for soyfoods. Other sources.

Contains 8 full-page color photos showing recipes. This is not a vegetarian cookbook. Recipes call for the use of chicken (4 recipes), ground beef, ham, crab meat, etc.

3177. Fallon, Sally; Enig, Mary G. 1999. Nourishing traditions: The cookbook that challenges politically correct nutrition and the diet dictocrats. 2nd ed. Washington, DC:

New Trends Publishing Inc. xvi + 668 p. Illust. by Marion Dearth. Subject index. Recipe index. Menu index. 26 cm. [200* ref]

• ***Summary:*** Contains over 700 recipes. Contents: Preface. Introduction: Politically correct nutrition, fats, carbohydrates, proteins, milk & milk products, vitamins, minerals, enzymes, salt, spices & additives, beverages, about food allergies and special diets, parting words, guide to food selection (nourishing traditional foods, compromise foods {such as tofu}, newfangled foods {such as soy protein isolates and commercial soy milk}), a word on equipment, kitchen tips & hints, references (188). Mastering the basics. Great beginnings. The main course. A catalog of vegetables. Luncheon and supper foods. Grains & legumes. Snacks and finger foods. Desserts. Beverages. Feeding babies. Tonics and superfoods. Appendixes (A-F). About the authors.

Some of the basic recommendations in this book fly in the face of modern nutritional science: Eat more meat. Eat dairy products made from raw milk; pasteurization harms the milk. The worst fats are *trans* fatty acids, produced by hydrogenation; cholesterol and saturated fats do not cause heart disease. Consume plenty of enzymes. Meat should be eaten raw, rare, or braised in stock. Moreover, the authors propose a conspiracy in which doctors, researchers, nutritionists, and spokesmen of various government agencies are giving bad nutritional advice to the American public (p. 2). The authors wish, sentimentally, for the return of the small American farm. Moreover, they do not examine some the non-dietary issues related to a diet based on meat and dairy products: What is its impact on the environment? How would it affect the ability of the Earth to feed more than 6 billion people? What right do humans have to kill animals?

However the authors also make a number of recommendations that many people would agree with: Eat more natural, traditional, fresh, and unrefined foods instead of refined and processed foods. Avoid sugar and hydrogenated fats. This book is strongly influenced by the observations of Dr. Weston Price, a dentist, whose important book *Nutrition and physical degeneration: A comparison of primitive and modern diets and their effects,* was published in 1939.

Concerning soyfoods, the authors favor the use of small amounts of fermented soyfoods (such as traditionally fermented soy sauce and miso) but are strongly opposed to the use of non-fermented soyfoods such as tofu and soymilk.

Soy-related recipes and information: Commercial soy formulas are low in saturated fats and devoid of cholesterol (p. 6). Today most of the fats in the American diet are polyunsaturated and derived from vegetable oils such as soy (p. 10). The cheapest oils, such as soy oil, are often hydrogenated; this creates *trans* fatty acids (p. 14-15). Cows lose valuable Activator X when fed high-protein soy-based feeds. Lecithin is found in butter (soy, the main source of lecithin worldwide, is not mentioned). Mother's milk is high in cholesterol because it is essential for growth and development (p. 16-17). Omega-6 (bad) and omega-3 (good) fatty acids in soybean oil (p. 19). Fermented soy foods contain compounds that resemble vitamin B-12 but they are not absorbed by humans (p. 28). Isolated protein powders made from soy are usually obtained by a high-temperature process that over-denatures the proteins to such an extent that they become essentially useless, while increasing nitrates and other carcinogens. These isolated soy proteins can cause osteoporosis (p. 29). Beef should not be fed soy meal for protein, but rather animal parts (p. 31). Avoid farm raised fish [aquaculture] that have been fed soy meal (p. 32). Cultured soybean products from Asia, such as natto and miso, are a good source of food enzymes if they are eaten unheated (p. 47). The natural glutamic acid in soy sauce and miso gives these foods their rich, meat-like taste (p. 49). Many processed foods contain MSG or hydrolyzed protein, "especially soy-based concoctions" (p. 50). Heavily yeasted foods, such as soy sauce and Worcestershire sauce, often exacerbate the symptoms of chronic yeast [candida] infection (p. 56). Beans cause digestive problems because they contain two complex sugars, farrinose [sic, raffinose] and stachyose (p. 60). The macrobiotic diet and soybeans: Use only as fermented products like miso, natto, and tempeh. Problems with tofu, soy milk, and phytoestrogens in soy (p. 62). The sickening effect of soy on ruminants (p. 87). In Japan, a typical meal contains miso, soy sauce, and pickles, all fermented products. In Indonesia, they eat tempeh (p. 94). Ode to naturally brewed tamari soy sauce and teriyaki sauce (p. 147). Soy products increase the body's need for vitamin B-12 (p. 164). Soy in Chinese history. Miso soup. Tofu in fish stock and soy sauce broth (p. 201). Macrobiotic diets (p. 343). Soy foods block zinc absorption (p. 348). Eat natural salmon; farm-raised salmon are fed inappropriate soy meal (p. 418). Problems with soy flour and modern soy products: phytates, antinutrients, omega-3 fatty acids, disagreeable taste, phytoestrogens, phytic acid, enzyme inhibitors (p. 477, 495). Soybeans are low in two essential amino acids (p. 496). Textured soy protein contains three antinutrients: Phytic acid, trypsin inhibitors, and isoflavones (p. 502). Person fed soybean milk as an infant had a spleen filled with ceroid (p. 546). Infants should not be fed soy-based formulas which contain phytic acid and estrogen compounds (p. 599, 603-04).

Note: The first edition was apparently published in 1995 by ProMotion Publishing (San Diego, California). Address: California. Phone: (877) 707-1776.

3178. *Nutrition Business Journal* (*San Diego, California*).1999. Soy protein is big news for suppliers. 4(10/11):5-6. Oct/Nov.

• ***Summary:*** The health claim for soy protein, approved Oct. 26, was granted under the Nutritional Labeling and Education Act (NLEA). The claim was submitted in 1998

by Protein Technologies International (PTI), a company of DuPont. On the day the claim was approved, PTI ran full-page ads in the *New York Times* and *Wall Street Journal*–a good idea since neither paper ran the story. Both Kellogg and General Mills are rumored to be developing a breakfast cereal containing soy protein.

In 1998 sales of soyfoods totaled an estimated $1.7 billion and should reach over $2 billion in 1999. During 1998 sales of soy milk grew to almost $200 million (up 20%), tofu to $200 million (up 15%), and tempeh $17 million (up 5%)–according to Peter Golbitz of Soyatech Inc. In 1999, with interest in soyfoods skyrocketing, Golbitz predicts overall growth of 20%, with soymilk up nearly 40%, and meat alternatives, tofu, and other prepared foods containing soy gaining between 20% and 50%, depending on the product.

3179. Turtle Island Foods, Inc. 1999. Tofurky: America's #1 turkey alternative. Now with Wishstix and Tofurky "Giblet" Gravy (Ad). *Vegetarian Times.* Nov. p. 52.
• ***Summary:*** This one-third page vertical color ad introduces Tofurky with new features. Color photos show: (1) Tofurky sliced and served on a silver platter. (2) Three hands holding Wishstix. (3) Three packages of Tofurky Deli Slices in Original, Hickory Smoked, and Peppered flavors.

Note: The word "giblets" (pronounced JIB-luts), a word first used in the 15th century, refers to the edible viscera or entrails of a fowl / bird. Address: Hood River, Oregon. Phone: 888-TOFURKY or tofurky.com.

3180. Tibbott, Seth. 1999. Update on Tofurky (Interview). *SoyaScan Notes.* Dec. 6. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Sales of Tofurky (vegetarian turkey alternative) are up about 20-23% over last year. Seth expects to sell about 56,000 to 58,000 by the end of the year, up from about 45% last year.

His new product, Tofurky Deli Slices, are doing surprisingly well, with total sales almost equal to those of Tofurky. His slices are based on tofu, whereas most competing products are based on soy protein isolates, which is not as natural an ingredient.

The "slow roast" is new way to cook Tofurky for the best flavor. Seth learned this from a customer. Put diced potatoes and carrots inside, and baste them with the Tofurky. Wrap in foil, then bake at 300ºF for 2 hours.

Seth gets lots of e-mail about Tofurky. Hot issues: (1) I've been a vegetarian for 15 years and I don't like it because it tastes too much like turkey. (2) Its too expensive. Seth's response: Ounce for ounce it is less expensive than Gardenburgers. (3) Does it contain genetically-engineered soybeans? (4) I like the new gravy. Address: Turtle Island Foods, Inc., P.O. Box 176, Hood River, Oregon 97031. Phone: 541-386-7766 OF.

3181. Tibbott, Seth. 1999. How Seth got interested in tempeh (Interview). *SoyaScan Notes.* Dec. 7. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Seth now runs one of the largest tempeh manufacturing companies in the United States. He makes and private-labels tempeh for many other companies.
Seth was born in 1951 in Washington, DC, at Columbia Hospital for Women. He attended Wittenberg University in Springfield, Ohio, but took a year off and worked at a nature center and in natural history programs in Yellow Springs. He also attended Antioch University in Yellow Springs, Ohio, for several semesters and studied outdoor education. His focus was elementary education with a strong background in environmental education. In 1974 he graduated from Wittenberg. Soon his main interest shifted to outdoor education, where he worked for 8-9 years before becoming a tempeh maker.

In 1977 he was living in Oregon working as a teacher-naturalist. He had read Steven Gaskin's books and knew about The Farm in Summertown, Tennessee. He was on their mailing list. He had read in their mailings about tempeh and he had been making soyburgers out of soy grits; he fried them in oil and they tasted awful, but they were one of his main foods. In the summer of 1977 he went to eastern Tennessee, not to visit The Farm but rather to work as a naturalist (officially an "environmental resource specialist") for the Tennessee Valley Authority's Youth Conservation Corps, located outside Greenville, Tennessee on Lake Nolichucky. He was a vegetarian, very interested

in vegetarian diets and very interested in The Farm–but had never been there. He and several friends (coworkers) showed up at The Farm one weekend–just to meet the people and see what they were doing. He saw nothing related to soyfoods or tempeh. The Farm had just gotten a truckload of gluten steaks, which Seth helped them devour.

After his visit, he ordered some tempeh spores from The Farm. He followed the directions, dehulled the beans by hand in their tent kitchen (it took about 2 hours to do 2 pounds), cooked then inoculated them, spread them on a stainless steel

tray, covered the tray with aluminum foil, perforated the foil, and put the tray out in a field for about 24 hours. The warm Tennessee summer weather at Lake Nolichucky was perfect for an incubator. "The next day we were just blown away to see what had happened to these beans. There was some discussion whether we should eat 'em or not. But we fried 'em up with okra and sweet corn. Man, it was just incredible. It was some of the best tempeh I've ever tasted. It was a religious experience."

At the end of the summer Seth returned to Oregon to continue his work as a teacher-naturalist. Over the next few years he visited The Farm briefly during drives across the United States to visit his parents in Washington, DC. But, again, he never saw or tasted tempeh or soyfoods at The Farm; nor did he ever visit their Soy Dairy.

During these years he ordered more tempeh spores from The Farm, and made tempeh at home and for other people (retreat groups) at a retreat center in Oregon. By this time Seth had put together an incubator from an old refrigerator in a barn heated by light bulbs. By about 1980 he had obtained and started to use copies of *Tempeh Production* and *The Book of Tempeh* by Shurtleff and Aoyagi.

In 1980, when President Reagan came into office, many government natural history programs began to be cut. Seth realized how of much his income was tied to government programs. Seth wanted to see his poorly-funded retreat center survive, so he decided to go into business making tempeh in order to make a lot of money, which he would use to find the environmental education program at the center. The idealism of the 1970s! Seth had just gotten back from Alaska, where he worked as a naturalist in the summer of 1980. In the fall he began accumulating tempeh-making equipment, investing $2,500 of his savings. He worked out a deal with the Hope Co-op in Forest Grove, Oregon, that he could use the space in their cafe during off-hours to make tempeh. He hoped to make tempeh another successful hippie food–like granola and yogurt. His first product, introduced in Dec. 1980, was Soy Tempeh. It was made from organically-grown soybeans (purchased from Applegate, in Oregon). The tempeh starter was purchased from The Farm in Tennessee. The tempeh was made in a perforated 8-oz bag, then sold packaged in a second outer bag–for $0.74 wholesale and $0.99 retail. Getting the labels printed was a big problem, because the minimum run on roll-stock was 1,000 labels–far too many. So Seth found a guy who printed bumper stickers, so he had several tempeh labels printed on each piece of bumper sticker stock. Unfortunately, it took a long time to peel each label off the bumper sticker. His next printed job was "Tempeh Information and Recipes." Seth was the company's sole employee for the first year; he did everything! Then he hired Belinda Hanley, followed by Alexander Lyon.

In 1982 Seth moved his tempeh company into an empty elementary school house which he rented in Husum, Washington, a little town of about ten houses, about 10 miles north of Hood River, where Seth's company is now. The school had a perfect kitchen for making tempeh; they stayed there for ten years.

In about 1986, while working as a struggling tempeh maker and still unmarried, Seth lost the lease on his rental house after a big party. Looking for a place to live, he decided to rent a piece of land (for $30/month) and build a tree house up in four Douglas firs. It took about a year to build (of and on), and Seth did most of the work himself–when he was not making tempeh. The main room (bottom floor) was 11 by 16 feet with a deck surrounding it. It was very cozy, heated by a wood stove, and well insulated. Above that was a sleeping loft, with a little cupola (the size of a phone booth) on the third floor; it had a little window seat that folded out into a bed.

In about 1987-88, while living in his tree house, Seth started to hear about other people living in tree houses. Unable to find a book on the subject, he started to write one. He found a professional photographer, and soon wrote an article about tree houses in the *Whole Earth Review.* The article mentioned his book and encouraged other tree house dwellers to contact him. Eventually Seth and the photographer traveled around the USA, interviewing people and taking photos. While he was on the road, other people ran the tempeh company. In about 1989 Seth took his ideas and materials to various small publishers, including Ten Speed Press in Berkeley, California. They all turned him down, so the book was never finished or published. Another fellow, Peter Nelson, a tree house builder, was writing a book on the same subject at the same time. Peter found a major publisher, got an advance, and had his book published in the early 1990s.

Seth lived in this tree house for about five years–as his tempeh company steadily grew. In 1991 he married Suzanne Spowart, moved out of his tree house, and into her house at Trout Lake. In May 1992 Seth moved his company across the river to Hood River, Oregon. In June 1992 Seth and Suzanne had their first child. In about 1996 his wife, Suzanne, became the tempeh company's bookkeeper, financial officer, etc.

A photo, taken in the summer of 1977 at Lake Nolichucky, shows Seth Tibbott–having fun, goofing off. Address: President and Founder, Turtle Island Foods, Inc., P.O. Box 176, Hood River, Oregon 97031. Phone: (503) 386-7766.

3182. **Product Name:** Tonzu Organic Tempeh.
Manufacturer's Name: The Organic Soy Company, Ltd.
Manufacturer's Address: Unit A, 2 Corban Ave., Henderson, Waitakere City, Auckland 0612, New Zealand.
Date of Introduction: 1999.
Ingredients: Certified organic whole soybeans, Rhizopus culture.
Wt/Vol., Packaging, Price: 250 gm, vacuum packed inside

paperboard box.
How Stored: Refrigerate at 4ºC or less.
New Product–Documentation: Label sent by Elizabeth Chalmers, owner. 2007. Jan. 22. The product was introduced by this company in 1999, but it was first sold in this paperboard box in 2006. They started using the Tonzu brand name in 2002. 5.75 by 4.75 by 1 inch. Color photo of snowy mountains beyond a deep green valley, on a bamboo green background. Superb label design. Certified Organic logo. On side panel: "Tempeh is a traditional high protein Indonesian soy food and one of the few vegetarian sources of vitamin B12. It is an excellent alternative to red meat, chicken, eggs or fish... Consume within 24 hours once opened. Can be frozen."

Letter (e-mail) from Elizabeth Chalmers. 2007. Jan. 22. "Today, after incubation in perforated plastic bags, we cool the tempeh down to 4ºC, vacuum pack it, then pasteurize / blanch it in boiling water in the cooker for 15 minutes. We have had a few problems with shelf life. Tempeh can blow up like a football on the chiller shelf in and even on occasion has jumped off the shelf–tempeh with an attitude! We are a bit puzzled as to why the occasional packet does this."

3183. Astuti, Mary. 1999. History of the development of tempeh. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 2-15. [17 ref. Eng]
• ***Summary:*** A superb, landmark history of tempeh in Indonesia. The best seen to date! Contents: Introduction. The origin of soybeans in Indonesia. The origin of tempe. Origin of the tempe inoculum. Consumers and producers of tempe. The development of tempe processing technology. Development of tempe inoculum: Leaf inoculum, semi-pure powdered tempe inoculum, pure strain *Rhizopus oligosporus.* Conclusion.

The origin of soybeans in Indonesia: "The modern Indonesian name for soybean is *kedelai,* but according to Winstedt's (1960) dictionary, *kedelai* comes from the Tamil language in southern India. Similarly Wilkinson's (1955) dictionary cites *kedelai,* to mean soybean or mung bean (Tamil)."

"In Javanese literature, the word *kedelai,* (written as *kadele* in Javanese), was first recorded in the Serat Sri Tanjung manuscript, believed to have been written in the 12th or 13th centuries. The manuscript describes the story of Sri Tanjung, wife of Ki Sidapaksa. In the story, Sri Tanjung was accused of committing adultery and, to prove her innocence, she threw herself into the river, from whence rose a beautiful fragrance, proving her innocence. As a reminder, the place where Sri Tanjung lived was given the name Banyuwangi, which means 'fragrant water.' The Sri Tanjung Manuscript (*Serat Sri Tanjung*) represents a legend of the town of Banyuwangi, and includes the mention of soybeans as illustrated in the excerpt below (in ancient Javanese):" A 3-line excerpt, which includes the word *"kadele,"* is given.

"A rough translation of the above is as follows: "The dwelling place of the teachers and the hermits was very beautiful, as were the gardens that were planted with peanuts, taro and sugarcane, soybeans and beans. There were tubers and ivory bananas beside them and 'cintamani' sugarcane as well as 'gunting' bananas that were also laid out in rows."

The word for "soybeans" is also found "in the Serat Centhini manuscript. This manuscript tells the story of Tambangraras, daughter of the king of Giri (a region of East Java near Surabaya), who fled with her brother from Giri when it was threatened by the armies of Mataram under Sultan Agung Anyakraksuma in the 16th century. They traveled with their servant, Centhini, throughout Java. Tambangraras told stories of their experiences and observations on the philosophy and culture of the Javanese which were recorded by Centhini. These stories, or Serat Centhini are also known as Suluk Tambangraras (after the daughter of Sunan Giri) and contain highly detailed analyses of the Javanese people, now regarded as reference works for the basis of Javanese knowledge and culture. In these accounts, they describe not only the regional cultures they came across in different parts of Java, but also the wide range of different foods that they were presented with. Although very little information was documented about how these foods were prepared, the ingredients are described in detail. As skills are largely handed down from generation to generation in Javanese society rather than being formally written down, it would not have been usual for a detailed recipe to be described. The original manuscripts were transcribed by Ronggo Sutrasno of the Palace of Surakarta by the order of Sultan Amengkunagara III. It was quite common at the time for such stories to be recorded by royal families in different areas and this one was also transcribed into verse in the Javanese calendar year 1724, (1814 AD).

"The word for soybeans appears first in section two of the Serat Centhini. This section describes the travels of Cebolang, son of Seh Akadiyat, from Purbalingga to Mataram, stopping at the home of Ki Amongtrustha. Here he was served dinner that consisted of a selection of foods including soybean porridge. In Mataram, Cebolang also obtained information about a special offering that was prepared by parents about to marry off a child. One such ceremony, witnessed by Sriyanto was about the *kacar-kucur*. Kacar-kucur contained kawak beans and mature soybeans, yellow rice, aromatic flowers and shiny metal coins. According to this well preserved ceremony, soybeans had been used in the kacar-kucur for traditional ceremonial purposes for a long time. It also reveals that the savory rice dish *nasi udeg* cooked with coconut for serving with chicken, was also served with fried black soybeans. Black soybeans evidently have a deep significance in Javanese culture."

"Etymology may also hold a clue for us." In Chinese (Cantonese), beans are called *tau* or *tao.* Therefore, in Indonesia, many foods made from beans have names with the prefix *tau* (or *ta*) such as: (1) *tauci / taosi / tau-dji* (modern and former spellings) (salted black soybeans). (2) *tauco / taucho / tautjo* (Indonesian-style miso). (3) *taugé* (bean sprouts). (4) *taujiong / tau-jiong* (soybean jiang). (5) *tahu* (tofu, by shortening *tau-hu*). (6) *tahua* (a by-product of tofu similar to yogurt in consistency). (7) *takua* (firm spiced tofu). Another fermented Indonesian soybean product is *kecap / ketjap,* which is *ke tsiap* in its native China. Notice that tempe, whose name is not derived from Chinese, does not start with the prefix *tau / tao.*

"The origin of tempe: The earliest written record of the word *tempe* comes from the Serat Centhini manuscript, Chapter 3. The excerpt of the manuscript describes the journey of Mas Cebolang when he traveled between Prambanan temple and Pajang, via Tembayat in Klaten regency (in Central Java). Here, Cebolang was served a hefty lunch by the prince of Bayat, which is described in its entirety, to include: *jae santen tempe*, a dish of tempe in coconut cream, and *asem sambel lethokan*, the main ingredient of which is over-fermented *tempe lethokan*. *Sambel lethok*, also known as sambel *tumpang* is nowadays still frequently made by the Javanese.

"Tempe made from soybeans was again mentioned in the Serat Centhini in chapter 12, which describes the journey of Jayengresmi and his group at Bustam village. Here they were hosted by Ki Arsengbudi, who served them a banquet which included *Kadhele tempe srundengan*.

"From the descriptions of the travels through Java of the Giri children and Cebolang, plus the numerous banquets served by their hosts, it can be seen that soybeans and tempe only appeared in Central Java. This was in the region of Mataram which includes the villages of Mataram, Mbayat and Bustam. In West Java (Bogor) fish was largely served as it was also in Surabaya (East Java)."

Origin of tempe inoculum: "The method of making ragi tempe was first described by Widagdo in a local magazine called *Guru Desa* (The Village Teacher), published in 1915, from Kulon Progo. According to Widagdo, making ragi tempe was easier than making ragi tape, and that one had to use pre-existing ragi tempe to make more ragi tempe. How the first ragi tempeh came to be is still a mystery..." Continued. Address: Gadjah Mada Univ., Faculty of Agricultural Technology, Jalan Socio Yusticia, Bulaksumur, Yogyakarta, Indonesia.

3184. Astuti, Mary. 1999. History of the development of tempeh (Continued–Document part II). In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 2-15. [17 ref. Eng]

• ***Summary:*** Continued: "The theory that tempe originates in Java is supported by the fact that tempe can be found in every corner of the island, with variation only in terms of the type of substrate used to manufacture it. The Javanese are both producers and consumers of tempe, both on Java as well as in other regions where they live. So strong is this bond between tempe and the Javanese that the two have become inseparable. Wherever there are Javanese, there is sure to be a source of tempe too.

"An extension of this Javanese tempe society can be seen amongst the Javanese community in Tondano, North Sulawesi. This community descended from a group of Javanese lead by Kyai Mojo, a Javanese Islamic leader who was exiled by the Dutch in 1835. Information gathered from this community revealed that when they first arrived, they were desperate to make tempe but did not bring the essential inoculum. Initially they tried making tempe by boiling soybeans then wrapping them in the leaves of the palambayan tree. These leaves are similar to the hibiscus used in Java, having hairs on the under surface. They succeeded in growing a type of tempe by wrapping the beans in leaves even though they no inoculum, which shows that naturally occurring wild fungi such as those found on leaves can produce tempe and provides evidence that tempe may have originated in this way.

"The spread of tempe outside Java began with the migration of Javanese to other regions, both within Indonesia as well as abroad... The Dutch took indentured labourers from Java to work in their plantations in Suriname, South America. These migrant Javanese brought with them their traditions as well as the know-how of tempe production. As a result, tempe manufacture can now be found in Suriname, Malaysia and Thailand, the latter two countries also have Javanese communities who make tempe.

"Within Indonesia, the spread of tempe is also associated with the movement of the Javanese, the majority of whom have traveled as transmigrants to other areas. Many transmigrants from Java settled in Lampung, Sumatra and brought with them their tempe technology. Interestingly, even though the Javanese passed on their knowledge of making tempe to the natives of Lampung, the industry failed to develop among them, illustrating the specific ethnicity that only the Javanese seem to have with this food" (p. 9).

"Before Indonesian independence in 1945, tempe was produced largely from black soybeans. However, preferences shifted to the yellow soybean when they began to be imported from China and America, and the black traditional variety almost disappeared. Other beans are also occasionally fermented into tempe, and in certain pockets of Java such as the area of Wonogiri and Gunung Kidul, tempe made from lamtoro (*Leucaena glauca*), a leguminous tree can be found. Lamtoro seeds are extremely cheap compared to soybeans, and as these areas are very poor, soybeans and koro beans are too expensive and the people have adapted to using cheaper

local materials" (p. 10).

"The method [of making tempe] reported by Widagdo in his 1915 article is as follows: 'First of all, the whole soybeans are boiled until cooked, then allowed to cool. When cool, the hulls are removed by treading under-foot several times until they float easily to the surface of the water. The hulls can then be easily separated and discarded, more water being added to clean the soybeans. The beans are then left to soak overnight until the soakwater begins to smell bad. At this stage they are boiled until soft, drained and left to cool on a bamboo or woven leaf mat. When cool they are mixed with the ragi on a hibiscus leaf. This is done by tearing up the hibiscus leaf with its mold into tiny pieces and placing this on a clay pot which is heated above the fire, without letting it burn. When the leaf dries out, the pieces are agitated until the mold becomes detached. They are taken and mixed up with the cooled soybeans. After this they are wrapped in leaves and fermented in a gunny sack for 48 hours until they become tempe.' This particular variation is illustrated in Table 1, variation V" (p. 11).

Leaf inoculum: "Ragi tempe which is sold in the form of sporulating mold stuck to the underside of hibiscus leaves is called 'usar,' because in order to inoculate soybeans with this, the leaves are wiped over the beans to spread the spores; the word *usar* means 'to wipe,'

"Near Yogyakarta in central Java is a village well known for its ragi producers. This is Kamal village in the Seyegan township of Sleman regency. One 75 year old descendent of a ragi making family could remember his mother and grandmother, when she was 70 years old, still making ragi. They used black soybeans that were fermented on hibiscus leaves. Usar was therefore made by the people in this area at least as early as 1845, and probably long before that too."

Semi-pure powdered tempe inoculum: "Ragi tempe is not only available in the form of usar on leaves, but also as a powder. This powdered commercially available product has been produced by the Lembaga Ilmu Pengetahuan Indonesia-LIPI (Indonesian Institute of Sciences) in Bandung, West Java since 1976 (Prof. Suharto, 1995, personal communication), and is widely used by the tempe makers belonging to the Indonesian co-operative of tempe and tahu makers (KOPTI). This powdered tempe inoculum is produced from a pure strain of *Rhizopus oligosporus* which is grown on a cooked rice medium, and dried and ground into a powder. It therefore contains a much more restricted range of *Rhizopus* molds than are found in the more wild 'usar', although not a single pure strain."

Conclusion: Tempeh probably originated in rural Java, "certainly before the 16th century." Initially, it was probably prepared from black soybeans. Address: Gadjah Mada Univ., Faculty of Agricultural Technology, Jalan Socio Yusticia, Bulaksumur, Yogyakarta, Indonesia.

3185. Astuti, Mary. 1999. Iron availability of tempe and its uses in iron deficiency anemia. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 41-45. [10 ref. Eng]
• ***Summary:*** Contents: Introduction. Extent of iron deficiency anemia in Indonesia. Tempe in the management of iron deficiency anemia. Address: Indonesia.

3186. Astuti, Mary. 1999. Antioxidant properties of tempe: Prospects for prevention of degenerative diseases. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 71-78. [16 ref. Eng]
• ***Summary:*** Contents: Introduction. Process of oxidation and cellular damage. Antioxidants as protective agents in the body. Premature aging as a degenerative disease. Antioxidants in tempe–Can they slow degenerative diseases? SOD (superoxide dismutase). Conclusions. Address: Indonesia.

3187. Bladholm, Linda. 1999. The Asian grocery store demystified: A food lover's guide to all the best ingredients. Los Angeles, California: Renaissance Books. 234 p. Foreword by Jonathan Eismann. Illust. Index. 23 x 13 cm. Series: A Take it With You Guide.
• ***Summary:*** An original, well-researched and well-written book–though some of the terminology (such as "beancurd") is outdated. Soyfood products include: Beancurd noodles (p. 38). Kinako (p. 47). Soy sauce, mushroom soy sauce, kecap manis (p. 53). Hoisin sauce (p. 54).

Chapter 10, titled "Soybean products" (p. 93-99) includes: Black bean sauce, dried soybeans, tempeh, beancurd (pressed beancurd, deep-fried beancurd, savory grilled beancurd {yaki-tofu}, freeze-dried beancurd {koyadofu}, bean curd sheets {yuba}), fermented beans (preserved black beans {tau see}, bean sauce, toen-jang, chili/hot bean sauce, fermented beancurd), okara, edamame, soybean sprouts, soy milk.

Note: This is the earliest English-language document seen (March 2009) that uses the word "toen-jang" (or "toen jang") to refer to Korean-style soybean jang (miso).

Concerning preserved black beans: "Also called salted or fermented black beans or 'tau see,' this is made by steaming small black soybeans, then fermenting them with salt and spices. Used in a variety of dishes to add a pleasant rich aroma and salty taste... Crush or mash beans slightly to release more flavor or mix with garlic, fresh ginger, or chilies. Available in small glass jars, cans, and plastic bags. They should feel soft and not be dried out... Look for Pearl River Bridge brand labeled 'Yang Jiang Preserved Beans' in a 1-pound yellow canister, and Koon Chun Sauce Factory,

Double Parrot, and Zu Miao Trademark brands all in 8-ounce bags." Note: This is the earliest English-language document seen (Oct. 2008) that uses the term "tau see" to refer to Chinese-style soy nuggets (preserved black beans).

Concerning bean sauce: "Varieties of this Asian staple include yellow bean sauce, brown bean sauce, bean paste (tau jeong), or sweet bean condiment. All are made from yellow or black soybeans, fermented with salt and in the sweet Northern Chinese type, with sugar-sweetened crushed yellow [soy] beans. Two forms are found: whole beans in a thick sauce and bean paste, which is mashed, ground or pureed beans. The whole bean type has a rounder flavor and adds texture, while the pastes are very salty and should be used sparingly... The yellow bean paste is tau cheo... Sold in glass jars and cans. Look for Koon Chun Sauce Factory, Kon Yick Wah Kee bean sauce, Amoy, or Yeo's.

Chapter 18, titled "Japanese food products" (p. 168-81) includes: Tsukemono (pickled in miso), miso paste, shiromiso, akamiso, mamemiso, natto, miso soup, noodle dipping sauce base (memmi), tamari sauce, teriyaki sauce, tonkatsu sauce.

Interesting non-soy products include: Sesame paste (p. 57). Satay sauce (with peanuts), gado-gado-dressing (p. 58). Peanut oil (p. 64). Sesame oil (p. 65). Amaranth (vegetable, p. 72). Winged beans (p. 76). Pickled wheat gluten (p. 108). Sesame seeds, peanuts, roasted peanuts (p. 118). Red/azuki beans, agar-agar (p. 121). Wheat gluten (p. 127). Sesame candy, peanut roll (p. 136). Sesame seed and peanut cookies (p. 137). Sweet red bean paste (azuki *an,* p. 139). Coix seed (Job's tears, p. 165). Japanese seaweed and kelp (p. 169-70). Umeboshi (p. 171). Fu (dried wheat gluten cakes), mochi (p. 177). Address: Writer, designer, illustrator and photographer, Miami Beach, Florida.

3188. Brata-Arbai, Arsiniati M. 1999. Cholesterol lowering effect of tempe. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 51-70. [44 ref. Eng]

• ***Summary:*** Contents: Introduction. Influence of diet on blood lipids. The effects of tempe on blood lipids ("The components within tempe thought to have cholesterol lowering effects include the following: protein, polyunsaturated fatty acids {PUFA}, fibre, niacin, vitamin E, carotenoids, isoflavones, and antioxidants"). Summary and recommendations.

Graphs show: (1) Average decrease in triglycerides after experimental diet. (2) Average decrease in total cholesterol after experimental diet. (3) Average decrease in LDL cholesterol after experimental diet. (4) Average increase in HDL cholesterol after experimental diet. (5) Average decrease in the ratio of plasma total cholesterol to HDL cholesterol after experimental diet.

Six illustrations show hypothesis for the development of atherosclerosis and methods of intervention. There are 7 risk factors including smoking, hypertension, hypercholesterolemia, obesity, etc. To address these: Stop smoking, make 6 dietary changes, and increase physical activity. Address: Nutrition Lab., Universitas Airlangga, Indonesia.

3189. Davidson, Alan. 1999. The Oxford companion to food. New York, NY and Oxford, England: Oxford University Press. xviii + 892 p. Illust. by Soun Vannithone. Index. 29 cm. [1500+* ref]

• ***Summary:*** The 2,650 alphabetical entries in this excellent encyclopedia and cornucopia represent 20 years of Davidson's work. The 175 illustrations by Laotian artist Soun Vannithone are superb. There are 39 longer entries about staple foods such as rice, noodles, and apples. A comprehensive bibliography provides access to further information. The book does not contain recipes.

Soy-related entries include: Bean sprouts (p. 64). Black beans, fermented (*chi,* p. 79). Kecap (Indonesian soy sauce, made "basically from soya beans and palm sugar only." "The word 'kecap' has passed into the English language as catchup or catsup and then as Ketchup, which now means something quite different." p. 429). Ketchup ("probably via the Malay word *kechap,* now spelled *kecap,* which means soy sauce. The word was brought back to Europe by Dutch traders who also brought the oriental sauce itself. The sauce has changed far more than has the word, although the name has appeared in a large number of variations such as catchup and catsup." Discusses tomato ketchup, mushroom ketchup, and ketchup made from oysters, mussels, walnuts, etc., p. 430-31). Koji (p. 435). Lecithin (p. 447). Miso (p. 509). Natto (p. 530). Soybean (p. 739). Soy milk (p. 739-40). Soy sauce (p. 740). Tempe (or tempeh, p. 788). Tofu (p. 798-99). Yuba (p. 860-61).

Also discusses: Alfalfa (p. 10). Almond (p. 12-13, incl. "almond milk"). Amaranth (p. 13). American cookbooks, history (p. 15-17). Azuki beans (p. 44-45). Barley, barley breads, and barley sugar (p. 58-60). Beef–BSE (mad cow disease, p. 68). Chia (p. 166). Cowpea (p. 230-31). Chufa (p. 185). English cookery books, history (p. 276-80). Five grains of China (p. 305). Gluten (p. 341). Groundnuts (or peanuts, p. 356-57). Hemp (p. 377-78). Hydrogenation (p. 391). Japanese culinary terms (p. 415-17). Kudzu (p. 437). Linseed (p. 454-55). Lupin (p. 463). Margarine (p. 478-79). Mung bean (p. 518). Nori (p. 534). Noodles of China (p. 537, incl. "Gan si {soya bean noodles}" and "Fen si {also fen-szu} {mung bean vermicelli}).” Oncom (p. 553-54). Quark (p. 644). Quinoa (p. 645). Seaweeds (incl. hijiki, kombu/konbu, nori, wakame, etc., p. 712). Sesame (p. 713). Shortening (p. 721-22). Sprouts (no listing). Tahini (p. 779). Toast (p. 797, incl. Melba toast). Ume and umeboshi (p. 817). Winged bean (p. 849). A brief biography and nice portrait photo of Alan

Davidson, a man of extraordinary knowledge in the world of food, appear on the rear dust jacket.

Note: The paperback edition of this book (2002) is titled *The Penguin companion to food.* Address: World's End, Chelsea, London, England.

3190. Djanuwardi, Bambang; Silitonga, Chrisman. 1999. Patterns of tempe consumption. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 117-33. [6 ref. Eng]
• ***Summary:*** Contents: Introduction. Consumption of soybeans and tempe in Indonesia. Changes in tempeh's image in Indonesia ("tempe's image has improved dramatically over the years"). Consumption of tempe in different income groups. Pricing structure and the consumer. Conclusions ("tempe has become more popular over the years and has spread through the different parts of the country"). Recommendations.

Tables: (1) Consumption of tempe (kg per person per week) in 13 provinces in 1981 (Source: Sayogyo 1981, 1985). It was highest in Yogyakarta, followed by Central Java, then Jakarta, then East Java. (2) Tempe consumption in urban and rural areas during 1984, 1987, 1990, and 1993. (3) Tempe consumption in different provinces, high, low, and lowest groups, during 1984, 1987, 1990, and 1993. (4) Covariant value for per capita tempeh consumption. (5) Tempeh consumption in urban, rural, and urban + rural areas, in 11 groups based on purchasing power, during 1984, 1987, 1990, and 1993. (6) With bar chart: Tempeh consumption based on level of income in 1993. Those with the highest and the lowest incomes consumed little tempeh. Those with middle incomes consumed the most. (7) Seasonal price index for soybeans and tempe.

Graphs: (2) Seasonal price variation of tempe, 1981-1992 (Jan. to Dec.). (3) Seasonal price index frequency in different towns.

Appendix 1. Table: Tempe consumption (kg per capita per week): Result of national food survey 1984, 1987, 1990, and 1993. By province.

Appendix 2. Table: Analysis of variance for tempe consumption based on level of expenditure, 1993 survey.

Appendix 3. Seasonal price index of tempe in different Indonesian cities, based on tempe price, 1991-1992. Address: Ministry of Food Affairs, Jakarta, Indonesia.

3191. Hagler, Louise. 1999. Meatless burgers: Over 50 quick and easy recipes for America's favorite food. Summertown, Tennessee: Book Publishing Co. 94 p. Illust. Index. 23 cm.
• ***Summary:*** A vegetarian cookbook. Contents: Introduction. Glossary of ingredients. Bean & grain burgers. Soyfood burgers: Tofu, tempeh, textured soy protein & soybeans. Vegetable burgers. Burgers with an ethnic flair. Accompaniments. Buns. Side dishes. Nondairy shakes. Address: Summertown, Tennessee.

3192. Hermana, -; Mahmud, M.; Karyadi, D. 1999. Composition and nutritional value of tempe: Its role in the improvement of the nutritional value of food. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 27-32. [7 ref. Eng]
• ***Summary:*** Contents: Introduction. Chemical and nutritional changes. Protein and fat. Vitamins. Changes in nutritional quality. Tempe supplementation to increase the nutritional value of cereals and root vegetables.

Tables: (1) Comparison of nutritional composition of soybeans and tempe, 100 gm wet weight (ww) and 100 gm dry weight (dw), including vitamins, minerals, and amino acids. (2) Nutritional value of tempe and soybean protein. Address: Indonesia.

3193. Hermana, -; Karmini, Mien. 1999. The development of tempe technology. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 80-92. [4 ref. Eng]
• ***Summary:*** Contents: Introduction. Contemporary tempe production technology (Flow diagram): Boiling, dehulling, soaking, washing, inoculation (ragi tempe, or laru), packaging, fermentation. Amylase activity. Protease activity. Lipase activity. An ideal processing method (flow diagram for the production of good quality tempe). Address: Indonesia.

3194. Karmini, Mien. 1999. Tempe and infection. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 46-50. [8 ref. Eng]
• ***Summary:*** Contents: Introduction. The effect of tempe on infective agents. Influence of tempe on the host animal. Therapeutic effects of tempe in infection. Conclusion ("Tempe has the ability to reduce the chances of infection by inhibiting the growth and virulence of many infective agents as well as increasing the ability of the body to destroy them. Tempe can also assist in speeding up recovery and improving nutritional status when used therapeutically during periods of infection"). Address: Indonesia.

3195. Karyadi, Darwin. 1999. The development of tempe across five continents. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The

Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 21-25. [24 ref. Eng]
• ***Summary:*** Research on and interest in tempeh in the United States and Europe has helped to improve the image of tempeh in Indonesia. Address: Indonesia.

3196. Klingel, Brigitta. 1999. Gesundheit fuer die Zellen–Soja-Lezithin [Health for the cells–Soya lecithin]. Munich, Germany: Suedwest Verlag GmbH. 96 p. Illust. (color photos). Subject index. Recipe index. 21 cm. [9 ref. Ger]
• ***Summary:*** A popular introduction to lecithin, with basic information about other soyfoods and vegetarian recipes. Contents: Lecithin–The multitalented. Soya lecithin. Help for the heart. Lecithin lowers blood cholesterol. Mental and bodily top fitness. Beauty thanks to lecithin. Soyfood products: Dry soybeans, soymilk, yuba, okara, tofu, tempeh, miso, soy sauce, soy sprouts. Recipes with lecithin. Address: Germany.

3197. Kodiran, -. 1999. Socio-cultural aspects of tempe in Indonesia. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 16-20. [8 ref. Eng]
• ***Summary:*** "Tempe is extremely popular in rural areas, were it is served as a complementary food in the daily menu, as well as throughout Java's cities, especially in Central Java. Both village and urban tempe consumers share several well known recipes. Tempe may be boiled, for *tempe bacem,* cooked with vegetables (*oseng-oseng tempe*), fried to dryness (*kering tempe*) and even left to become over-ripe before it is cooked (*tempe bosok*). In addition, it may be served as an accompaniment to the main meal (*luwah*) or served as a snack (*nyamikan*). The most popular dish in an area depends on the taste and preference of the particular social group concerned and what learned behaviour they have acquired. In rural areas, tempe has already spread into all sectors of society and is eaten by everyone, from the highest socio-economic classes to the very lowest. In towns and cities, things are a little different and here more tempe is consumed among the middle and lower classes.

"In rural society, although tempe is readily eaten as an addition to the daily menu, it is nevertheless regarded as a food of low status and may lower one's position or social standing. For example, a member of a particular community may put down the social status of a group who do not have status symbols or prestige, by calling them 'the tempe group.' Similarly, if a rich family were to serve tempe at a family wedding for instance, it would be seen as highly inappropriate to their social and economic status.

"As in rural areas, urban societies also have their own views. Here, tempe is not consumed equally by all social groups, but is generally served as a variation to the menu of middle and lower class families. As in rural areas, it is almost unheard of to serve tempe at formal receptions and dinners among the middle and upper classes, who instead prefer to serve European or American style food, the same as Europeans or Americans might serve 'exotic' Indonesian food in the same circumstances.

"In urban areas, particularly in central Java, the word 'tempe' was used in the past to refer to things of low or trivial value, as well as being an insult to put down something as inferior. Over the years, expressions have appeared like 'tempe nation,' 'tempe mentality,' and 'tempe class' to refer to something of lower prestige or of lower quality as it implies being only as cheap as tempe.

"Among all the foods available in a society, there are some that have important significance and symbolism (Koentjaraningkrat, 1987). Tempe is one such food. A food's social value is linked to socio-economic factors, whereas the ritual, or cultural significance of a food relates to its use in religious ceremonies, festivals and life events. All of these aspects influence people's attitudes and perceptions of tempe and in some areas it is held as a food of great socio-cultural significance. In certain rural areas, especially around Cilacap and Poerwokerto in Central Java, and Bantul and Wonosari in Yogyakarta province, tempe is served at an important feast, or *selamatan* known locally as *kenduri* as well as at a ceremony where offerings are made (*punjungan*). This is a type of Thanksgiving ceremony for the cycle of life and is represented by tempe made into sacred offerings according to local beliefs. A *selamatan* may be held for a birth or in coastal areas, as an offering to the spirits of the sea.

"In the last few years, the position of tempe in society has improved dramatically and more people, particularly in towns and cities as well as those abroad already enjoy eating tempe. This move has been brought about largely through increased knowledge and awareness about food and nutrition. Many academic institutions, universities and nutrition authorities, both governmental and independent, within Indonesia and abroad, have publicized their findings on tempeh via scientific journals, lectures, and the press." The main nutritional benefits of tempeh are listed. Address: Gajah Mada Univ., Yogyakarta, Indonesia.

3198. Lwin, Claudia Saw. 1999. The food of Burma: authentic recipes from the land of the golden pagodas. Boston, Massachusetts: Periplus; North Clarendon, VT: [Distributed by] Tuttle Pub. 120 p. Introductory articles by Wendy Hutton, San Lwin and Win Pe. Illust. (color photos by Luca Invernizzi Tettoni). Index. 21 x 23 cm.
• ***Summary:*** Contains 75 recipes collected from all over Myanmar. A glossy, full-page photo is on every other page. The most populated "upcountry" region of Myanmar is the Shan Plateau. One of the main foods grown here is soya beans. The soups from this area are often "thickened with

powdered soya bean. One example of this is a Shan version of Burmese noodles (*kyaukswe*), which is based on pork in a soup thickened with powdered soya bean..." (p. 12-13).

"The Shan tribes also make a fermented soya bean product similar to the Indonesian *tempe,* which is often dried, pounded and used as a seasoning" (p. 13).

"The soya bean, a native of China, appears in many guises in Myanmar: soy sauce, fermented soya beans (sometimes pressed into a cake and dried) and beancurd [tofu]." The Shan people also make a unique type of tofu from chickpeas. Sprouts are made from several types of beans, including soya beans and mung beans (p. 15).

In Part II, "Cooking in Myanmar," the section on "Burmese ingredients" has three soy-related entries (p. 35): "Soya bean cake (*pè bya*)*:* Dried soya beans are steamed, fermented, and made into cakes or wafers, which are roasted or pounded to a powder. This powder is added to curries and soups, or mixed with tomatoes to make a dish similar to Myanmar curried *ngapi."* A small color illustration shows soya bean cake. "Soy bean preserve (*pè ngapi*)*:* Fermented soya beans are made into a paste and used as a condiment. Tinned soya bean paste is sold outside Myanmar and can sometimes be used as a substitute for the fermented soya bean products.

"Soy Sauce (*pe nganpya yay*)*:"* Light and dark soy sauce are both used in Burmese recipes; the light sauce is saltier and paler in colour.

Soy related recipes: Khayanchinthee pantwepyaw (Tomato sauce, with "2 slices dried fermented soya bean cake, 7 cm (3 inches) in diameter," p. 37). Wether ahchochet (Pork balls cooked in sweet soya bean sauce, with "2 tablespoons sweet soya bean sauce," p. 96-97). Kailun gyaw (Stir-fried kailan, with "1 tablespoon light soy sauce," p. 108).

Note: This is the earliest English-language document seen (Sept. 2010) that contains the term "sweet soybean sauce."

3199. Mowe, Rosalind. ed. 1999. Southeast Asian specialties: A culinary journey through Singapore, Malaysia, and Indonesia. Cologne, Germany: Culinaria Koenemann. 319 p. Illust. (color photos by Günter Beer). Index. 26 x 22 cm.

• ***Summary:*** Translated from the German. Includes headings in Chinese. This book is a feast for the eyes, printed on glossy paper with informative color photos on almost ever page. The structure and content are also creative and very interesting; it has caught the heart and spirit and nuances of the culture. On some pages, however, the type is too small to read. The name of most recipes and ingredients is given in their native language. A 2-page map of Southeast Asia appears near the front. The basic structure: Singapore (p. 12-109). Malaysia (p. 110-215). Indonesia (p. 216-301). Glossary (p. 302-04). Introduction to Chinese nutritional theory, by Andrea Fülling (p. 305-06): Introduction, yin and yang, the three warmers, the warming effect of foods (the five energy states are hot, warm, neutral, refreshing, and cold), the five elements. Acknowledgements. Photo credits. Index.

The contents includes: Healing herbs (p. 26-29). Soup as medicine (p. 30-33). Soybean (in Singapore, p. 40-47): Introduction (familiar forms are sprouts, soy sauce, beancurd, tempeh; new disguises are "vegetable protein," emulsifier," "lecithin," "vegetable oil" which are found in dairy products, canned fish, candies, desserts, and much more), in the West soybeans are "often grown as monocultures, with the disadvantages that this entails, such as the use of chemical fertilizers and pesticides," and genetically engineered soybeans, great nutritional value yet rarely used as whole dry soybeans, most of the harvest in SE Asia is processed into beancurd and tempeh, importance of fermentation, soy milk resembles cow's milk and is an excellent substitute, soy sauce is used throughout this cuisine. Photo of green soybean plants with green pods.

Soybean sprouts: "Black soybeans are imported from Thailand and Myanmar (Burma)." After washing, the beans are spread out in deep baskets and kept in the dark for 6 days. "Before the baskets of sprouts can be sold, the top layer if green leaves is trimmed off. They are used as feed for chickens and ducks. One basket yields 154 lb (70 kg) and the output of a medium-sized business is 60 baskets a day." Soybean "sprouts should never be eaten raw, nor should they be cooked for too long." Mung bean sprouts are better know than soy sprouts, but both can be bought fresh.

Dou ban jiang ("Salted soya bean sauce." Photo of jar and Sinsin label). Dou chi ("Black bean sauce." Photo of jar and Sinsin label). Note: Typically Dou chi are named "Salted black beans." Photo of five glasses showing how dry soybeans are transformed into soymilk, then curds.

Tofu: Meat from the fields (p. 42-44). The best tofu is made from special types of soybeans that are different from those that are crushed to make oil and meal. Most of the tofu in Singapore is made from soybeans imported from Canada. Describes the basic process for making commercial pressed tofu or soft tofu, with 7 photos showing the steps. Implies that making yuba is part of the process for making tofu; it "is eventually sold as dried beancurd sticks (*fu chok*).

Soy milk products: Fu pei–dried tofu skin [yuba]. Fu chok–dried tofu sticks [dried bamboo yuba]. Tim chok–sweet tofu pieces [sic, sweet yuba / ama-yuba]. Tofu fa–soft tofu as a dessert [tofu curds]; a little tapioca flour may be added. "Served warm or cold with a syrup flavored with almond extract." Color photo shows yellow yuba atop hot soymilk, and a woman removing a slab pressed tofu from its mold.

Tofu recipes for every taste (p. 44-45): "Tofu on its own is rather bland in taste, but this is precisely its strength, since when it is combined with different ingredients and condiments it tastes new and different every time. Recipes:

Niang dou fu (Fried beancurd pockets). Xia ren dou fu (Stir-fried beancurd with jumbo shrimp). Hong shao dou fu (Braised beancurd). Sui rou zheng dou fu (Steamed soft beancurd with ground pork). Dou hua (Sweet beancurd dessert). Zha fu pi juan (fried beancurd skin [yuba] roll). Color photos show the 2nd and last recipes.

Soy sauce (p. 46-47): A naturally fermented product made with mold cultures of *Aspergillus oryzae.* Describes the process for both light and dark; the koji is made in shallow round trays, ready after 4 days. It is "then transferred into fiberglass tanks [or earthenware jars], covered with brine, and left to ferment for 3 months," after which the 1st extraction of crude soy sauce takes place [but not through pressure]. More brine is added and a second extraction takes place 1 month later; this process is repeated for the third extraction. "At this point, the paths of the different soy sauces diverge." The saltier, light-colored soy sauce is mixed with a preservative, pasteurized, "and stored in tanks to clarify before bottling." The dark soy sauce is mixed with both a preservative and caramel coloring, is allowed to mature for an additional 4 weeks, then is pasteurized and bottled. Note: What happens to the 2nd and third extractions? Color photos show five steps in the process, but a traditional earthenware vat is shown instead of the fiberglass tanks. Dark soy sauce is thicker than light. Recipes: Jiang you ji (Chicken in soy sauce, with marinade). Hong shao niu nan (Braised shoulder of beef).

Oyster sauce (contains no soy). Sesame oil (p. 49, with 7 photos).

Condiments (p. 50-51): Color photos show the front and label of 15 separate jars and bottles with a substantial description under each. Those containing soy are: Hoisin sauce. Dou chi (Fermented bean dried). Dou ban jiang (Tou cheong). Fu ru (Beancurd preserved). Jang qing (light soy sauce). Hei jiang you (Dark soy sauce). Tian jiang (Sweet sauce).

Peking duck (p. 62-65; soybean paste {no Chinese name is given} and Hoisin sauce are ingredients in the sauce). One key is the crisp skin. It is served in thin Mandarin pancakes.

Suckling pig (p. 86-87): Piglets are bred in Hunan province. Slaughtered at the age of 3-4 months. After a dead piglet has been patted dry, it is brushed with soy sauce, then coated with a marinade that includes fermented red bean curd and light soy sauce. As with Peking Duck, suckling pig is prized for its crisp, tasty skin. Six photos show the skewered baby pig.

Symbolic foods (p. 98-101): One of these is Moon Cakes from the mid-autumn festival (15th day of the 8th lunar month). "Traditional fillings include sweet black bean or lotus paste." Is the sweet black bean filling made from soy beans?

Instant cup noodles [instant ramen] (p. 48): Note: Wikipedia says at Momofuku Ando: ORS [Order of the Rising Sun], (lived March 5, 1910–Jan. 5, 2007) was the Taiwanese-Japanese businessman who founded Nissin Food Products Co., Ltd. He is famed as the inventor of instant noodles and cup noodles, which he launched on 25 Aug. 1958 (at age 48) under the name Chikin Ramen–after months of trial and error experimentation to perfect his flash-frying method. On 18 Sept. 1981 he launched his most famous product, Cup Noodle.

Beansprouts (p. 154-57): With a long introduction, a description of the process, beautiful photos, and recipes: Taugeh goreng kucai (Fried beansprouts with chives). Taugeh masak kerang (Fried beansprouts with baby clams). Tahu goreng (Fried tofu with beansprouts). Bihun goreng (Fried rice noodles). Urap taugeh (Fried beansprouts with grated coconut).

Nasi tumpeng (rice cone) (p. 220). Served with sambal goreng tempe (crisp-fried marinated strips of tempeh). Gudeg (rice with green jackfruit cooked in a sweet sauce, p. 221) is served with a side dish of tahu goreng bacem (tofu cooked with spices, then fried).

Tempeh (p. 228-29), soybeans fermented with *Rhizopus oligosporus* mold. Indonesians consume more tempeh than tofu. The process is described, with 4 color photos: Recipe: Tempe goreng (fried tempeh).

Glossary (p. 302-04) includes: Fermentation. Soy sauce ("Probably the best-known Asian seasoning agent,..."). Sticky rice (also known as glutinous rice). Tahu (Indonesian; tofu). Tempeh. Tofu (beancurd, incl. hard, soft, and smoked).

3200. Murti, Tri Hesti; Nasution, Haris. 1999. KOPTI: The tempe and tofu co-operative. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 144-55. [Eng]

• ***Summary:*** A very interesting chapter about two key organizations. Contents: Introduction. History of KOPTI. The role of BULOG (National Logistics Office) in the development of Kopti. Pusat KOPTI or PUSKOPTI. Contributions of Kopti to the tempeh industry: Institutional aspects, business and capital, the managerial position, social welfare for its members. Achievements of Kopti in tempe development: Quality improvement, processing of waste products and environmental constraints, soybeans, tempe marketing. Challenges of Kopti and future prospects: Organizational targets, business challenges, industrial and technological challenges, investment capital challenges, challenges for human resourcement management ("to improve the image of and respect for the tempe industry as a skilled profession and to develop managerial skills").

"One of the key institutions involved with the tempe industry is KOPTI, the Co-operative of tempe and tahu makers of Indonesia. After a difficult start in the early 1980s, KOPTI has been successful in bringing the tempe industry into the cooperative structure it is in today."

"Kopti began its origins in 1975 in Jakarta, in response to the difficulties met by the tempe and tofu makers in obtaining soybeans. At that time they had to purchase soybeans from the open market which had unstable prices and supplies were temperamental, having to be bought from the only wholesale market in Jatinegara [a subdistrict {*kecamatan*} of East Jakarta, at the far western end of Java] which had a monopoly. In essence, there was no guaranteed soybean supply at a stable price. Those manufacturers who lived far from Jatinegara found it very inconvenient and incurred great expense to transport beans back to their factories. There was also a great variety of soybean grades; Ampenan, Lampung, Medan, Hijau, Balong, Argentina, America, China, Burma, Sumbawa and Aceh.

"In 1975/76, a group of leading tempe makers decided to form a body that would resolve the problems in obtaining their raw materials, and between 1976-1978 plans were made to put this into effect. Tempe makers from Pekalongan, Central Java joined together to devise a way by which soybean supply could be improved and also so that they could communicate their ideas and exchange information on tempe more readily.

"This first organization they formed was called the Federation of Indonesian Tempe and Tahu makers (HIPTI). However, in December 1978, HIPTI was disbanded, largely for legal purposes as it was necessary to re-form the organization in an official capacity as a co-operative that was recognized by the government. In the beginning of January 1979, a new co-operative of tempe and tahu members was created. The aims of the co-operative were primarily to serve the needs of the tempe and tahu makers and at that time it was represented only in the four districts of Jakarta. At that time, KOPTI was based in Utan Panjang II, Kemayoran, Jakarta Pusat [central Jakarta] with Achmad Rouzi Noor as its head, a man who was also director of the company P.T. Sangga Buana.

"The objectives of KOPTI were assigned as follows:

"a. To facilitate the supply of soybeans.

"b. To avoid extortion by middlemen.

"c. To obtain government assistance for legal protection and advice.

"d. To improve the poor image and status of tempe makers so that they may become respected members of society and their profession regarded as a craft passed on down the generations.

"e. Increase product quality and productivity.

"f. To aim to produce tempe and tahu at a price easily affordable by the general population.

"The Role of BULOG (National Logistics Office) in the Development of Kopti: Officially, Kopti was inaugurated on 11th March 1979 in Jakarta. Since 1977, however, the National Logistics Office (BULOG) had the responsibility for the procurement and supply of soybeans, which was to become the responsibility of Kopti, to the tempe and tahu manufacturers, KOPTI activities really only took off between 1979-1980, when 29 primary Kopti units were set up as its first offices and membership totaled 9,387. Although BULOG had a monopoly on soybean procurement, there were several reasons why they were interested in supporting the formation of Kopti.

" The tempe making technology employed by almost all the tempe makers was largely traditional and static in nature. The product also was well below any standard for quality and safety, and there was little regard for using clean water or a modern industrial environment.

"Tempe makers had a very weak position with regard to capital or collateral. As a result, they had a very poor bargaining position over the price of soybeans. This was because the soybeans available at that time were sold on the free market where the price fluctuated widely. Ultimately, the tempe maker was always in a loss making position with minimal profit on each transaction.

"In general, the capital available for use in the production process was very limited. The very poor were at the mercy of their creditors to lend them money to continue their businesses, which were largely unsuccessful. This situation continued for quite a long time and created a bad impression of the tempe industry. Moreover, the conditions under which the tempe makers themselves lived had a lot to be desired, living, as many of them did, in slums that were highly inappropriate for a food industry with a high risk of contamination."

"To become a member of Kopti, one has to fulfill the requirements of being a tempe or tahu maker as well as to adhere to the statutes of the primary co-operatives.

"Both social and economic benefits have been realized, including training and welfare programs, savings schemes and subsidized housing for its members."

Tables: (1) Growth in human resources of Kopti (until April 1993). The table is divided into 5 columns: Region. Total Primkopti, total members, total worker members, total Kopti employees. Kopti is now composed of 73 Primkopti, with 40,621 members, 117,487 worker members, and 1,473 Kopti employees. The largest (by far) of the six regions into which Indonesia is divided is Central Java which has 35 Primkopti, 21,360 members, 64,017 worker members, and 375 Kopti employees. It is followed by West Java (10,572 total members), Jakarta (4,450 total members), Yogyakarta (2,750 total members), etc. Palembang is by far the smallest of the six regions.

(2) Total capital belonging to KOPTI in Indonesia (up to April 1993). In the same six regions, KOPTI has Rp 23.031 billion of total working capital, R 44.554 billion of total investment capital, and Rp 71.575 total capital.

(3) Housing funds. In the same 6 regions, Kopti as a total of Rp 14.731 billion in housing funds in 10,465 housing units.

A photo shows the inside of a tempe shop in Indonesia

where Kopti members are processing tempe. Address: Director of PT Soya Briket Niagatama, Indonesia.

3201. Pawiroharsono, Suyanto. 1999. Microbiological aspects of tempe. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 93-115. [35 ref. Eng]
• ***Summary:*** Contents: Introduction. The fermentation process. The role of tempe micro-organisms [microorganisms]: Bacterial lactic acid fermentation, principal tempe fungal fermentation, contaminant micro-organisms. Identification of micro-organisms. Isolation, characterization and selection of micro-organisms. Improving the quality of amino acids. Antibacterial and antifungal effects. Antioxidants. Hypocholesterolaemic effect: Ergo sterol, unsaturated fatty acids, vitamins, fat soluble vitamins. Degradation of anti-nutritional compounds: Soybeans and flatulence (the role of stachyose and raffinose), phytic acid. Improvements in flavor and aroma. Formulation of inoculum. Propagation of isolated strains. Summary. Address: Director of Industrial Process Technologies, BPPT, Jakarta, Indonesia.

3202. Sapuan, -; Sutrisno, Noer; Agranoff, Jonathan. comp. and trans. 1999. The complete handbook of tempe: The unique fermented soyfood of Indonesia. Translated and edited by Jonathan Agranoff. Singapore: American Soybean Association. xiv + 186 p. No index. 24 cm. [208 ref. Eng]
• ***Summary:*** See next page. The title page states: Compiled by Dr. Sapuan and Dr. Noer Sutrisno. In collaboration with The Indonesian Tempe Foundation (*Yayasan Tempe Indonesia,* Jakarta). The copyright page states: Copyright of English edition: 1997. Limited edition printed and distributed by American Soybean Association. Note: This is an English-language translation of an Indonesian-language book by the same authors titled *Bunga Rampai Tempe Indonesia,* published in 1996 in Jakarta, Indonesia, by Yayasan Tempe Indonesia.

Contents: Preface by the Indonesian Tempe Foundation. Preface by the American Soybean Association, Southeast Asia Regional Office. Foreword, by Dr. Jonathan Agranoff. Introduction and summary: Sapuan and Agus Saifullah.

Chapter One: Historical and cultural. 1. History of the development of tempe, by Mary Astuti. 2. Socio-cultural aspects of tempe in Indonesia, by Kodiran. 3. The development of tempe across five continents.

Chapter Two: Nutrition and health aspects. 4. Composition and nutritional value of tempe, its uses in the improvement of the nutritional value of food. 5. Tempe in the treatment of infant diarrhea in Indonesia. 6. Iron availability of tempe and its uses in anemia. 7 Tempe and infection. 8. Cholesterol lowering effect of tempe. 9. Antioxidant properties of tempe.

Chapter Three: Technology and microbiology. 10. The development of tempe technology. 11. Microbiological aspects of tempe.

Chapter Four: The tempe economy. 12. Tempe consumption patterns. 13. The scale of the Indonesian tempe business. 14. KOPTI, the tempe and tofu co-operative. 15. Making tempe in Indonesia. 16. The politics of developing a national tempe industry.

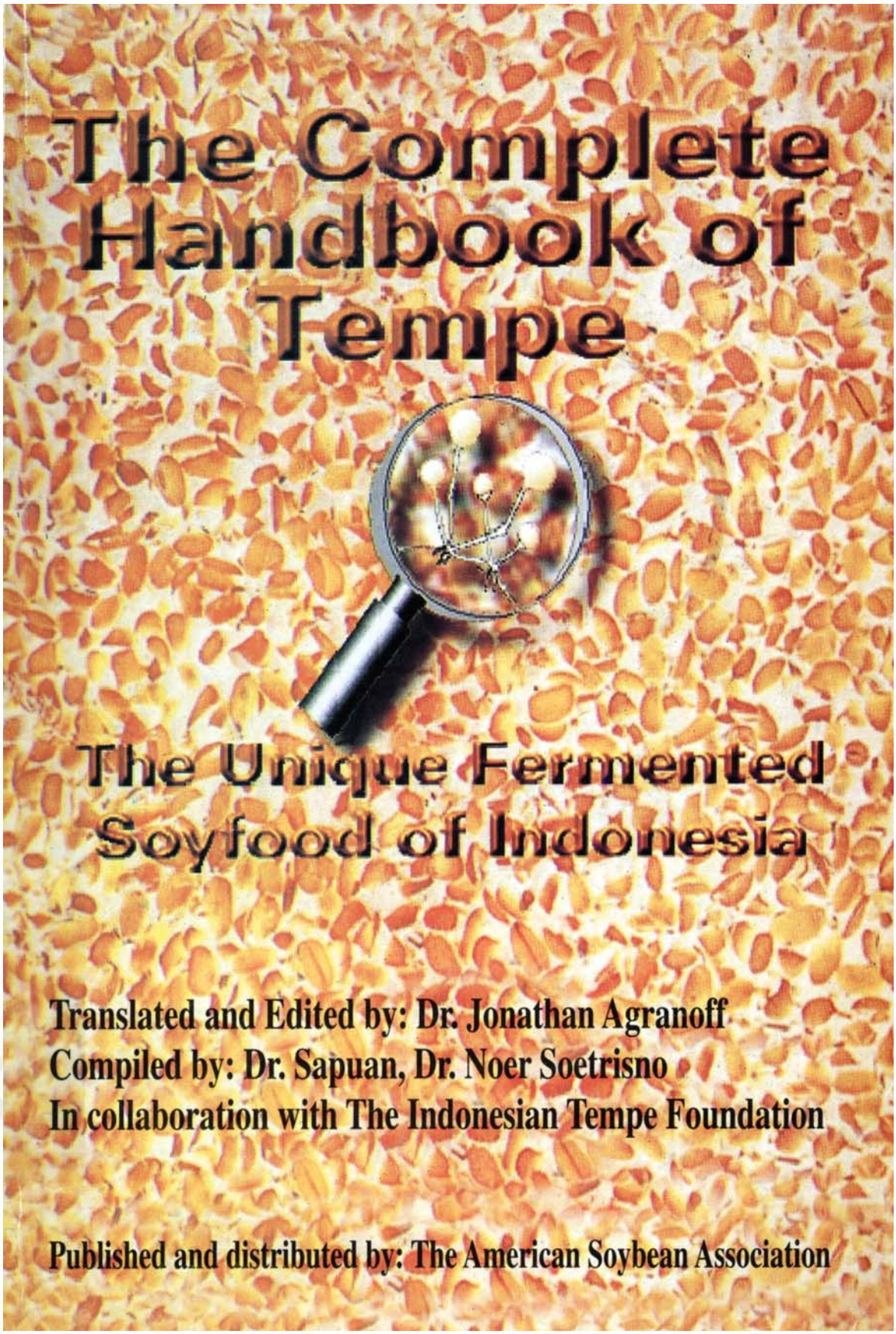
Chapter Five: Conclusions. 17. Conclusions. List of contributors. Address: Indonesia.

3203. Sapuan, -; Saifullah, Agus. 1999. Conclusions. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 176-79. [Eng]
• ***Summary:*** "In the last few years, a great deal more scientific attention has been paid toward tempe, both in Indonesia and abroad. One way by which tempe has attracted attention is through the media and in Indonesia a government campaign entitled 'I Love Indonesian Food' has provided some momentum. Distributing information on tempe, therefore, has gone hand in hand with promoting native Indonesian foods. In the case of tempe, this has been carried further by the publication of this book through the efforts of the Indonesian Minister for Food Affairs.

"Tempe, at its basic level, is still regarded merely as a side dish at the Indonesian dinner table. Over time and with the developments that have taken place in society, its function has changed in many ways, recipes have been created and its various characteristics have changed. Even though it has now become a popular modern snack food, it has retained its traditional position and, to the majority of Indonesians it is still served fried, generally in the home as a side dish to the main meal.

"The fact that tempe is a unique food made from fungal-fermented soybeans, has brought it considerable attention by a various experts, both from Indonesia and abroad who have conducted extensive research on the food. These studies and research findings have provided much supportive evidence for the many different qualities this food possesses..." Address: Secretary to the Minister and Chairman, Indonesian Tempe Foundation.

3204. Sudigbia, I. 1999. Tempe in the management of infant diarrhea in Indonesia. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 33-40. [20 ref. Eng]
• ***Summary:*** Contents: Introduction. Definition. Role of tempe in oral rehydration therapy. Tempe in the management



of infant diarrhea. Effects of tempe supplementation on infant growth rate following diarrhea.

Tables: (1) Research data showing the influence of tempe supplementation to the diet of infants suffering from diarrhea. (2) Weight gain and nutritional status three months post-diarrhea.

Illustration (bar chart): Growth expressed gain over a 3 month period following recovery from diarrhea. Address: Indonesia.

3205. Sulaeman, Suhendar. 1999. The scale of the Indonesian tempe business. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 134-43. [5 ref. Eng]

• ***Summary:*** Contents: Introduction. Optimalisation of scale of operation. Production capacity for tempe processing. Cost and benefit. Opportunities for developing the tempe business. Conclusions.

The larger the scale of a business, the greater the benefit per unit made in terms of profit and efficiency. "However, for the local tempe market, and to supply the customers directly, a small to medium scale of operations is most appropriate as the product cannot be stored. Production figures in the region of 150-200 kg/day are ideal."

"The very small 'household' scale tempe makers who process less than 50 kg of soybeans per day... should join a communal group such as a tempeh co-operative Kopti." This would help them to increase their production to 50-100 kg/day and to become more efficient and profitable.

"The tempe industry in Java is the largest in Indonesia and, especially in the province of Yogyakarta where the market is relatively saturated, the only opportunity would be to process tempe further into secondary value added products... The future really lies in developing secondary products from tempe."

Tables show: (1) Gross profit and profit of kg of soybeans per month from three different production capacities in three provinces, 1994. (2) Monthly expenditure and revenue of tempeh makers for three different levels of tempe production. For each maker in a particular region or city gives (in rupiah or kg): Fixed costs, variable costs, market costs, total costs, tempeh production (kg), sales revenue, price (Rp per kg of tempe). The three regions or cities are South Sumatra, Lampung, and Yogyakarta.

(3) Fixed and variable costs for each kg of tempe produced in three sample districts (Rp/kg). The three districts are South Sumatra, Lampung, and Yogyakarta. Address: Indonesia.

3206. Sutrisno, Noer; Muharto, -. 1999. Marketing tempe in Indonesia. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 156-65. [1 ref. Eng]

• ***Summary:*** Contents: Introduction. Tempe marketing networks. Production cost analysis in the marketing of tempe. Summary.

"It is no surprise that tempe, which is the product of an ancient civilization, has a long history in the economy of Indonesia. This is especially true in the smaller towns and villages, deep in the Indonesian countryside and far from the big cities, and is where tempe's true identity lies. Nowadays, however, with rapid and intense urbanization that has occurred with modern industrialization, tempe has far from been left behind and has managed to penetrate not only into the cities, but also into the hotels and restaurants as proof of the steps forwards it is making in society.

"From a political viewpoint, tempe was also a symbol of backwardness and social stagnation in the 'Old Order' of Indonesian politics under the first President, Sukarno. In his classic speeches, Sukarno is noted to have referred to the cheap status of tempe as in 'Don't let us become a tempe nation!' meaning to move forward and away from backwardness. It was a rather unfortunate choice of words and the negative perception of tempe has remained for many years.

"The position of tempe in society has changed a great deal since then. Originally, tempe was very much respected as an important food in society, without any negative connotations. Many years ago, long before the modern Indonesian nation was formed, tempe was an important and highly respected food in society, even being used in certain Javanese religious ceremonies. When the old Javanese kingdoms faded from power and a new society emerged under the Dutch East Indies and later Indonesian independence, tempe's status in society fell and it became an object of political ridicule.

"Today, tempe's status has risen once again to regain its respect in society, and moreover, has become the subject of serious scientific attention in other countries. Perhaps we should see this as a new dimension in the history of tempe, as it emerges once again as one of Indonesia's unique foods for all the levels of society.

"Tempe is generally produced in small household factories and it is a long journey to get from here to the customer's dinner table, street stall or hotel / restaurant. Nevertheless, tempe has managed to penetrate into all parts of Indonesia to supply the snack food industry there. In fact, wherever the Javanese have settled, there is sure to be tempe too. This is a crucial aspect to tempe's distribution and marketing as it is largely through the Javanese that tempe is distributed, something that is not usually documented by researchers. There are many intricate details like this in the way tempe is produced and distributed in Indonesia, and this knowledge underlies the successful marketing of tempe" (p.

156).

The medium scale producers sell a larger proportion, about 50% of their capacity direct to local markets, and the remainder is also sold via intermediate vendors. The small scale producers, on the other hand, work very much for the local market and sell about 70% of what they produce directly to the market customers, another 10% or so is sold around the area from the back of a bicycle, and the remaining approximately 20% is sold via local outlets such as other small traders, local warungs etc.

"One aspect of this marketing hierarchy is that large scale tempe makers in Java not only produce mature tempe for sale, but also sell 'ready mixed' soybeans that have been inoculated but not yet fermented to maturity. This 'ready to ferment' product makes it easier for some small tempe makers to sell tempe and act as the agents for the large factories who produce too much for their own local market.

"Based on this study, it was apparent that tempe is still an industry of the Javanese and even in South Sumatra and Lampung, almost 100% of the tempe makers were of 100% Javanese origin" (p. 159).

Summary: "The tempe industry is labor intensive and each of its workers are equally treated and have the same respect in the factory. It displays characteristics of a fair and socially conducive environment to work in, both in providing income earning opportunities as well as providing training for new recruits and profit sharing."

A diagram (Fig. 1) shows the tempe marketing network. Soybean traders and KOPTI are at the top of the supply chain and the market is at the bottom.

Tables: (1) Comparison of the composition of costs in the tempe industry. For large, medium, and small manufacturers in South Sumatra, Lampung, and Yogyakarta. For each is given: Fixed costs, variable costs, production costs, marketing costs, expenditure, income, and profit (%). The percent profit for large makers is 32.08% in South Sumatra, 19.69% in Lampung, and 27.22% in Yogyakarta.

(2) Conversion of soybeans to tempe according to factory size. 1 kg of soybeans makes from 1.65 to 2.00 kg of tempeh. The yield of 2.00 kg is by large makers in Lampung.

(3) Proportional composition of non-fixed costs in different sizes of tempe factories (%). For large, medium, and small manufacturers in South Sumatra, Lampung, and Yogyakarta. The components of non-fixed costs are soybeans, inoculum, packaging, fuel, wages, and other. For large makers, soybeans account for 85-93% of non-fixed costs. Address: Indonesia.

3207. Sutrisno, Noer. 1999. The politics of developing a national tempe industry. In: Sapuan, Noer Sutrisno, and Jonathan Agranoff, compilers and translator. 1999. The Complete Handbook of Tempe: The Unique Fermented Soyfood of Indonesia. Singapore: American Soybean Association. xiv + 186 p. See p. 166-75. [3 ref. Eng]

• ***Summary:*** Contents: Introduction. The present state of the tempe industry. Prospects for growth in the tempe industry. The future for tempe. Development of the rural tempe industry. Research and development. Conclusion.

The writer believes that an export market for tempe can be developed. Address: Indonesia.

3208. Yasa Boga. 1999. Tempe & tahu [Tempeh & tofu]. Jakarta, Indonesia: Gramedia Pustaka Utama. 24 p. Series: Seri resep praktis. [Ind]*

3209. Wild Oats Community Market; Alfalfa's Markets. 2000. The joy of soy: Resolve to evolve. This millennium, pick up a good habit. Your guide to soyfoods–True health food. Colorado. 8 panels. [10 ref]

• ***Summary:*** This is a chain store newspaper (published from time to time; copyrighted 1998), with this issue devoted to soyfoods. It contains ads for many soy products sold at the store, many of them on sale. "Soy strategy: 3 New Year's resolutions. 1. Get healthy. 2. Lose weight / cut down on bad fats. 3. Help protect the environment.

A sidebar titled "Cool beans! Top ten reasons to enjoy soy" states: "1. Soy protein helps reduce cholesterol levels, thereby reducing the risk of coronary heart disease, which accounts for more than 500,000 deaths in the U.S. per year.

"2. The soybean is the only vegetable to offer a complete protein profile, equal to both meat and eggs in its protein content.

"3. As a complete protein, soy contains all nine essential amino acids. (The human body needs twenty amino acids, only eleven of which are produced by our bodies).

"4. Soybeans are higher in essential, healthful fats than most vegetable foods.

"5. Soybeans are a good source of several vitamins and minerals, including calcium, zinc, copper, magnesium, iron and many of the B vitamins.

"6. One acre of soybeans provides about 30 times more protein than one acre devoted to raising beef.

"7. Soy is also the richest dietary source of isoflavones, which act as phytoestrogens that may help protect against cancer, osteoporosis and menopause.

"8. Soy may increase bone density and reduce the risk of osteoporosis.

"9. Soy may reduce menopausal hot flashes in women–good news for those women who do not wish to take hormone replacement therapy.

"10. Other heart-healthy benefits of soy include low saturated fat, high calcium content, high essential fatty acid (EFA) content, high vitamin E content and no cholesterol."

There are definitions of and information about: Miso, shoyu, tamari, tofu, tempeh, soy milk, soy yogurt, soy cheese, soy desserts, soy oil, soy flour, texturized soy protein, soy grits, soy nuts, edamame (soy in the pod), and meat alternatives.

3210. Purvis, Kathleen. 2000. Say soy! New foods and drinks keep sprouting from these magic beans. *Post-Dispatch* (*St. Louis, Missouri*). Feb. 14.
• ***Summary:*** Perhaps the tastiest form of soy is edamame. These green soybeans, boiled, salted, and served chilled, are the "latest craze in the chi-chi ["chic"] cocktail set." In Japan they are served as snacks with beer or sake.

In the six months before June 1999, sales of soyfoods have grown 34.4%, according to data from SPINS. Sue Havala notes that soymilk is now available at mainstream food stores / supermarkets. A full-page color photo shows bright green edamame, with the pods both opened and closed. Contains four recipes and a glossary of the following: Green soybeans, soymilk, soy flour, soy nuts, canned soybeans, soynut butter, miso, tofu, tempeh, soy sauce. Address: Knight Ridder Newspapers.

3211. Erickson, Marsha. 2000. Soy foods may lower cholesterol: In season. *News-Tribune* (*Duluth, Minnesota*). Feb. 17.
• ***Summary:*** "Editor's note: The American Heart Association has designated February as American Heart Month. Throughout the month, In Season is focusing on the 'right stuff' to feed your heart. Today the spotlight is on soy foods. Coming next week: Whole grains."

Soyfoods are good for the heart. They "are rich in special plant chemicals called isoflavones. These isoflavones may directly lower blood cholesterol. In addition, soy foods are low in saturated fat, high in soluble fiber, cholesterol-free and contain high quality protein.

"Food sources of soy include soynut butter, roasted soynuts, soy flour, miso, tofu, tempeh, textured soy protein and soymilk."

A black and white photo has a border of "green soybeans," both in the pods and shelled. The text, titled "Great soy sources," states: The FDA now allows products that contain at least 6.25 grams of soy protein per serving to say on the label that the product may reduce the risk of heart disease. Products that are good sources of soy protein per serving are:

4 ounces of firm tofu contains 12 grams of soy protein. 4 ounces of soft tofu contains 9 grams. 1 soy burger contains 10-12 grams. 8 ounces [1 cup] soymilk contains 10 grams. ½ cup cooked soybeans contains 16 grams. ½ cup green soybeans [shelled edamame] contains 10 grams. ½ cup tempeh contains 19 grams. ½ cup roasted soy nuts contains 39 grams. Address: Registered Dietitian, Miller-Dwan Medical Center; Duluth representative of the Minnesota Dietetic Association.

3212. Starcke, Beate Susanne Stefanie. 2000. Untersuchung zur antiproliferativen und antiangiogenen Wirkung der Isoflavonoidinhaltstoffe des Tempeh (fermentierte Sojabohnen) [Investigation of the antiproliferative and antiangiogenic effects of the isoflavonoid contents of tempeh (fermented soybeans)]. PhD thesis, Hohen Landwirtschaftlichen Fakultaet der Rheinischen Friedrich-Wilhelms-Universitaet zu Bonn, Germany. 85 p. Submitted 23 Feb. 2000. [91 ref. Ger]
• ***Summary:*** Contents: 1. Introduction. 2. Statement of the problem. 3. Materials and methods. 4. Results. 5. Discussion of the results. 6. Summary. 7. Illustrations, tables, and list of abbreviations. Address: Bonn, Germany.

3213. Stephens, Roger; Stephens, Jane Ade. ed. and comp. 2000. Soyfoods guide 2000: Helpful tips and information for using soyfoods. Indianapolis, Indiana: Stevens & Associates, Inc. Distributed by the Soy Protein Partners. 24 p. Illust. No index. 28 cm. [23 ref]
• ***Summary:*** This guide is available only on a limited basis to dietitians and health professionals. Contents: Health: Add soy to diet to reduce heart disease (FDA recommends 25 grams of soy protein a day to reduce blood cholesterol levels), sample day soy meal planner (easy ways to add 25 grams of soy protein). Daily soyfood guide pyramid. Soy and your health–Scientists are learning about soy's health benefits: Isoflavones, heart disease, menopause & osteoporosis, cancer, allergies, diabetes & kidney disease, fat. Soyfood Descriptions: Meet the bean: Green vegetable soybeans (edamame), hydrolyzed vegetable protein (HVP), infant formulas, soy-based, lecithin, meat alternatives (meat analogs), miso, natto, nondairy soy frozen desserts, soy cheese, soy fiber (okara, soy bran, soy isolate fiber), soy flour (50% protein), soy grits, soy protein concentrate, soy protein isolate (isolated soy protein, 90% protein), soy protein, textured (flour or concentrate), soy sauce (tamari, shoyu, teriyaki), soy yogurt, soybeans, soymilk, soy beverages, soynut butter, soynuts, soybean oil & products, sprouts (soy), tamari (see soy sauce), tempeh, Teriyaki sauce (see soy sauce), tofu & tofu products, whipped toppings, soy-based, yuba. Helpful charts: Soyfood substitutions, soyfood isoflavone content. Soyfoods web site. Soyfood composition. Recipes using: Meat alternatives, textured soy protein, whole soybeans, soy flour, soynut butter, soymilk, tofu. Address: 4816 North Pennsylvania Street, Indianapolis, Indiana 46205. Phone: 317-926-6272.

3214. Potter, Susan. 2000. Soy: Good news for the heart. *Healthy & Natural Journal* 7(2):68-71. April.
• ***Summary:*** While experts are not sure exactly how soy protein works, they are convinced that a significant improvement in America's cardiovascular health can be achieved by the consumption of as little as 25 grams/day of soy protein. A large color photo shows a tall glass of soymilk, a white bowl of dry soybeans, a cake of tempeh broken in half, and a cake of tofu–all on a wooden cutting board, placed on a woven cloth mat.

Note: Until recently, Dr. Potter was with the Dep. of Food Science and Human Nutrition, University of Illinois, Urbana, Illinois. Address: PhD, Research Scientist, Director of Nutrition Science, Protein Technologies International.

3215. Schlieske, Ingrid. 2000. Soja, Tofu & Co.: Vom Fleisch, das auf dem Felde waechst [Soya, tofu & company: From meat that grows in the fields]. Bietigheim, Germany: Turm Verlag. 231 p. April. Illust. Recipe index. 25 cm. [Ger]
• ***Summary:*** A very handsome book, with a full-page color photo on almost every other page, printed on glossy paper. Contents: Foreword. General information: What is healthful eating?, vegetarian diets taste good and are good for you, making food look attractive, textured soy protein, introduction to ingredients (incl. azuki beans, seitan), which fats are suitable for cooking, vegetables, sea vegetables, herbs and salt, pumpkins and squash, nuts, avocadoes, and mushrooms, brief glossary of foods.

Recipes: Tofu (p. 30-105). Textured soy protein (Soja-Hack, p. 106-31). Soja-Ragout (p. 132-65). Soja-Schnetzel (p. 166-71). Sojetten (p. 172-85). Chickpea meal (Kichererbsenmehl, p. 188-209). Azuki beans and mung beans (210-19). Seitan (*Saitan,* p. 220-21). Tempeh (p. 222-23). Salad dressings (p. 224-25). Address: Germany.

3216. *Vegetarian Times.*2000. Glossary. April. p. 119.
• ***Summary:*** Five of the seven entries are for soyfoods: Hoisin sauce, edamame, miso, tempeh, and tofu. The pronunciation of each is given.

3217. Jacobi, Dana. 2000. The joy of soy: 75 delicious ways to enjoy nature's miracle food. Roseville, California: Prima Publishing. xii + 244 p. May. Illust. Index. 22 cm. Series: The natural kitchen. [16 ref]
• ***Summary:*** This is basically a reprint of Dana's 1996 book titled *Soy! 75 Delicious Ways to Enjoy Nature's Miracle Food,* also published by Prima Publishing. It contains no new text and no new recipes; a few small errors have been corrected and the design of both covers and the title page is new. Address: Food writer, New York, NY.

3218. Sears, Barry. 2000. The soy zone. New York, NY: HarperCollins (ReganBooks). x + 338 p. Index. 25 cm. [216 ref]
• ***Summary:*** Contents: Acknowledgments. Introduction. 1. The health benefits of soy. 2. Enter the soy zone. 3. Zoning your kitchen. 4. Soy zone cooking tips. 5. Soy zone meals. 6. Modifying your favorite recipes. 7. Fine-tuning the soy zone diet. 8. Your longevity report card: The tests you want to pass. 9. Insulin: Your body's Dr. Jekyll and Mr. Hyde. 10. Soy science. 11. How the soy zone diet stacks up against the traditional vegetarian diet. 12. Frequently asked questions. 13. World health implications for the soy zone diet. Appendixes. A. Technical support. B. Zone validation studies. C. Calculation of lean body mass. D. Zone food blocks for making soy zone meals. E. Synthesis of DHA. F. Glossary of terms. G. Resources. H. References.

Note: This book has all the hallmarks of a "quickie" written by a person who does not know his subject. Moreover, we believe the nutritional science and dietary philosophy are seriously flawed. Address: Ph.D., Swampscott, Massachusetts.

3219. ConAgra, Inc. 2000. ConAgra acquires Lightlife Foods (News release). Omaha, Nebraska. 2 p. July 14.
• ***Summary:*** Today (July 14) ConAgra, Inc. (NYSE: CAG), "one of the world's leading food companies, and Lightlife Foods, Inc., a leading developer, manufacturer, and marketer of premium vegetarian and soy products... announced that ConAgra has purchased all assets of Lightlife. Terms of the transaction were not disclosed.

"Twenty-one-year-old Lightlife Foods [www.lightlife.com] is the leading refrigerated brand of vegetarian and soy-based food products in the United States. Lightlife manufactures a variety of meatless products including hot dogs, burgers, deli slices, ground meat substitutes, as well as popular vegetarian items like tempeh and seitan."

"ConAgra, Inc., (www.conagra.com) a $25-billion-plus food company, is North America's largest foodservice manufacturer and second-largest retail food supplier. The company employs more than 80,000 people worldwide. In 1988, ConAgra developed Healthy Choice, a brand that brought the concept of healthy eating into the mainstream. Advantage 10, another ConAgra brand that was developed two years ago, is a full line of vegetarian foods and is endorsed by noted physician Dean Ornish, M.D." Address: Omaha, Nebraska.

3220. Botschaft der Republik Indonesien [Indonesian Embassy]. 2000. Tempeh [Tempeh]. Bonn, Germany: Botschaft der Republik Indonesien Bildungs- und Kulturabteilung [Indonesian Embassy]. 27 p. July 1. Illust. 21 cm. [10 ref. Ger]
• ***Summary:*** This booklet, which has a gray cover, was published in conjunction with Tempeh Promotion Day, held on July 1 at the Indonesian Embassy in Bonn, Germany. The rear cover shows that the booklet (and event) were sponsored by Garuda Airways of Indonesia, Viana, and Haus Java restaurant. On the cover is a color photocopy collage of two cakes of tempeh, three tempeh dishes, and a line drawing of an Indonesian woman from *The Book of Tempeh.* The cover price is 5 German marks.

Contents: Greetings from the Indonesian Ambassador. Tempeh. Tempeh–A food that helps promote good health. How to make tempeh at home. Tempeh as a raw material for making tempeh milk and tempeh sausage. Tempeh recipes. Tempeh links on the World Wide Web. Small bibliography. Directory of manufacturers and other sources of tempeh.

Address: Bonn, Germany.

3221. International tempe symposium [International tempeh symposium]. 2000. Bonn, Germany. 27 p. Held Saturday, 1 July 2000 at the Indonesian Embassy, Bernkasteler Str. 2–Bonn, Bad Godesberg. [10 ref. Ger]
• ***Summary:*** Contents: Recipes. Greetings from the Indonesian Ambassador, by Izar Ibrahim (p. 2-6). Tempeh: A blessing for vegans and vegetarians (p. 7-10). Tempeh–food that promotes good health (summary of lectures by Dr. Hem Chandra Jha, Bonn Univ., p. 11-12). The significance of tempeh in Indonesia (summary of lectures by Dr. Suyanto Pawiroharsono, BPPT, Jakarta, p. 13-14). How to make tempeh at home, by Dr. Suyanto Pawiroharsono (p. 15). Tempeh as a raw material for the production of tempeh milk and tempeh sausage, by a research project of Brawijaya Univ. in Malang, East Java (p. 16-17). Tempeh recipes (p. 18-23). Tempeh links on the Web (p. 24). Small bibliography (p. 25). Sources of tempeh in Europe (p. 26; Viana Naturkost GmbH, Euskirchen, Germany. Alberts Tofuhaus, Lautersheim, Germany. Lima, Maldegem, Belgium). Publication and edition of this booklet. Nutritional composition of tempeh and 14 related foods. Address: Bonn, Germany.

3222. Saltspring Tempeh. 2000. Saltspring Tempeh. Rainbow Rd., Ganges, Saltspring Island, BC V8K 2K3, Canada.
• ***Summary:*** Letter (e-mail) from Henry Schmidt, founder of Henry's Tempeh. 2011. Jan. 12. In 1998 he helped his daughter, Katrina Schmidt Reimer, to start a tempeh company on Saltspring Island, but he never worked there afterward. Ganges was the main town on Saltspring where this tempeh was sold. It was a sole proprietorship, owned by her, that made only one kind of tempeh from July 2000 to June 2004–when it ceased doing business; it was not sold. He has none of the labels left. Address: Saltspring Island, BC, Canada.

3223. Tempeh promotion day: Samstag, 01 Juli 2000 09:00–18:00 Uhr [Tempeh promotion day: Saturday, 1 July 2000, 9 a.m. 6 p.m. (Leaflet)]. 2000. Bonn, Germany. 6 panels. Held at the Indonesian Embassy, Bernkasteler Str. 2–Bonn, Bad Godesberg. [Ger]
• ***Summary:*** Contents: A vegetarian food. The program. A food with many benefits. Nutritional composition. Illustration. Contact information. Address: Bonn, Germany.

3224. Yap, Bwee Hwa Flora. 2000. Re: Tempeh Promotion Day in Germany. Good tempeh now sold in Germany at a reasonable price. Letter to William Shurtleff at Soyfoods Center, Aug. 7. 1 p. Typed, with signature.
• ***Summary:*** This year Tempeh Promotion Day was held on July 1, in Bonn, in the Indonesian Embassy, sponsored by Garuda Airways. The day was successful, with about 150 people in attendance, thanks to Miss Birgit Steffan of the cultural department of the embassy. Lectures about tempeh were given by Dr. Suyanto (Director of Bioindustrial Technology, Agency for the Assessment and Application of Technology, Jakarta) and Dr. Jha (a cancer researcher at the Univ. of Bonn). On the walls were pictures of the different stages of tempeh making. The lunch, consisting of tempeh dishes, was served outdoors in tents by the Java Restaurant (of Koeln). After lunch there were more lectures and a show of Indonesian dances.

Dr. Suyanto will come to Germany again this August or September. Flora plans to go with him to Maldegem, Belgium, where there is a very modern tempeh factory–previously owned by De Hobbit.

In Germany, very nice frozen white tempeh, made in Holland, is now sold in Asian Shops for DM2.50 for 250 grams–a very reasonable price. The tempeh sold in natural food stores retails for about DM6.00 is made by Viana (owned by Bernd Drosihn). Bernd plans to move his factory to the Eifel.

A second letter, dated Aug. 15, accompanies two new books on tempeh. Flora adds: "It is a pity that German people still have not learned to appreciate tempe. Tofu is sold in supermarkets, also soymilk and desserts." Spreads for bread made of soy, are found mostly in natural food shops (Naturkost Laden). One of the reasons that tempe is not made in households is that the starter is difficult to buy in Germany. Address: P.O. Box 4132, D-66386 St. Ingbert, Germany. Phone: 6894-53609.

3225. Elliott, Julia. 2000. Simply soy: Nature's own antidote. Clifton, Virginia: Pocol Press. xiv + 112 p. Aug. Index. 22 cm. [37 ref]
• ***Summary:*** Contents: Prologue. The problem: Menopause–a natural event, causes... and effects, my own changing. The solution: The soybean–a little bean with a big history, soy–nature's own alternative, the benefits of soy. The program: Soy food products, cooking with soy, soy recipes, cooking with tofu, tofu recipes. Guideposts for the journey: Warning, risks, and wisdoms, vitamins, minerals, and water, herbal alternatives, meditation, massage, and acupuncture. Epilogue. Appendices: Readings and resources (women's health resources, books about menopause, menopause web sites, books about soy and tofu, general information sources, soy product sources, soybean web sites), source notes, bibliography. About the author. Address: 10 Guyton St., Kingston, New York 12401. Phone: 914-338-6368.

3226. Seemo (H. Shapira); Kairava (J. Spaelstra). 2000. Re: Photos of the new Dakini Health Foods Pvt. Ltd. food processing facility in Pune / Puna, India. Letter to William Shurtleff at Soyfoods Center, Sept. 2. 1 p.
• ***Summary:*** This packet contains no letter, only 13 color photos of the new food plant. Most of these photos show

the Indian employees working with the modern- and very sanitary-looking equipment, making tofu and soy tempeh, in a clean plant with white walls, a high roof, and a tile floor.

Four of the photos show: (1) Two Indian men cooling the soybeans on a tray before inoculation to make tempeh. (3) Joined by a woman, they measure the inoculated soybeans into plastic bags. (3) A list of products sold by the company: White tahini paste. Sesame butter. Peanut butter. Soy-tempeh. Tofu. (3) Kairava (J. Spaelstra) standing by a sink with a glass in her hand. Address: Dakini Health Foods Pvt. Ltd., S.N. 33, Bhoiwasti, Keshavnagar, Mundhwa, Pune / Puna 411 036, Maharashtra, India.

3227. Hagler, Louise. 2000. Soja: Wandelbarste Bohne der Welt. Eine 'coole' Proteinquelle [Soya: The most versatile bean in the world. A 'cool' source of protein]. Aitrang, Germany: Windpferd. 140 p. Illust. Index. 18 cm. [Ger]
• ***Summary:*** Foreword by Peter Golbitz. Foreword by Louise Hagler. Introduction by Dr. Mark and Virginia Messina. Basic soyfoods. Feeding babies and children soyfoods. Breakfast, brunch & bread. Whole soybeans. Sauces, spreads, dips & dressings. Soup & salad. Main dishes. Desserts. Drinks & yogurt.

No dairy products or eggs are used; honey is called for in some recipes. Address: The Farm, Summertown, Tennessee.

3228. Mangels, Reed. 2000. Nutrition hotline: The phytate component of soy products. *Vegetarian Journal* (*Baltimore, Maryland*) 19(5):2. Sept/Oct.
• ***Summary:*** "Phytates interfere with the absorption of minerals, but do not completely prevent us from absorbing minerals like calcium and iron. The presence of phytates is not a good reason for avoiding soy products. Whole grains and other dried beans also contain phytates."

"Fermented soy products, including tempeh and miso, have a lower phytate content so that zinc from these foods is better absorbed than from unfermented soy products like tofu and soymilk." Address: PhD, R.D., Baltimore, Maryland.

3229. Turtle Island Foods, Inc. 2000. Talkin' Tofurky (Color videotape). Hood River, Oregon. 6:40 minutes.
• ***Summary:*** This seven-minute video was released in Sept. 2000. It was developed by Turtle Island mainly for stores that might be interested in carrying the Tofurky line. Also, it could be sent to TV stations who request video footage before Thanksgiving or Christmas. It describes briefly how the company got started (in 1980 in Forest Grove, Oregon, making tempeh at night), then tells about the origin of Tofurky, how it has developed, and its market niche. It shows a family preparing a Thanksgiving dinner, when their vegetarian kid calls, saying he's coming home for Thanksgiving. Horrors! What to do? They also have some good footage of when Christina Applegate, a movie star, brought Tofurky on the Tonight show–as well as other TV show footage. Address: P.O. Box 176, 601 Industrial Ave., Hood River, Oregon 97031. Phone: 541-386-7766.

3230. **Product Name:** Shipping and display carton for various types of tempeh and Tofurky Deli Slices.
Manufacturer's Name: Turtle Island Foods, Inc.
Manufacturer's Address: Hood River, Oregon. Phone: 541-386-7766.
Date of Introduction: 2000. September.
Ingredients: -
New Product–Documentation: This brown cardboard carton may contain any of the following products made by Turtle Island Foods, Inc. (1) Soy Tempeh, 10 x 8 oz. (2) Five Grain Tempeh, 10 x 8 oz. (3) Wild Rice Rhapsody, 10 x 8 oz. (4) Low Fat Millet Tempeh, 10 x 8 oz. (5) Original SuperBurgers (TM), 10 x 6 oz. (6) BarBQ SuperBurgers (TM), 10 x 6 oz. (7) TexMex SuperBurgers (TM), 10 x 6 oz. (8) Tofurky Deli Slices Original. (9) Tofurky Deli Slices Smoked.

"Remember Folks 'Brown is Beautiful.' Please recycle this unbleached dioxin free box." "The superior taste since 1980. #1 premium, northwest tempeh."

3231. Singh, J. 2000. Re: Making tofu and soymilk in Belgium, and tempeh in The Netherlands. Letter (fax) to William Shurtleff at Soyfoods Center, Oct. 2. 1 p. Handwritten with signature on letterhead. [Eng]
• ***Summary:*** This company makes tofu and soya milk in Belgium, and they also own a tempeh factory (the biggest in Europe) in The Netherlands. They make about 20,000 kg/week of tofu and 8,000 kg/week of tempeh.

The tempeh company is: Tempé Produkten B.V., Tunnelweg 107, 6468 EJ Kerkrade, Netherlands. Another name of the company is YIP Soya Products (Bolda, Holland). Mr. Singh purchased the tofu company in Belgium in 1986, and the tempeh company in Holland in 1990. Address: Benelux Soya N.V. Factory: Industrieweg 3, 2320 Hoogstraten, Belgium. Phone: 03-314-5632.

3232. Rose, Bruce. 2000. How Bruce got involved with natural foods, soyfoods, Rosewood Products, Inc. and Tofu International Ltd. (Interview). *SoyaScan Notes.* Oct. 15. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** In 1967, while enrolled at Wayne State University in Detroit, Michigan, Bruce got involved with macrobiotics. His main education came from "street school." He would drive to Ann Arbor for the fun of it, and there he discovered Eden Foods, a little upstairs co-op that was the first he found that sold brown rice. He would buy foods, and take them back to the little center which was in Detroit. Michio Kushi visited their center several times and gave lectures.

One of his childhood friends was Tim Redmond, whom

he later met during his college years and then at Eden Foods. Redmond's dad invested money in Eden Foods on the condition that they cease to be a co-op. Michael Potter later contributed money "from spurious sources in tune with the times." Potter's attitude has long been "It's Mike against the world."

Many of the food co-ops were started by potheads; most were in university towns and part of the counterculture–a mix of politics and natural foods.

From time to time, usually when some problem or opportunity arose, Eden Foods would run out of money and call on Bruce. He loaned them money (once $12,000) and they paid it back each time. In 1978 Bruce started to work for Eden Foods at their warehouse on Platt Road in Ann Arbor. They were already a fairly big food distribution company with large semi trucks [semitrailers]. Soon Bruce learned about the Soy Plant, which was a co-operative on Ann Street in Ann Arbor. He started to visit their deli. In 1979, Bruce and his family moved to a town about 20 miles north of Ann Arbor–before the fire.

Then in Nov. 1979 the Eden warehouse at 4601 Platt Road was destroyed by a large fire. Bruce was a manager at the time. He is quite sure that the fire was *not* caused by arson. If it was arson, it certainly was not done by the owners. They definitely didn't burn down the company to collect on the insurance. The main reason is that Eden was greatly underinsured; they lost a lot more than they got back or than could ever have gotten back. In the best case, insurance pays you 80% of what you're insured for. To this day, nobody knows for sure what caused the fire. The fire almost put Eden out of business; they lost a lot of money. They were able to stay in business because of the help of their friends. Before the fire, the insurance companies were always trying to get Eden to buy more insurance coverage–but they never did.

The fire was devastating for Bruce as well. He had been working on some automatic packaging equipment for Eden; it all melted. So after the fire, he decided to leave the company. They owed him $15-30,000 at the time. He sat down with Potter and his good friend Redmond and made them an offer. You can forget the debt if you will give me just 15% of the stock in Eden Foods. Potter said "Yes" and Redmond said "No."

Cliff Adler, who had joined the company before the fire, had a profound effect on its recovery. After the fire, he converted a $100,000 loan into stock so that in 1980 he owned 34% of the company. "Cliff was great. He was an upper management mover and shaker and eased the company's debt burden. He moved the company forward."

At one point Bruce considered starting a company to make tofu, but he didn't want to compete with the Soy Plant. Then he happened to meet Ben Wenzel who was delivering (by contract) the Soy Plant's tofu out of the Ann Arbor area and outside of Michigan. "He was delivering cider and tofu in his old hippie van." So Bruce decided to go into the raw milk cheese business. He got into it by accident by misunderstanding the difference between markup and profit margin. "Had I known the difference, I never would have gone into the business." So in Aug. 1980 he started a distribution company named Rosewood Products, Inc. After about a year, he started to distribute the Soy Plant's products along with his cheese. Then the Soy Plant got into trouble financially. Bruce tried to help them. He said: "I had a long history with the Soy Plant and this looked easy. Making tofu sounds exciting. East meets West type products was the reason I went in. I never dreamed I'd be packing tofu for 20 years. You never know what life has to offer you."

Bruce ran the Soy Plant for 3 months before they went bankrupt. Then he bid on the company when they were in bankruptcy, and won the bid. He tried to keep all the employees but they came from a co-op background. "I was a pretty traditional business guy. I wasn't smoking dope any more, had short hair, hard working. A lot of the co-opers wouldn't work for me. I found the best workers were good old meat-eaters. The idealists would do great for three months, and then peter out."

For years after he took over the company, people who had loaned the Soy Plant $100 or so, came to Bruce and said they wanted their money back. He tried to explain that the Soy Plant had declared bankruptcy and their debts were not his. But that didn't satisfy most of them. Bruce estimates that The Soy Plant paid back about half of the roughly $10,000 they borrowed from members of the community.

In the end, Bruce merged the Soy Plant, a pioneer soy company, into his Rosewood Products, then later renamed it Tofu International Inc.

Update: Letter (fax) from Bruce Rose. 2001. May 22. Bruce says Rosewood Products no longer makes tempeh. They bought from White Wave from 1990-1998, but now buy their tempeh from Lightlife. They sell mostly bulk tempeh burgers. The Soy Plant started making tempeh in 1977. Rosewood started in 1987, stopped about 1995. Address: Founder and President, Rosewood Products, Inc., 738 Airport Blvd., Suite 6, Ann Arbor, Michigan 48108. Phone: 734-665-2222.

3233. Adie, M. Muchlish; Widowati, S.; Soedarjo, M. 2000. The characteristics of Indonesian soybean varieties, and its importance to the soybean processing. In: Kyoko Saio, ed. 2000. Proceedings–Third International Soybean Processing and Utilization Conference. Tokyo, Japan: Korin Publishing Co., Ltd. [xxiv] + 728 + 8 p. See p. 79-80. [6 ref]

• ***Summary:*** A survey by Indrasari (1991) showed that consumption of tempeh and tofu in Indonesia were 1,065 gm per capita per month, and 866 gm per capita per month, respectively. Address: 1,3. Research Inst. for Legume and Tuber Crops, PO Box 66 Malang, Indonesia; 2. Research Inst. for Food Crops Biotechnology, Jalan Tentara Pelajar 3A

Bogor, Indonesia.

3234. Henry's Tempeh. 2000. SoyKasha Tempeh. Scott St., Kitchener, ON N2H 0A3, Canada.
• ***Summary:*** Letter (e-mail) from Henry Schmidt, founder of Henry's Tempeh. 2011. Jan. 12. In Oct. 2000 he made and sold his first tempeh, SoyKasha Tempeh, to a retail outlet. He used organic soybeans in all subsequent tempeh products and organic kasha in this product from Day 1. He bought his organic soybeans in Ontario, within 100 miles of Waterloo, originally from Hensall, now from Ailsa Craig. Address: Kitchener, Ontario, Canada.

3235. Karyadi, Darwin; Lukito, Widjaja. 2000. Tempe as functional food and contemporary paradigm: Its potential beneficial effects in disease prevention and treatment. In: Kyoko Saio, ed. 2000. Proceedings–Third International Soybean Processing and Utilization Conference. Tokyo, Japan: Korin Publishing Co., Ltd. [xxiv] + 728 + 8 p. See p. 711-12. [16 ref]
• ***Summary:*** Tempeh originated hundreds of years before the 16th century in Central and East Java as confirmed in the *Serat Centhini.* Address: M.D., PhD, SEAMEO-TROPMED Regional Center for Community Nutrition, Univ. of Indonesia, Jakarta 10430, Indonesia.

3236. Oser, Marie. 2000. More soy cooking: Healthful renditions of classic traditional meals. New York, NY: John Wiley & Sons, Inc. xi + 307 p. Foreword by John A. McDougall, M.D. Oct. Index. 23 cm. [61 ref]
• ***Summary:*** Contents: Foreword, by John A. McDougall, M.D. Acknowledgments. Introduction. The need for a plant-based diet: The protein question, the dairy myth, the international connection, what's eating North America?, soy: Food of the future, Functional foods. Soy-centered cuisine: Soyfoods and more: a glossary, beyond soyfoods. Kitchen tools, techniques, and tofu: Tools, techniques, tofu, cooking with spirit! The recipes: Amazing appetizers, the skinny on soups and salads, enlightened entrées, pasta and pizza, select sides, delightful desserts. Resource guide. Recommended reading.

On the rear cover is a small color photo of the author and a biographical sketch. Address: P.O. Box 3021, Thousand Oaks, California 91359-0021.

3237. **Product Name:** [Tempeh, and Handmade Tempeh-Seitan Sausages].
Foreign Name: Tempeh, Saucisses Artisales Tempeh et Seitan.
Manufacturer's Name: Produits Naturels Compagnards.
Manufacturer's Address: 3325 Rue Hugh-Greene, Rawdon, PQ J0K 1S0. Phone: 450-834-7391.
Date of Introduction: 2000. October.
Ingredients: Sausages: Tempeh, seitan, whole-wheat bread crumbs, filtered water, nutritional yeast, extra virgin olive oil, tamari, spices, potato flour, guar gum.
New Product–Documentation: Letter (fax) from Brian Morin. 2001. Feb. 22. He started making and selling Tempeh and Tempeh-Seitan Sausages on 1 Aug. 2000.

Form filled out and letter from Brian Morim. Gives his current address, phone, fax, email (morin_brian@hotmail.com) and the ingredients for his sausages in French and English. He expects the labels to be ready by Aug. 2001.

3238. Saio, Kyoko. ed. 2000. Proceedings–Third International Soybean Processing and Utilization Conference: Dawn of the innovative era for soybeans. Tokyo, Japan: Korin Publishing Co., Ltd. [xxiv] + 728 + 8 p. Held 15-20 Oct. 2000, Tsukuba, Ibaraki, Japan. Illust. Author index. 30 cm. [Eng]
• ***Summary:*** The first international conference of this type was held in Jilin, China, in 1990. The second was held in January 1996 in Bangkok, Thailand. Foreword. Program committee for ISPUC-III. Contents: Keynote session (3 papers). Session 1: Production for processing and utilization (20 oral presentations/papers, 22 poster presentations). Session 2: Quality control (13 oral, 7 poster). Session 3: Nutrition and physiological functionality (23 oral, 25 poster). Session 4: Traditional products (23 oral, 19 poster). Session 5: Modern processing and utilization of foods (32 oral, 20 poster). Session 6: Edible oil and feeds (9 oral, 5 poster). Session 7: Innovative non-food uses (10 oral, 4 poster). Session 8: Strategies for dissemination (18 oral, 4 poster). Satellite session: Monodisperse microspheres and microchannel technologies (12 oral, 15 poster). Public symposium: The miracle of Asia–Marvelous fermented soyfoods (6 oral presentations/papers). Author index. Sponsors: Organizations/companies (55), individuals (33), others (8). Within each category, listed in order of date contributed. Exhibitors (29; an exhibition was held with the Conference). Advertisers (6 companies purchased full-page black-and-white ads). Address: Chair of the Program Committee, ISPUC-III, Tsukuba, Japan.

3239. Astuti, Mary; Meliala, Andreanyta; Dalias, Fabien S.; Wahlqvist, M.L. 2000. Tempe, a nutritious and healthy food from Indonesia. *Asia Pacific J. of Clinical Nutrition* 9(4):322-25. Dec. *
Address: 1. Centre of Women's Studies, Gadjah Mada Univ., Bulaksumur, Yogyakarta, Indonesia; 2. International Health and Development Unit, Faculty of Medicine, Monash University, Melbourne, Victoria, Australia.

3240. Garlock, Lori A. 2000. The effect of various acidic solutions on the concentration of genistein in tempeh. Master's thesis, University of Wisconsin–Stout. [ix] + 58 p. Dec. Online version: http://www.uwstout.edu/lib/thesis/2000/2000garlock.pdf. [70 ref]

• ***Summary:*** The use of various acidic solutions in making tempeh decreased the final concentration of genistein in the tempeh.

"Additional research should be conducted to determine whether or not the fermentation process is responsible for the increased level of genistein in tempeh."

3241. Huang, H.T. 2000. Science and civilisation in China. Vol. 6, Biology and biological technology. Part V: Fermentations and food science. Joseph Needham series. Cambridge, England: Cambridge University Press. xxviii + 741 p. Illust. Index. 26 cm. [200+ soy ref]
• ***Summary:*** This is the most important book on soyfoods in China ever written, and it is especially good on their origins and early history in China. It is also one of the best books seen on food in Chinese culture and history.

The section titled "Soybean processing and fermentation" (p. 292-378) comprises 14.3% of the book's text, and has the following contents: Introduction. Soybean sprouts. Soybean curd and related products: The origin of bean curd, transmission of *tou fu* to Japan, products associated with *tou fu* (soymilk {*tou fu chiang*}, tofu curds {*tou fu hua* or *tou fu nao*}, pressed tofu sheets {*ch'ien chang* or *pai yeh*}, yuba {*tou fu i* or *tou fu p'i*}, deep-fried tofu {*yu tou fu* or *tou fu p'ao*}, pressed tofu {*tou fu kan*}, five-spice pressed tofu {*wu hsiang tou fu kan*}, plain dried tofu [pressed tofu] {*pai tou fu gan*}, smoked tofu {*hsün tou fu*}, dried tofu soaked in brine and fermented {*ch'ou tou fu kan*}, frozen tofu {*tung tou fu*}), making fermented tofu {*fu ju*}, comparison of *tou fu* and cheese, addendum. Fermented soybeans, soy paste, and soy sauce: *Ferments* for food processing, fermented soybeans–*shih,* fermented soy paste–*chiang,* fermented soy sauce–*chiang yu,* soy fermentations in China and Japan.

Note: This is the earliest English-language document seen (Feb. 2004) that uses the term "hsün tou fu" [pinyin: *xun doufu*] to refer to smoked tofu. Soy is also discussed in other parts of the book. Address: Alexandria, Virginia.

3242. **Product Name:** [Smoked Tempeh].
Foreign Name: Smoked Temeph.
Manufacturer's Name: De Hobbit.
Manufacturer's Address: Nijverheidslaan 7, 9980 Maldegem, Belgium. Phone: 050 71 70 20. Food for Freedom makes.
Date of Introduction: 2000.
Ingredients: Soy*, sea salt, rhizopus must ferment.
Wt/Vol., Packaging, Price: 170 gm.
How Stored: Refrigerated.
New Product–Documentation: Form filled out by Mr. Frederik Dossche and two leaflets sent by fax. 2001. June 7. Food for Freedom and De Hobbit seem to have merged. Both make tempeh at: Nijverheidslaan 7, 9980 Maldegem, Belgium. Phone: 050 71 70 20. De Hobbit makes Tempeh, Smoked Tempeh, and Tempeh Bacon. Leaflet index card. De Hobbit. Product cluster: Tempeh. A photo shows smoked tempeh. "Description: Smoked in a natural way. How to use: Together with raw vegetables and salads. Warm in pizza, in spaghetti sauce."

Label for Smoked Tempeh sent by Seth Tibbott of Turtle Island after trip to Netherlands to study tempeh 2009. April 22. 170 gm. The maker is: De Hobbit, n.v., Nijverheidslaan 7-9, B-9990 Maldegem, Belgium.

3243. **Product Name:** [Smoked Tempeh].
Foreign Name: Smoked Temeph.
Manufacturer's Name: Food for Freedom.
Manufacturer's Address: Nijverheidslaan 7, 9980 Maldegem, Belgium. Phone: 050 71 70 20. Food for Freedom makes.
Date of Introduction: 2000.
Ingredients: Tempeh, sea salt, smoke of wood chips.
Wt/Vol., Packaging, Price: 180 gm.
How Stored: Refrigerated.
New Product–Documentation: Form filled out by Mr. Frederik Dossche and two leaflets sent by fax. 2001. June 7. Food for Freedom and De Hobbit seem to have merged. Both make tempeh at: Nijverheidslaan 7, 9980 Maldegem, Belgium. Phone: 050 71 70 20. Food for Freedom makes Tempeh and Smoked Tempeh. De Hobbit makes Tempeh, Smoked Tempeh, and Tempeh Bacon.

3244. **Product Name:** [Tempeh, Amazake, Miso].
Foreign Name: Tempeh, Amazake, Miso.
Manufacturer's Name: Rui Rato Tempeh.
Manufacturer's Address: Bairro da Coopalme, Lote 291, 2727 Algueirao, Portugal. Phone: +351 21 920 2798.
Date of Introduction: 2000.
New Product–Documentation: Talk with Roy Kamiki of Nutrideas, Portugal. 2001. June 10. Ricardo currently makes tempeh, amazake, and miso, but does not have a company name. He has only one customer. He sells tempeh frozen to a big organic co-op–BioCoop–An organic farming Product Co-op is Lisbon.

"Mr. Rui Rato is a fan of yours and a great appreciator of your books. He has nearly all your publications, but does not depend on soyfoods production for his source of income. He has another steady job and makes soyfoods in his spare time."

3245. **Product Name:** Barbecue Burger.
Manufacturer's Name: Vermont Soy
Manufacturer's Address: 44 Foundry St., Waterbury, VT 05676. Phone: 802-244-5400.
Date of Introduction: 2000.
Ingredients: Organic tempeh (organic soy beans, vinegar, culture), organic tomato sauce, water, soy bean oil, organic onion, honey, unsulphured molasses, organic garlic, tamari,

organic lemon, chipotle pepper, spices.
Wt/Vol., Packaging, Price: 10 oz (285 gm).
New Product–Documentation: Form filled out and two labels sent by Megan Treadwell. 2001. June. Vermont Soy is at 44 Foundry St., Waterbury, Vermont 05676. Phone: 802-244-5400. Label for Barbecue Burger is 4 by 4 inches. Self adhesive. Green on white. "An organic cultured soy product."

3246. Adams, M.R.; Moss, M.O. 2000. Food microbiology. 2nd ed. Cambridge, England: Royal Society of Chemistry. xiv + 479 p. + 16 pages of unnumbered plates. Illust. 24 cm. [439* ref]
• ***Summary:*** This book focuses on general principles, and does not try to mention every fermented food. Chapter 9.12, "Mould fermentations" (p. 363-68) discusses tempeh, soy sauce and rice wine [saké], koji (a mould enzyme preparation), miso, and Chinese chiang [jiang].

Ochratoxin may result from contamination of soya beans by *Aspergillus* species. Address: Univ. of Surrey, Guildford, UK.

3247. Davis, Brenda; Melina, Vesanto. 2000. Becoming vegan: The complete guide to adopting a healthy plant-based diet. Summertown, Tennessee: The Book Publishing Co. v + 281 p. Index. 25 cm. [153 ref]
• ***Summary:*** An excellent vegan sourcebook (not a cookbook) by two registered dietitians. Contents: Acknowledgements. From the authors. 1. Vegan roots. 2. Perspectives on vegan health. 3. Plant protein. 4. Big fat lies. 5. The two faces of carbohydrates. 6. Prospecting for minerals. 7. Vitamins for vegan vigor. 8. Phytochemicals. 9. The vegan food guide. 10. Building vegan dynamos. 11. Growing vegans. 12. The prime of life. 13. Overweight. 14. Eating disorders. 15. Underweight. 16. The vegan athlete. 17. Vegan diplomacy.

This book begins with a good history of veganism and contains (throughout the book) a wealth of accurate, positive information about many different types of soyfoods (especially tofu) and related subjects, including tofu, soymilk, tempeh, soy yogurt, soy cheese, soy sauce, tamari, and soy oil (incl. omega-3 fatty acids). Plus Adventist Health Studies, dietary fiber, phytochemicals and sea vegetables. Address: 1. Kelowna, British Columbia; 2. Langley, British Columbia. Both: Canada.

3248. Evans, K. Lee; Rankin, Chris. 2000. Giant book of tofu cooking. New York, NY: Sterling Publishing Co., Inc. 256 p. Illust. (color photos). Index. 28 cm.
• ***Summary:*** A beautiful vegetarian cookbook, with many color photos on glossy paper, excellent use of standard terminology (except for "freeze-dried tofu"), and 350 healthful, delicious recipes. Contents: Introduction. Tofu basics and techniques: Getting started (buying tofu {soft tofu, form tofu, extra-firm tofu, silken tofu, marinated tofu, smoked tofu, freeze-dried tofu, fermented tofu}, storing tofu, preparing tofu for your recipes {draining and blotting, pressing, freezing and thawing, blending, cubing and dicing, crumbling, shredding / grating, marinating, boiling slightly sour tofu, frying, deep-frying}), other soy products (edamame, meat alternatives, miso, soy cheese, soy flour, soy ice cream, soy milk, soy sauce, soy sprouts, soy "yogurt," soynut butter, soynuts, tempeh, textured soy protein, whole dry soybeans), tofu and a healthier you (introduction, protein, heart disease, cancer, menopause, osteoporosis, our planet), simple ingredient substitutions (eggs, milk, cheese, butter, salt, sugar {honey, molasses, maple syrup, rice syrup, barley malt syrup}). Ingredient glossary: Incl. arrowroot, balsamic vinegar, bamboo shoots, barley malt syrup, fermented Chinese black beans, filé powder, galangal, garam masala, garbanzo beans, Hoisin sauce, liquid smoke, mirin, miso, nutritional yeast, phylo or filo, pickled ginger, quinoa, rice noodles, rice papers, rice syrup, sake, shoyu, tahini, toasted sesame oil, vegetarian gelatin, vegetarian Worcestershire sauce ("Just like the original, it is made of soy, vinegar, and spices, but without the anchovies"), wakame, wheat germ. Breakfast. Appetizers. Soups. Salads. Lunch and dinner. Dressings, sauces, and spreads. Desserts. Metric conversion chart. Acknowledgments.

3249. Fruehschuetz, Leo. 2000. Soja [Soya]. Schaafheim, Germany: Bio Verlag. 144 p. With recipes by Judith Braun. Illust. Index. 15 cm. [12 ref. Ger]
• ***Summary:*** Contents: Forward: Portrait of the soybean: From China to the entire world, the composition of whole beans, does soya help with cancer?, protein and oil for the world economy. The original soybean and what followed: Introduction (there is not much to improve on in the soybean), the "labor-bean" (Monsanto and Roundup-Ready soybeans), the results for farmers, for the environment, for health, politics without results, for trade and the end-users, the forgotten results, soya in animal feeds. Organically grown soya–without genetic engineering and pesticides. Versatile: Soya in the wholefoods kitchen: Soybeans: whole, ground, and sprouted, the fluid bean–milk, yogurt (fermented), and oil, tofu–the meat without bones, tempeh–the noble cultured food from Indonesia, soy sauce–aged in wooden vats, miso–soya for soups, soyameat–saved from the wolf. Recipes: Soymilk, soy flour and flakes, tofu, tempeh, soy meat and granules, miso, soy sprouts. Address: News journalist for natural foods and long-lived people, co-worker with Schrot&Korn.

3250. Holtzman, Rachel. 2000. Trader Joe's soy foods: Answers to commonly asked questions. Nutrition information (Leaflet). Needham Heights, Massachusetts: Trader Joe's. 3 panels each side. Front and back. Each panel 9 x 26 cm. Folded.

• ***Summary:*** Question and answer format: Contents: What is soy anyway? Why should I include soy in my diet? Does soy have fat? Some soy products say soy wards off heart disease. What does this mean? What are isoflavones and where can I find them? What is the difference between isoflavones and soy protein? How can I include soyfoods in my diet? Ans: Trader Joe's carries soymilk, tofu, tempeh, soy nuts, edamame (soybeans), soy protein powder, meat substitutes, soybean butter. What is tofu and how can I use it? How much soy should I eat? Ans: About 25-50 grams per day. Address: R.D., Needham Heights, Massachusetts.

3251. Hu, Jiang. 2000. Isolation and quantitative analysis of soybean saponins by high performance liquid chromatography. MSc thesis, Iowa State University. 96 leaves. Illust. 29 cm. *

3252. Kornfeld, Myra. 2000. The voluptuous vegan: more than 200 sinfully delicious recipes for meatless, eggless, and dairy-free meals. New York, NY: Three Rivers Press. [xi] + 305 p. Illust. (by Sheila Hamanaka). Index. 24 cm.
• ***Summary:*** A vegan cookbook with some macrobiotic flavor. The excellent glossary includes: adzuki beans, agar-agar. almond butter, barley malt, barley miso, carob powder, edamame, gluten, haricots verts, Hass avocado, hijiki, Hokkaido pumpkin (kabocha squash), kanten, koji, kombu, kudzu, maple sugar (crystallized maple syrup), mirin, miso, MSG, nori, oden, Rice Dream, rice syrup, sambal (Indonesian word for chutney), sea salt, seitan, shiitake, shoyu, soybean, soy milk, Sucanat, tahini, tempeh, umeboshi paste, wakame, wheat gluten, Yannoh coffee. The index contains 29 entries for tofu, 9 for seitan, 5 for tempeh, 2 for miso, 1 for "Cheese"–tofu (p. 214), "Sour cream"–tofu (p. 25), and teriyaki vegetables. Note: Soy milk is called for in many recipes. Address: Professional Chef, New York City.

3253. Liberty, Anne. 2000. Super soy! Protect yourself against bone loss, heart disease, cancer, menopause, high cholesterol. Boca Raton, Florida: American Media Mini Mags Inc. 66 p. 14 cm. [1 ref]
• ***Summary:*** This mini-book (only 5½ inches high) was sold (for $1.19) next to the tabloid magazines at the checkout stand at Longs Drug Store in Lafayette, California. On the little cover is a color photo of a grey-haired and healthy-looking lady holding a glass of soymilk. Contents: All about soy: Inside the soybean (phytoestrogen, isoflavones, genistein, protease inhibitors), eight of soy's top health benefits (antioxidant protection from free radicals, breast cancer protection, cholesterol control, colon cancer protection, strong bones, hot flash reduction, a strong immune system, and kidney disease prevention), different soy products (green soybeans, hydrolyzed vegetable protein {HVP}, infant formula {soy-based}, lecithin, meat alternatives, miso, non-dairy frozen soy ("soy ice cream"), soy cheese, soy flour, soy grits, soy protein (incl. TSP = textured soy protein = textured soy flour), soy sauce, soy yogurt, whole soybeans, soy nut butter, soy nuts, soy oil, soy sprouts, tempeh, tofu, whipped soy-based topping, yuba), nutritional value, how much do you need? Bone loss. Heart disease and cancer: Heart disease, cancer (genistein, isoflavones, phenolic acids, phytates, protease inhibitors). Menopause. Cholesterol. Cooking with soy products: Soy flour, miso, soy milk, soy protein, tofu, tempeh. Delicious soy recipes.

The author frequently refers to Earl Mindell, PhD, but has no real scientific references. Many of the recipes were provided by the United Soybean Board. On the last page are two sources of more information and recipes: The United Soybean Board website www.talksoy.com and the Indiana Soybean Board website www.soyfoods.com.

3254. McMann, Mary Carol. 2000. Soy protein: What you need to know. New York, NY: Penguin Putnam Inc. (Avery). 60 p. Index. 22 cm. Avery's Nutrition Discovery Series. [74 ref]
• ***Summary:*** Contents: Introduction. 1. What makes soy so special? 2. Cardiovascular disease. 3. Cancer. 4. Osteoporosis. 5. Menopause and menopausal symptoms. 6. Incorporating soy (protein) into your diet. Conclusion. Glossary. References. About the author.

Note: This book is copyrighted by Protein Technologies International. Address: MPH, RD, LD, Houston, Texas.

3255. Rose, Robert. ed. 2000. Beans, lentil & tofu gourmet. Toronto, Ontario, Canada: Robert Rose, Inc. 192 p. Illust. Index. 26 cm.
• ***Summary:*** This is an unusual but attractive book, with no real author or publisher. It was written by "The editors of Robert Rose" and published by Robert Rose Inc., with financial support of the government of Canada. Basically, it is a collection of recipes from other cookbooks. Except in the chapter titled "Meatless" (p. 145-62), many recipes contain meat, poultry, fish, or seafood. The section titled "Contributing authors" lists eight authors, with photos and descriptions of their cookbooks, and statements such as "Recipes from this book are found on pages 23, 38, 69, and 180." The book contains 12 full-page color photos of dishes prepared from the recipes.

Contains 13 tofu recipes and one tempeh recipe: Malay vegetable-stuffed fried bean curd with spicy sweet-and-sour sauce. Bak choy noodle and tofu chicken soup. Curry-fried tofu soup with vegetables and udon noodles. Mixed vegetable herb broth with soft tofu. Chickpea tofu stew. Braised stuffed bean curd. Braised roasted pork with tofu and green onions. Steamed shrimp-stuffed tofu with broccoli. Hoisin stir-fried vegetables and tofu over rice noodles. Barbecued tempeh with basil, hyssop and ginger. Chickpea tofu burgers with coriander mayonnaise. Thai dry vegetable

curry (with tofu, p. 162). Pea tops with pancetta and tofu. Soy-braised tofu, cabbage and ginger with cellophane noodles (with soya sauce, p. 172-73). Address: 120 Eglington Ave. E., Suite 1000, Toronto, ONT Canada. Phone: (416) 322-6522.

3256. Glenville, Marilyn. 2001. Natural alternatives to HRT* (* hormone replacement therapy) cookbook: Understanding estrogen and foods that benefit your health. Berkeley, California: Ten Speed Press. 192 p. Illust. Index. 24 x 21 cm. [37* ref]
• ***Summary:*** Every woman who experiences menopause has probably experienced unpleasant symptoms such as joint pains, mood swings, weight gain, hot flashes, etc. Yet these symptoms can be avoided, or at least alleviated–by simple and safe changes in diet to include more phytoestrogens and isoflavones. This books tells and shows you how. Already a best-seller in the U.K. with over 20,000 copies in print.

Although this is not a vegetarian cookbook (recipes call for the use of fish and shellfish such as crab, mussels, salmon, tuna, etc.), there is extensive discussion of the benefits of soyfoods in a diet for menopausal women and many recipes that use soy (especially tofu). The chapter titled "What you need to eat at menopause" contains a good discussion (p. 17-18) of the benefits of isoflavones / phytoestrogens and natural soyfoods. It is known that "legumes contain good levels of isoflavones, and soy ranks the highest." Phytoestrogens are also good for bone health, and soy protein helps to reduce cholesterol (p. 25).

In the "Introduction to the recipes" is a section on "Soy products" (p. 47) that discusses miso, soy milk, soy sauce, tempeh, and tofu (which is "wonderfully versatile"). Soy-related recipes include: Scrambled tofu (p. 71). Tofu vegetable quiche (p. 90). Russian salad deluxe with tofu dressing (p. 96). Vegetable, bean sprout and tofu stir-fry (p. 104-06). Tofu and mushroom stroganoff (p. 106-07). Herby tofu and oat sausages with nutty mash (p. 112). Austrian bean salad with tofu dressing (p. 130-132). Deluxe kebabs (p. 136). Apricot tofu ice-cream (p. 156). Tofu cheesecake (p. 157). Mixed berry fool (p. 159). Miso broth (p. 176). Soy mayonnaise (p. 179). Sesame tofu dressing (p. 180). Tofu dip for raw vegetables (p. 180). Mocha tofu cream (p. 183). Tofu cream (p. 183).

Marilyn Glenville, PhD, earned her doctorate at Cambridge University and is Chair of the Governing Council for the British Association of Nutritional Therapists. She has practiced nutritional therapy in the U.K.and U.S. for more than twenty years, and specializes in the natural approach to female hormone problems. She practices from three private clinics in London and Kent, including the prestigious Hale Clinic. Address: PhD, nutritional therapist, UK.

3257. Hagler, Louise. 2001. Miso cookery. Summertown, Tennessee: The Book Publishing Co. 96 p. Illust. Index. 23 cm.
• ***Summary:*** Contains 70 recipes (each with a nutritional analysis) that use miso as an ingredient, and four full-page color photographs. Contents: Introduction. It's alive!!!! (visit to American Miso Co. in North Carolina). Soups. Spreads. Salads and dressings. Sauces and gravies. Vegetables. Main dishes. Side dishes. Sweet things.

Many recipes call for the use of tofu as an ingredient, and some call for the use of edamame, gluten, soymilk, soy yogurt, tempeh,

On the rear cover is a color photo of Louise Hagler; her vegetarian cookbooks have sold over 750,000 (or 742,000) copies worldwide. Address: Summertown, Tennessee.

3258. Simmons, Marie. 2001. Edamame dearest: The popular Asian soybeans are fun to eat (and good for you). *Bon Appetit.* Jan. p. 150-51.
• ***Summary:*** This article, in the section titled "Cooking for health." begins: "Just when we thought we knew–and loved–everything about soy, something new pops onto the scene. Move over, tofu and tempeh: This year the buzz is all about the beans themselves, otherwise known as *edamame.*"

Contains four recipes: Edamame and carrot salad with rice vinegar dressing. Tomato, edamame and corn sauté with cumin and cilantro. Edamame and sautéed vegetable soup. Brown rice and chicken stir-fry with edamame and walnuts.

A beautiful color photo shows edamame (in the pods) mounded on a rectangular Japanese dish, shelled edamame in a shallow bowl, and an opened green pod showing the three beans inside.

3259. **Product Name:** Bulk Tempeh, Bulk Soy & Rice Tempeh.
Manufacturer's Name: Acorn Foods.
Manufacturer's Address: 2128 Ferndale Rd., Arroyo Grande, CA 93420. Phone: 805-489-1850.
Date of Introduction: 2001. March.
Ingredients: Soybeans, culture.
Wt/Vol., Packaging, Price: 2 lb bulk.
How Stored: Refrigerated.
New Product–Documentation: Talk with Todd D'Alessio, founder. 2001. Nov. 6. He had friends who were in the Upfull and Right partnership, which dissolved. He bought their equipment and accounts, then in March 2001 started making bulk tempeh, which he sells to restaurants and deli departments. He has built a commercial kitchen on the property where he lives. It will be inspected in Jan. 2002. He is working on a business plan, has not attempted to expand the business, is developing value-added products, has not yet decided on the future direction of the business.

3260. Stephens, Roger; Stephens, Jane Ade. ed. and comp. 2001. Soyfoods guide 2001: Helpful tips and information for using soyfoods. Indianapolis, Indiana: Stevens & Associates,

Inc. Distributed by the Soy Protein Partners. 24 p. Illust. No index. 28 cm. [23 ref]
• ***Summary:*** This guide is available only on a limited basis to dietitians and health professionals. Contents: Foreword. Keep your heart healthy: Super soy protein smoothie. Beans, beans, good for the heart: The more you eat, the better your chances of lowering your blood cholesterol levels. Cholesterol: What's in a claim. Sample soy meal planner (4 meals a day for 5 days, to get 25+ grams/day of soy protein). Dietary guidelines for Americans. Composition of soyfoods (table). The healthy bean: Isoflavones, heart disease, menopause and osteoporosis, allergies, diabetes and kidney disease, fat. Isoflavone content of soyfoods (table). The state of soy research. Protein content of soyfoods (table). Soy resources: Web sites, books. Soyfood substitution chart. Descriptions of soyfoods: Traditional soyfoods, soy-based products, soy ingredients. Recipes: Meat alternatives. Textured soy protein. Soy flour. Whole soybeans. Soymilk. Tofu. Soy snacks and smoothies. Soy–Good for your heart.

The Foreword (p. 2) states: "The *2001 Soyfoods Guide* is distributed by the Soy Protein Partners. Partners include state soybean boards from: Alabama, Arkansas, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Jersey, North Carolina, South Dakota, Tennessee, Texas, Virginia, and Wisconsin. Industry partners include: American Soybean Association, Archer Daniels Midland Company, Central Soya Co., Minnesota Soyfoods Association, Protein Technologies International, Soy Protein Council, Soyfoods Association of North America, Soyfoods Council and the United Soybean Board." Address: 4816 North Pennsylvania Street, Indianapolis, Indiana 46205. Phone: 317-926-6272.

3261. Cervoni, Peter A. 2001. Tempting tempeh. *Vegetarian Times*. April. p. 46-48, 50-52. Special soy foods issue.
• ***Summary:*** A good introduction to tempeh plus "six irresistible recipes that pack a nutritional punch." Tempeh paprikash. Coconut-crusted tempeh. Smoky tempeh wedges. Jamaican jerk tempeh. Tempeh bouillabaisse. Tempeh Bolognese. Address: Former executive chef, Angelica Kitchen, New York City.

3262. Henry's Tempeh. 2001. SoyOnly Tempeh. Scott St., Kitchener, ON N2H 0A3, Canada.
• ***Summary:*** Letter (e-mail) from Henry Schmidt, founder of Henry's Tempeh. 2011. Jan. 12. A year after SoyKasha Tempeh was introduced, Henry launched his second tempeh product, SoyOnly Tempeh. Address: Kitchener, Ontario, Canada.

3263. Shurtleff, William; Aoyagi, Akiko. 2001. The book of tofu. 2nd ed. Revised. Berkeley, California: Ten Speed Press. 336 p. May. Illust. by Akiko Aoyagi Shurtleff. Index. 28 cm. [321 ref]
• ***Summary:*** This edition contains an updated "Appendix B–Directory of Tofu Makers" (p. 313-316, updated to 22 Feb. 2001). The copyright page and inside rear cover have also been updated. The preface has been expanded. Numerous other small changes have been made throughout the book. Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549. Phone: 925-283-2991.

3264. Drosihn, Bernd. 2001. Genetically engineered soybeans and soyfoods in Europe (Interview). *SoyaScan Notes.* July 23. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** In Europe, soybeans are still not familiar and not many are grown in Europe, so no European government would say to the population that they should eat more soy protein or make a health claim like that from the FDA in late 1999. Most of the soybeans now used to make foods in Europe come from South America or China; no more than 10-15% are grown in Europe. Imports from the USA and Canada have dropped dramatically because of the issue of genetically engineered (GE) soybeans.

For consumers, it has become a question of image; the image of North American soybeans is very bad in Europe. "Our customers ask us, 'What kind of soybeans do you use?' If we say that we use American or Canadian soybeans, then they will not trust our tofu." Even though Bernd makes his tofu from organic soybeans, he regularly tests all the soybeans he uses. He generally finds less than 1.01% are GE. Europe is definitely ahead of the USA in their awareness of GE issues.

Note: Since President George W. Bush took office, Europeans seem to be increasingly upset with U.S. unilateralism on a wide range of issues, from global warming to missile defense. They seem to be venting their frustration in the way they buy soybeans as well.

Talk with Jim Skiff, President of U.S. Soy, LLC. 2001. July 23. Jim has repeatedly observed exactly what Bernd described above. European consumers are upset with and distrust the USA; they reflect that in the way they buy soybeans. The U.S. government continues to try to force the Europeans to purchase our soybeans, which just makes matters worse. They don't understand the basic law of marketing–you have to give consumers what they want.

Christian Nagel no longer makes soyfoods; he now buys his tofu from Sojafarm (Lothar Stassen, Trechtingshausen, in central Germany). Tempeh is a very, very small product in Europe; not many companies currently make it.

In September Bernd plans to visit White Wave in Colorado. Address: Founder and president, Viana Naturkost GmbH, 54578 Wiesbaum / Vulkaneifel, Germany. Phone: +49 06593-99670.

3265. Dillman, Erika. 2001. The little soy book. New York, NY: Time Warner. xiii + 190 p. Index. 15 x 16 cm. [58 ref]

• ***Summary:*** Contents: Introduction. 1. It's soy time. 2. Why eat soy? Health benefits of soy? Soy foods: Soy milk, soybean oil, soy sauce, soy meat alternatives, tofu, tempeh, miso, whole soybeans, edamame, soy nuts, soy nut butter, soy sprouts, soy ice cream, soy yogurt, soy cheese, soy flour and grits, textured soy protein (TSP), soy protein concentrate, soy protein isolate, hydrolyzed vegetable protein, infant formula, lecithin, natto, yuba, soy fiber, Cooking with soy (recipes). Notes [references]. Resources [Directory]. Glossary. Address: Seattle, Washington.

3266. Tibbott, Seth. 2001. Update on Turtle Island (Interview). *SoyaScan Notes*. Aug. 21. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Seth's factory is 11,000 square feet in size and about half of it is devoted to tempeh production. However tempeh sales have been down about 5-10% over the past 6 months; this was a shock to Seth. Seth's gross revenues now consist of about 1/3 holiday business (Tofurky and related products at Thanksgiving, Christmas, and New Year's), 1/3 Tofurky products (such as Deli Slices and Jerky) during the rest of the year, and 1/3 tempeh. The problem is that the tempeh takes up lots of space. It doesn't take much space to make a lot of Tofurky.

Another problem: Why black spots sometimes appear on tempeh? Indonesian-Americans, who are an important market for Seth, often return tempeh on which black spots appear. They should be the first to know that a black spot does not mean spoilage. But they believe that good tempeh should always be white. We need an albino spore. Address: President and Founder, Turtle Island Foods, Inc., P.O. Box 176, Hood River, Oregon 97031. Phone: (503) 386-7766.

3267. Jacobi, Dana. 2001. Amazing soy: A complete guide to buying and cooking this nutritional powerhouse, with 240 recipes. New York, NY: William Morrow. An imprint of HarperCollins Publishers. xiv + 364 p. Aug. Index. 24 cm. [50 ref]
• ***Summary:*** Contents: Introduction. Ingredients and techniques. Breakfast. Smoothies and drinks. Dips and starters. Soups and breads. Salads and dressings. Wraps, burgers, and savory pies. Pizzas and pastas. Stews, casseroles, and chilis. Steaks, chops, skewers, and meat loaf. Stir-fries and curries. Seafood. Mainly vegetables. Desserts. Sources. Bibliography. Address: Food writer, New York, NY.

3268. Shurtleff, William; Aoyagi, Akiko. 2001. The book of tempeh: A cultured soyfood. 2nd ed. Revised. Berkeley, California: Ten Speed Press. 176 p. Aug. Illust. by Akiko Aoyagi Shurtleff. Index. 28 cm. [374 ref]
• ***Summary:*** See next page. This revision has completely new front and rear covers, designed and illustrated by Akiko. It contains a completely new "Appendix B–Directory of Tempeh Makers" (p. 157-58, updated to 16 June 2001). The page "About the Authors" (autobiographical) has been updated, and the original photographs have been replaced with more recent ones–reflecting the fact that Bill and Akiko separated in Nov. 1993 and their marriage ended in May 1995.

The last page, "Soyfoods Center," has been updated.

On page 176 is "The Best of Vegetarian Cooking from Ten Speed Press" (descriptions of eight cookbooks, with price and ISBN).

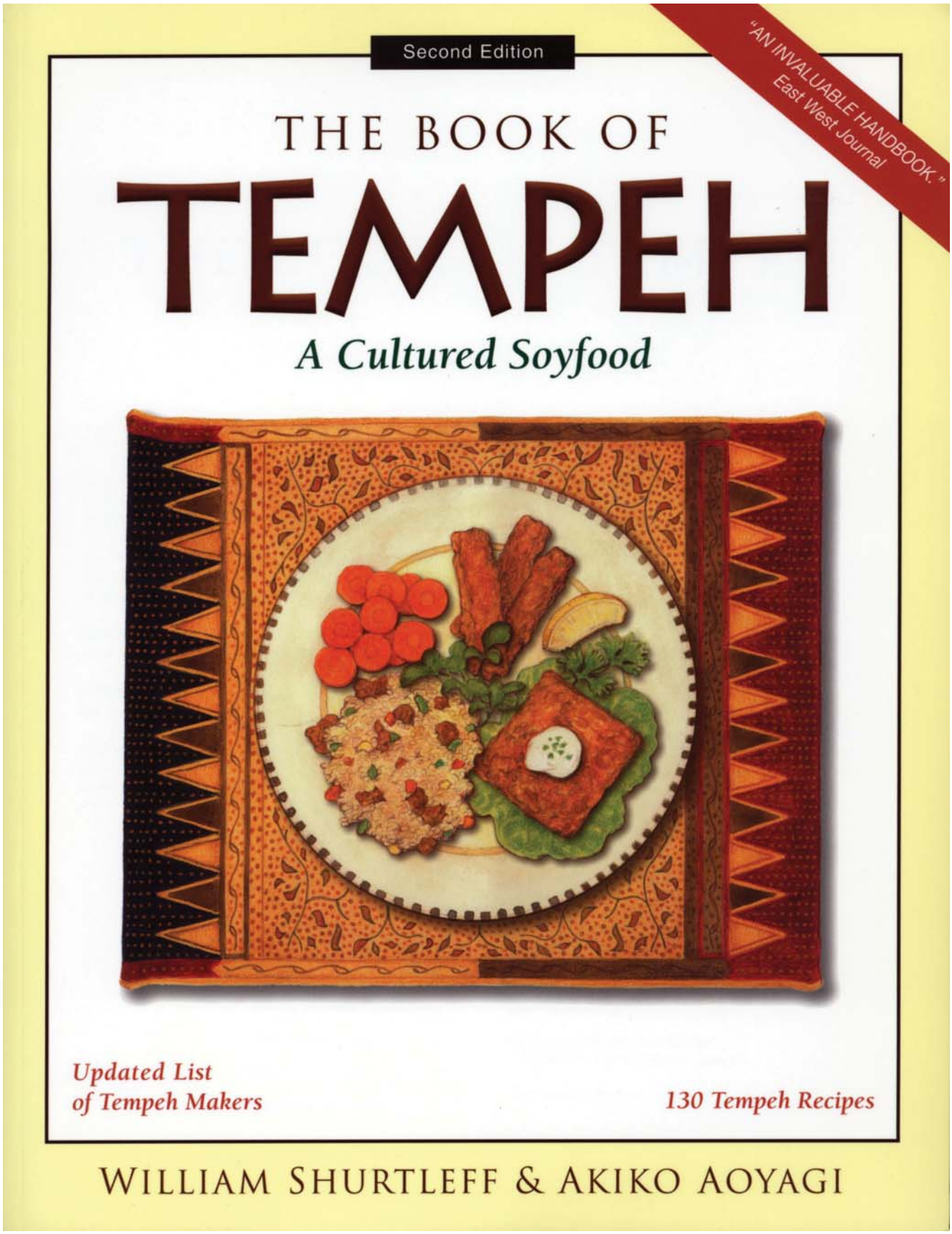
The inside rear cover has been updated, and now includes current information about: (1) *Tempeh Production,* a book published by Soyfoods Center about how to start and run a company making tempeh on any of four scales and budgets in North America, and on either of two scales in tropical developing countries. (2) *Tempeh and Tempeh Products: Bibliography and Sourcebook,* published by Soyfoods Center. (3) SoyaScan, the unique computerized database produced by Soyfoods Center. This database now contains more than 62,000 records from 1100 B.C. to the present, and more than 76% of all records have a summary / abstract averaging 146 words in length. A description of the four different types of records (published documents, commercial soy products, original interviews and overviews, and unpublished archival documents), and the number of each type, is given.

The title page, copyright page, and table of contents have been redesigned and updated to give the book a much more contemporary look. Other small changes have been made throughout the book. Still contains 130 vegetarian recipes–both western and Indonesian.

Ten Speed Press gave this book a new ISBN: 1-58008-335-8. Yet despite the many changes described above, the authors preferred not to have this called a "new edition" or "revised edition." Address: Soyfoods Center, P.O. Box 234, Lafayette, California 94549. Phone: 925-283-2991.

3269. Thym, Jolene. 2001. A twist on tofu: New, tastier food products put the joy in soy. *Oakland Tribune.* Sept. 5. Bay Area Living section. p. 1, 6.
• ***Summary:*** This front-page story contains a long interview with Dana Jacobi, author of *Amazing Soy,* plus a large color photo showing ten different types of soyfoods. The writer has discovered that "there's a whole lot more to soy than plain tofu." A sidebar titled "Name that food" is a glossary including: Edamame, silken tofu, miso, tempeh, fermented bean curd, fried tofu balls, yakidofu, yuba, soynuts, soy sauce, soy milk. Contains four recipes from Jacobi's book. Address: Staff writer.

3270. Carter, Rachel; Kistner, Stephanie. eds. 2001. The soy alternative. Vancouver, BC, Canada: Whitecap Books Ltd. 240 p. Illust. (color). Index. 26 cm.
• ***Summary:*** This is an attractive book, with a full-color photo on almost every other page. However it is edited by a



team of people who apparently don't know much about the subject, since it contains many factual errors. It has no real author and many publishers, the main one being Murdoch Books, a division of Murdoch Magazines Pty. Ltd. (Sydney, Australia).

Contents: The soy story. Glossary of ingredients. Soy for breakfast. Breakfast in a glass. Soy for lunch. Soy for Sunday lunch. Soy for vegetarians. Note: The rest of the book is not vegetarian, containing recipes for beef, lamb, chicken, pork, etc. Soy for dinner. Soy for parties. Soy for dessert. Soy at teatime. Cookery terms. Address: 351 Lynn Ave., North Vancouver, BC, Canada V7J 2C4.

3271. Krizstan, Jan. 2001. Update on work with tofu and soybeans in Slovenia (Interview). *SoyaScan Notes.* Oct. 11. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Jan and Mirko live about 100 km apart in Slovenia. Jan presently earns his living in desktop publishing, working with computers. Mirko lives with his wife, Jan's sister, on a farm, where he makes the best tofu in Slovenia; he has about 75% of the Slovenian tofu market. All his tofu is still made with nigari, which he buys from Natur Garten, located just across the border in Gamlitz, Austria.

Jan plans to move to Croatia (where his girlfriend lives) and start a new company there making tofu and tempeh. There are already several tofu makers in Croatia but Jan thinks the quality of their tofu is not very good; they grind their soybeans with blenders, which is very slow and inefficient.

It is now illegal to import kombu into Slovenia because of the high arsenic levels it contains. Jan believes there are two types of arsenic–good and bad. He thinks kombu has the good type. Kombu is an important ingredient in making seitan. Address: Mestni trg 22/1, 68330 Metlika, Republic of Slovenia. Phone: (386) 068 59 481.

3272. *SoyaScan Notes.* 2001. Chronology of major soy-related events and trends during 2001 (Overview). Dec. 31. Compiled by William Shurtleff of Soyfoods Center.
• ***Summary:*** April 12–Bill Bolduc, founder of Eden Foods and natural foods pioneer, dies in Southern California.

April 17–Martha Stewart, on her popular nationwide TV program *Living,* has a very positive segment on South River Miso Co.

April 18–Richard Rose, a soyfoods pioneer, sells Rella Good Cheese Co. to Tree of Life. He retains his company HempNut, Inc. in Santa Rosa, California. His Hempeh (hempseed tempeh) still contains soy.

May 11–The Kerry Group (of Wisconsin and Iowa) purchases Iowa Soy Specialties, LLC of Vinton, Iowa.

June 12–The Hain Celestial Group acquires Yves Veggie Cuisine (Vancouver, BC, Canada).

Aug. 24–Wildwood Natural Foods (Fairfax and Santa Cruz, California) and Midwest Harvest, Inc. (Grinnell, Iowa) merge to form Wildwood Harvest, Inc. Iowa Agricultural Finance Corporation (IAFC) invests $3.3 million in the new company, and the Iowa Farm Bureau Federation (IFBF) invests an additional $700,000. This investment will be used to build and equip a 20,000 square foot soyfoods plant in Grinnell and to remodel and equip another 20,000 square foot soyfoods plant in Watsonville, California.

Aug. 3–Bunge, in its initial public offering (IPO), raises $278 million by floating 23% of its shares on the New York Stock Exchange. Bunge his been a private grain trading company since it was founded in 1818 in the Netherlands by Johann Peter Gottlieb Bunge.

Sept.–SunRich's new soymilk plant in Wyoming starts production. By Nov. the plant is at full capacity and expansion begins.

Oct.–The Coca-Cola Co. acquires Odwalla, Inc. of California for $181 million. Odwalla has annual sales of about $130 million, mostly in fresh, refrigerated juices plus some delectable soy beverages.

Oct. 21–The U.S. National Organic Program and its standards take effect.

Nov. 4-7–Fourth International Symposium on the Role of Soy in Preventing and Treating Chronic Disease held at San Diego, California. General chairpersons and proceedings editors: Stephen Barnes and Mark Messina.

Dec. 10–The Hain Celestial Group, Inc. acquires Lima NV, the leading Belgian natural and organic foods manufacturer and marketer, and its Biomarché operations. Hain appoints Lima's Chairman, Philippe Woitrin, as Managing Director of Hail Celestial Europe. Lima is also a European pioneer in macrobiotic foods and soyfoods.

Dec. 11–Ralston Purina Co. (St. Louis, Missouri, a soy pioneer) is acquired by Nestle SA for $10.1 billion cash; on this date the deal is approved by the U.S. Federal Trade Commission. The new company is named Nestlé Purina. The merger brings together such household names as Ralston's Dog and Cat Chow and Nestle's Friskies cat food and Mighty Dog brands.

Dec. 24–The Federal Trade Commission approves the merger of Dean Foods and Suiza Foods Corp. (which owns 14% of Horizon Organic Dairy). A federal judge throws out White Wave's lawsuit arguing that White Wave has the right to buy back its own stock at the market price before the merger.

In 2001, for the first time in modern history, the USA lost the distinction of supplying more soybeans and soybean products (oil and meal) than all other countries combined. This year it supplied about 46% of the world's soybean exports. South America (mainly Brazil and Argentina) now supply more than 50%. Devalued currencies in Brazil (the *real*) and Argentina (the *peso*), plus the strong U.S. dollar, make it difficult for U.S. exporters to compete based solely on price. To compete in the future, U.S. growers must find a new strategy, which will focus on soybean quality.

3273. Weed, Susun S. 2001. New menopausal years: The wise woman way. Woodstock, New York: Ash Tree Publishing. xxiii + 280 p. Dec. Illust. Index. 22 cm. [102* ref]

• ***Summary:*** Soy is discussed throughout this book but sources are rarely cited. When they are cited, we insert them below. For heavy bleeding (flooding) during the menopausal years: To nourish and tonify, avoid tofu, soy drinks, and soy protein powders (p. 9-10). For uterine fibroids: Consume lignans, which are anti-estrogenic phytoestrogens, found in all whole grains and beans–including soy (p. 15). Building better bones: Exercise regularly, eat calcium-rich foods, and avoid calcium-leaching foods such as soy "milk," tofu, coffee, alcohol, and white flour products (p. 24). Calcium: Caution–"Unfermented soy (e.g. tofu) is especially detrimental to bone health being protein-rich, naturally deficient in calcium, and a calcium antagonist to boot (p. 28). Beware of calcium antagonists, foods that interfere with calcium utilization. Avoid consistent use of unfermented soy products, including tofu, soy beverages, and soy burgers (p. 29; see p. 163).

Phytosterolic, phytoestrogenic foods: Whole grains and beans are good sources. "Caution: Beans must be cooked or fermented to remove anti-nutritional substances. Tofu and soy 'milk' are not recommended" (p. 70).

Red clover has ten times more phytoestrogens than soy, as well as much more bone-building minerals, such as calcium and magnesium (p. 71). Sea vegetables are second only to flax in concentration of lignans. Seaweeds, not soy, are the real secret of health in the Japanese diet (p. 72). "The phytoestrogens in dong quai, like those in soy, promote the growth of cancer cells in petri dishes" (p. 73). Phytoestrogenic herbs: Fermented soy products (miso, tamari, tempeh), ground flax seeds, whole grains, etc. are rich in hormonal precursors and phytoestrogens. Use daily to ease menopausal symptoms, prevent cancer, and lower heart disease risk (p. 94). Lack of vitamin B-12 doubles the risk of severe depression for older women; tofu and soy beverages interfere with its absorption (Fallon 1999) (p. 114).

Preventing breast cancer: 75% of all breast cancers occur in women over age 50. Reduce use of seed oils, such as soy oil. For each 5 gm of polyunsaturated fat (from vegetable oils), risk of breast cancer rose by 70% (Wolk 1997 [sic, 1998]) (p. 145). Eat more beans: "There is a relationship between the large amount of *fermented* soy products (miso and tamari) in the Japanese diet and low incidence of breast cancer. But no relationship has ever been shown between the consumption of processed, fake, imitation soy foods, and breast cancer reduction. Soy beverage is used moderately, or not at all, depending on the specific Asian country" (p. 146).

Herbal allies: Red clover is everything you thought soy would be with none of soy's drawbacks. It contributes to bone health, normalizes the thyroid, and prevents and counters breast cancer. "So do miso and tamari, but not other soy foods. Red clover contains more active phytoestrogens in greater quantity than soy... Red clover contains all four of the major estrogenic isoflavones; soy has only two of them. A cup of red clover infusion (not tea) contains ten times more phytoestrogens than a cup of soy beverage, is richer in calcium, has less calories, and contains no added sugars" (p. 161).

The section titled "Soy" (p. 163-64) praises fermented soy foods (miso, tamari, tempeh, natto) but is quite critical of tofu, soy milk, and "fake soy foods" (burgers, hot dogs, soy cheese, etc.). Soy can reduce hot flashes and prevent heart disease; fermented soy foods can protect against breast cancer. Soy is not a good source of calcium and it is deficient in fats needed for healthy brain/memory functioning. "Soy protein isolate, textured vegetable protein, isolated isoflavones–processed soy foods come in more forms than I can list. I eat miso and tamari freely, tofu and tempeh occasionally, and other soy products not at all. Dosage: 50-200 grams of isoflavones per day, preferably from food. Caution: Excess soy can cause liver damage and is said to feminize men. Soy may be difficult to digest, may cause allergic reactions."

Interstitial cystitis: Tofu may cause problems (Ford 1999).

Heart healthy: Soy, whole grains, vitamin E (from foods), essential fatty acids, and seaweeds are helpful (p. 210).

Osteoporosis risk factors: Being a vegetarian or vegan who eats a lot of tofu or soy beverage (p. 218). "Eliminate soy products except tamari and miso. (Unfermented soy prevents you from utilizing calcium.)" (p. 220).

Aching joints: A tofu poultice may help (p. 229).

Vitamins and minerals for the menopausal years: Vitamin B-12, calcium, and iron are depleted by unfermented soy products (p. 248, 250-51).

Note: The author does not cite a single scientific publication to support her many criticisms of soyfoods. In fact, the scientific literature does not support her criticisms. It is well known that the author is an admirer of Sally Fallon. Address: P.O. Box 64, Woodstock, New York 12498-0064.

3274. **Product Name:** [Tempeh Bacon].
Foreign Name: Temeph Bacon.
Manufacturer's Name: De Hobbit.
Manufacturer's Address: Nijverheidslaan 7, 9980 Maldegem, Belgium. Phone: 050 71 70 20. Food for Freedom makes.
Date of Introduction: 2001.
Ingredients: Tempeh*, cornsyrup*, shoyu*, sea salt, yeast extract, cane sugar*, spices*, red fermented rice.
Wt/Vol., Packaging, Price: 120 gm.
How Stored: Refrigerated, 10 weeks shelf life.
New Product–Documentation: Form filled out by Mr.

Frederik Dossche and two leaflets sent by fax. 2001. June 7. Food for Freedom and De Hobbit seem to have merged. Both make tempeh at: Nijverheidslaan 7, 9980 Maldegem, Belgium. Phone: 050 71 70 20. De Hobbit makes Tempeh, Smoked Tempeh, and Tempeh Bacon. Leaflet index card. De Hobbit. Product cluster: Tempeh. A photo shows Tempeh bacon. "Description: The vegetarian alternative for ordinary bacon. How to use: Fry golden brown on both sides or can be prepared like regular bacon, with cheese, eggs, etc., but very healthy."

3275. Frost & Sullivan Inc. 2001. U.S. soy-based meat alternatives market. New York, NY: F&S. *
• ***Summary:*** Contents: Market overview. Overview and definitions. Market drivers. Market restraints. Challenges. Forecasts and trends. Revenue forecasts. Demand analysis. Market and technology trends. Pricing trends. Competitive analysis. Competitive structure. Market share analysis. Product analysis. Recommendations and evaluation. Meat analogs market. Tofu market. Tempeh market.

3276. Hutabarat, L.S.; Greenfield, H.; Mulholland, M. 2001. Isoflavones and coumestrol in soybeans and soybean products from Australia and Indonesia. *J. of Food Composition and Analysis* 14:43-58. *
• ***Summary:*** Gives levels of daidzein, genistein, and coumestrol for the following soybeans and commercial soyfood products: Soybeans (USA, Indonesia, Australia: McKenzie's, Bowyer Riverina NSW), Fresh soybeans [edamame] (Indonesia, Imported from China), Canned soybeans (Australia), Soymilk products Australia (So-Good, So-Good lite, Good Life, Soy drinks No Frills, Soy drink Sungold, Vitalife Natural foods, Vitasoy Vitasoy Int., Natures, So Natural, Soya drink, Instant soy powder), Soymilk from Indonesia (Susu Kedalai Mony, Soya bean milk, Susu Kedalai traditional), Tofu products from Australia (Hard, Silken, Smoked, Firm, with tempeh, Cutlets, Nigari, Organic), Tofu from Indonesia (Traditional, Silken, Tahu Tau Kwa, Skake).

3277. Kiers, J.L. 2001. Effect of fermented soya bean on digestion, absorption and diarrhoea. PhD thesis, Wageningen University. *

3278. Berkoff, Nancy. 2001. Vegan meals for one or two: Your own personal recipes. Baltimore, Maryland: The Vegetarian Resource Group. 216 p. Illust. Index by subject. Index to recipes. Index by major ingredients. 23 cm.
• ***Summary:*** Contents: It's all about you. Meal planning and shopping. Breakfast. One-pot wonders. Freeze or refrigerate now, eat later. Grab-and-go. Desserts and snacks. Every day and special day cooking. Glossary: Definitions of vegan products and details of less common cooking, measurements, soy substitutes. Resources from the Vegetarian Resource Group. Address: R.D.

3279. Breier, Davida Gypsy; Mangels, Reed. comps. 2001. Vegetarian & vegan FAQ: Answers to your frequently asked questions. Baltimore, Maryland: The Vegetarian Resource Group. 272 p. Illust. Index. 23 cm. [69 ref]
• ***Summary:*** Contents: 1. Most frequently asked questions (incl. How many people are vegetarian? Detailed results of polls conducted in 1994, 1997, 2000). 2. Vegetarianism in daily life (incl. How do you pronounce "vegan?" Ans: VEE-gun. Who are some famous vegetarians? What is the history of vegetarianism?). 3. Nutrition (incl. I need impartial, major scientific studies that show a correlation between a vegetarian diet and disease prevention? Gas caused by eating soy). 4. Food ingredients (incl. Soy cheeses, soy lecithin). 5. Recipes (incl. many recipes for tofu, tempeh, soy whipped cream, chocolate pudding with soymilk, soy yogurt, wheat gluten / seitan, TVP). 6. Vegetarian products (incl. What is seitan? Where can I buy seitan? What is tempeh? What is TVP? Where can I buy TVP? What is tofu? What do I do with it? Alternatives to dairy products. Vegan eggnog. Soy candles). 7. Cooking and baking (Tofu, draining tofu, tofu cream cheese, Tofutti). 8. Travel and restaurants. 9. Veggie kids (Soy-based infant formula. Phytoestrogens in and safety of soy infant formula). 10. Soy (p. 168-76; contains good, balanced responses to the anti-soy articles by Fallon and Enig, p. 173-76). 11. Vegan concerns. 12. Unique questions. 13. Questions about VRG. 14. Appendix: Quick guide to fast food. Quick guide to helpful websites. Protein content of selected vegan foods. Calcium content of selected vegan foods. Iron content of selected vegan foods. Daily values. A senior's guide to good nutrition. Eat better, perform better, sports nutrition guidelines for the vegetarian. Why is wine so fined? Handy guide to food ingredients. List of suggested reading: Vegetarian cookbooks, vegetarian families, vegetarian travel. School foods information. Feeding plans for infants and toddlers. VRG publications, resources, and tabling materials.

Soy-related questions and answers outside of Chapter 10: Gas and bloating after eating soy (p. 64). Casein found in many soy cheeses (p. 80). Soy lecithin (p. 85). Recipes: Tofu dill dip (p. 88). Spinach pie (with tofu, p. 93). Tempeh stuffed potatoes (p. 94-95). Spicy sautéed tofu with peas (p. 98). Quick sloppy joes (with tempeh, p. 98). Sweet potato slaw (with tofu). Tofu balls (p. 100). Pad Thai (p. 102-03). Davida's spicy garlic noodles and tofu (p. 105). Soy whipped cream (with soymilk, p. 106-07). Chocolate pudding (with soymilk, p. 107). Heavenly chocolate cupcakes (with soymilk, p. 109). Tofu cheesecake (p. 112). Homemade soymilk, rice milk, almond milk (p. 115). Homemade tofu (p. 115). Tofu recipes on the Web (p. 116). Homemade soy yogurt (p. 116). Homemade wheat gluten & seitan (p. 116). What is tempeh? What is TVP (p. 119). Vegetarian mince or meatless ground beef (p. 120-21). vegetarian and soy cheeses

(p. 121). Tofurky (meatless turkey, p. 122-23). Tofutti (non-dairy soy ice cream) and vegan eggnog (p. 125). Soy-based vegan candles (p. 126). Using tofu (p. 129-31). Tofu cream cheese (p. 131). Soymilk and soy creamer (p. 132). Soy buttermilk and soy mayonnaise (p. 133). Feeding an infant with soy formula (p. 154). Are the phytoestrogens in soy formula safe? (p. 155). Helping kinds to switch to soymilk from cow's milk (p. 156). Address: 1. Baltimore, Maryland; 2. R.D.

3280. Davis, Brenda; Grogan, Bryanna Clark; Stepaniak, Joanne. 2001. Dairy-free & delicious. Summertown, Tennessee: The Book Publishing Co. 160 p. Index. 21 x 18 cm.
• ***Summary:*** Contains over 100 creative vegan recipes for managing milk allergy and lactose intolerance. Nutritional information by Brenda Davis, R.D. Recipes by Grogan and Stepaniak. Contents: Introduction. 1. Lactose intolerance. 2. Milk allergy. 3. Building strong, milk-free bodies. 4. Superb substitutes. 5. Dairy-free dining: Travel tips. Natural foods for dairy-free cooking [glossary]: Agar, arrowroot, brown rice syrup, liquid smoke, mirin, miso, nutritional yeast, seitan, soy flour, soy protein isolate powder, soy sauce (tamari), tahini, tempeh, tofu. Dairy-free & delicious recipes: Homemade dairy-free spreads, uncheeses, and milk. Sauces. Breakfast. Salads and dressings. Soups. Main dishes. Desserts.

With this book, you can make any "dairy product" you can imagine without using dairy. The most widely used ingredients are: Tofu (used in more than 70 recipes!). Soymilk, rice milk, and other dairy-free milks. Nutritional yeast.

3281. Geiskopf-Hadler, Susan; Toomay, Mindy. 2001. The complete vegan cookbook: Over 200 tantalizing recipes plus plenty of kitchen wisdom for beginners and experienced cooks. Rocklin, California: Prima Publishing. xvi + 318 p. Illust. Index. 22 cm.
• ***Summary:*** Contains more than 200 vegan recipes, including many recipes for miso (3 recipes), soy cheese (9), tempeh (7), tofu (regular, 22), tofu (silken, 6), and soy yogurt (2). The "Glossary of special ingredients" contains definitions of miso, soy mayonnaise, soy milk, tempeh, and tofu. For nutritional information about soy foods, see p. 20-21. Tamari soy sauce is frequently used as a seasoning.

Contents: Acknowledgements. Introduction. 1. Cooking fundamentals. 2. Stocking the vegan pantry. 3. Menus for entertaining and everyday meals. 4. Appetizers. 5. Salads. 6. Soups and stews. 7. Vegetable side dishes. 8. Pasta dishes. 9. Grain and bean dishes. 10. Sautés and stir fries. 11. Baked and grilled entrées. 12. Sandwiches and wraps. 13. Morning meals. 14. Deserts. 15. Frequently used ingredients. Appendix: Nutrition fundamentals. Glossary of Specialty ingredients. Address: Northern California.

3282. Green, Shia. 2001. Tempeh: La mejor proteína vegetal [Tempeh: The best source of vegetarian protein]. Barcelona, Spain: Océano Grupo Editorial, S.A. 144 p. Illust. 20 cm. Series: La naturaleza cura. [Spa]
• ***Summary:*** Contents: What is tempeh?: Brief history of tempeh, soybeans–protein source of the future. How to make tempeh at home. How to make a tempeh incubator. Preparatory techniques. Tempeh recipes: Easy recipes to start with, Western-style recipes, Asian-style recipes. Appendixes: I. Other types of soyfoods (glossary). II. Useful contacts in Spain: Natursoy, S.L. (Barcelona). Vegetalia (Barcelona), BioSpirit, S.L. (Girona).

Describes the secrets of preparing recipes that are delicious, nutritious, and healthful.

3283. Hayter, Kurumi. 2001. The soy for health cookbook: Recipes with style and taste. Alexandria, Virginia: Time-Life Books. 144 p. Illust. (color). Index. 25 x 19 cm.
• ***Summary:*** This is a beautiful and strange book, designed and produced by Quintet Publishing Ltd. (London). Beautiful in that almost every other page is a stylish full-color photo of a recipe. Strange in that: (1) Tofu is probably the most common soy ingredient used, yet it does not even appear in the index. Nor does tempeh which is also called for. Yet miso is in the index. (2) A number of the soyfood terms are bizarre and unconventional–such as "beancurd pouches" [abura-age or deep-fried tofu pouches], "sticky beans (natto)." (3) On the inside front cover, the book's title is given as "The Tofu for Health Cookbook."

Contents: Introduction: Nutrition and health, lactose (dairy intolerance), prevention against heart disease, prevention against cancer, prevention of other disorders. How to use this book. Glossary of soyfoods and other ingredients. Basic recipes. 1. Soups and stews. 2. Salads and appetizers. 3. Main dishes. 4. Snacks and side dishes. 5. Desserts.

This book is not vegetarian; some recipes call for beef, pork, chicken, fish, etc.–but none call for dairy products.

3284. Lemlin, Jeanne. 2001. Vegetarian classics: 300 essential recipes for every course and every meal. New York, NY: HarperCollins. ix + 294 p. 25 cm. Index. Reprinted in 2003 by Quill (New York).
• ***Summary:*** One chapter is titled "Tofu and tempeh" (p. 189-202). Soy related recipes include: Edamame (p. 41). Miso (p. 10-11, 55-56, 73-74).

Jeanne Lemlin, who has been writing about vegetarian food for more than a decade, has won a prestigious James Beard Cookbook Award. Address: Great Barrington, Massachusetts.

3285. Marcus, Erik. 2001. Vegan: The new ethics of eating. Revised ed. Ithaca, New York: McBooks Press. xi + 211 p.

Illust. Index. 23 cm. [432 endnotes*]
• ***Summary:*** Very well researched and written. Widely considered to be the best current introduction to Veganism. Contents: Foreword, by Howard Lyman. Introduction. I. Part I: To your health. 1. The beat goes on. 2. Cutting your cancer risks. 3. Eat well to weigh less. 4. The perfect food isn't. 5. How now, mad cow. II. Part II: The truth about food animals. 6. Rescued! 7. Chickens and eggs. 8. Pigs. 9. Milk and beef. 10. The killing business. III. Part III: Beyond the dinner table. 11. World hunger. 12. American rangeland. 13. Awakening. Appendix A: The new four food groups.

The New Four Food Groups (p. 194-95) are vegetables, whole grains, fruit, and legumes. Legumes includes soy milk, tempeh, texturized vegetable protein, and tofu.

On the cover is written boldly: "Urgent. What we eat has devastating effects. Heal our planet and your body."

The chapter on mad cow disease gives a brief but good history of the problem. In Jan. 1997 the U.S. Foods and Drug Administration proposed regulations to prohibit the feeding of cattle parts back to food and dairy cattle. In June 1997, the proposal was passed into law. "If the resultant ban is seriously enforced, it could essentially eliminate the possibility of a British-style mad cow epidemic." However the new legislation still allows livestock producers to take risks with America's food supply by feeding other animal by-products back to farm animals. Pig and chickens have been shown to have developed spongiform diseases. Yet the new law exempts rendered pigs, chickens, horses, milk, blood, and gelatin from the ban.

British BSE researcher Stephen Dealler has tried to calculate how many Britons may actually die from Creutzfeldt-Jakob disease–the human form of mad cow disease. He has calculated 21 scenarios, each of which he considers equally likely. Fifteen of these show at least 140,000 people at high risk of developing the disease, and the six worse predict that over 32 million people in Britain have already been exposed to a potentially fatal dose. The wide range of numbers results from several unknowns: (1) The rate of transmission from infected of beef to humans that eat it; the issue of crossing the species barrier. (2) The human body's resistance to BSE prions. (3) The incubation time and distribution of the infection in humans. A closely related question is how many humans will die from spongiform encephalopathies contracted from infected animals other than cattle–such as pigs, chicken, etc.

Eric Marcus was born in 1966. Address: Vegan.com, P.O. Box 432, Albion, California 95410.

3286. Northrup, Christiane. 2001. The wisdom of menopause: Creating physical and emotional health and healing during the change. New York, NY: Bantam Books. xi + 589 p. Illust. Index. 28 cm. Revised and expanded in 2006.
• ***Summary:*** "This book is dedicated to the pioneering spirit embodied in the women of the baby boom generation." The stories in this book reflect authentic situations in the lives of the thousands of perimenopausal women Dr. Northrup has seen in her practice. She has "integrated advanced medical techniques with the best natural remedies, offering readers specific guidance on choosing the right approach for themselves."

In this book "Dr. Northrup once again challenges convention. 'The change' is not simply a collection of physical problems to be 'fixed'–whether with hormones or herbs–but a body-mind revolution that brings the greatest opportunity for growth since adolescence... [This] book examines the connection between menopause and a woman's emotional and spiritual life And it stresses how the choices a woman makes now–from the quality of her relationships to the quality of her diet–either secure her health and well-being for the rest of her life, or put her at future risk."

Candid and reassuring, [this book] elucidates the changes women should expect from ages 40 to 55, and how these changes can be wonderfully life-affirming. Instead dreading menopause as a time of loss, women will hear the real message their bodies are sending–that this is a time of personal empowerment and positive energy... and a time for women to break free and thrive." Contains a very positive and accurate section on the ability of soyfoods to relieve menopausal symptoms. But the benefits are dose-dependent. Discusses: Soy and menopause (p. 125). Bone loss (p. 164). Soy capsules or pills (p. 173). Soy and menopausal symptoms, dose dependency, genetic engineering (p. 179-84). Vaginal resiliency / moisture (p. 286). Alzheimer's and dementia (p. 321). Skin and wrinkles (p. 345). Breast health (p. 422). Summary (p. 548-49).

About the author: "Christiane Northrup M.D., trained at Dartmouth Medical School and Tufts New England Medical Center before cofounding the Women to Women health care center in Yarmouth, Maine... Board certified in obstetrics and gynecology, she is past president of the American Holistic Medical Association." Address: M.D. (gynecologist), Women to Women, Yarmouth, Maine.

3287. Sabaté, Joan; Ratzin-Turner, Rosemary. ed. 2001. Vegetarian nutrition. Boca Raton, Florida: CRC Press. [xxiv] + 551 p. Index. 24 cm. CRC Series in Modern Nutrition. [1732 ref]
• ***Summary:*** The best scholarly book seen to date on this subject. Consists of a Prologue (by Mervyn Hardinge) plus 21 chapters, in five sections, by various authors.

This book contains extensive information on soyfoods as follows: Vitamin B-12, homocysteine, meat analogues and soya milks (p. 47). Summary of epidemiologic studies of soy / tofu intake and breast cancer risk (p. 80-81). Vegetarian diets and soy in the prevention of osteoporosis, diabetes, and neurological disorders (p. 120-21, 125). Iron and soy (p. 202-03). Guidelines to achieve an optimal ratio of essential fatty acids in the diet (p. 203; soy is rich in □-linolenic

acid). Zinc, calcium and soy (p. 206). Women's reproductive function, menopausal symptoms, phytoestrogens and soy (p. 232-34, 244). Health advantages of a vegetarian diet for the elderly–and soy (p. 254-55). Vegan children, protein and soy (p. 302). Iron and soy (p. 304; "While the percentage of iron absorbed from soy may be low, the total amount of iron absorbed is adequate, because soy beans naturally contain relatively large amounts of iron" (p. 304-05)). Phytoestrogens and soy (p. 312-13). Macrobiotic diets (p. 313-15). Calcium and soy (p. 316). Vitamin B-12, miso and tempeh (p. 319-22). Iodine and soy (p. 323). Health-promoting phytochemicals beyond the traditional nutrients–soyfoods and isoflavones (p. 342-45; One table shows the isoflavone content (genistein, daidzein, and glycitein) of soybeans, roasted soyflour, roasted soynuts, TVP, tofu, tempeh, miso, and soy milk). Another shows the isoflavone content of commercial soy products by the weight of a typical serving, in descending order of isoflavone content (cooked soybeans, dry TVP, dry roasted soy nuts, tofu, soy flour, soy protein isolate, soymilk, SoyBoy Breakfast Links, soybean chips, tempeh, miso, soy cheese, Ice Bean, Green Giant Harvest Burger, soy noodles, Tofutti, soy sauce, soy oil). Protection against cancer and soy (p. 346-47). Help for menopause and bone loss (p. 347-48). Protective substances and soy foods (p. 397-98). Calcium fortified products such as soy (p. 421). Consuming a wide range of vegetable oils from intact plants–soy (p. 421). Developing a vegetarian food guide–Legumes, lentils and peas (p. 428-29; "Among legumes, the soybean possesses unique nutrient characteristics." Many food guides place soy beverages in the milk-dairy category). Table: Comparison criteria for evaluating soy and grain-based beverages (p. 430). The water efficiency of food production–and soy (p. 449; "The water intensity of animal production is much larger than the water intensity of crops. For instance, per gram dry weight, soybeans require about 0.75 liters of water" compared with about 20 liters for cattle). Note: Joan Sabaté is a man. The series editor is Ira Wolinsky, PhD, Univ. of Houston, Texas. Address: 1. Prof. of Chair, Dep. of Nutrition, and Prof. of Epidemiology, Loma Linda Univ., Loma Linda, California.

3288. Singleton, Paul; Sainsbury, Diana. 2001. Dictionary of microbiology and molecular biology. 3rd ed. Chichester, New York, Weinheim, Brisbane, Singapore & Toronto: John Wiley & Sons, Ltd. xi + 895 p. Illust. 25 cm.
• ***Summary:*** Contains entries for: fermentation, fermented foods, fermenter (fermentor), fungi, miso, natto, ogi, oncom, shoyu (see Soy sauce), soy paste (see Miso), soy sauce (shoyu), sufu, tempeh, tofu (an intermediate in Sufu production). Address: London.

3289. The Mail Order Catalog for healthy eating. Winter 2002. 2002. P.O. Box 180, Summertown, TN 38483. 36 p.
• ***Summary:*** The book section of this mail order catalog contains listings for an excellent selection of vegetarian and vegan cookbooks, vegetarian soyfood cookbooks, plus books on food nutrition & health, alternative healthcare, women's healthcare, native Americans and their cultures, animal rights, and sustainability.

The vegetarian food products section offers TVP granules and chunks, Response textured soy protein concentrates (misleadingly called "Response TVP flakes"), miso soup mixes, wheat free soy pasta, soy & rice pudding mixes, soy & nondairy beverages and beverage mixes, soy protein powders & shake mixes, soynut butters, sea vegetables, vegetarian jerky, soynuts, plus foods from Worthington and Loma Linda, Jyoti India Cuisine, and Dr. John McDougall. Address: Summertown, Tennessee. Phone: 800-695-2241.

3290. Huang, Timothy; Krueger, Carol Ann. 2002. Chronology of work with soyfoods (1972-1980) (Interview). *SoyaScan Notes.* Feb. 15-24. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** 1950 Dec. 25–Born in Detroit, Michigan. Growing up in a Chinese-American family, Tim naturally ate tofu (mostly at restaurants) and other soyfoods. At college in Michigan he started to prepare some of his own meals and began to cook with store-bought tofu.

1972–Tim leaves the University of Michigan (he studied architecture, then natural resources/ecology) to join "The Farm," an intentional community in Summertown, Tennessee, where he is exposed to vegetarianism and new uses of soybeans as food. Tim becomes a complete vegetarian (vegan). On The Farm, all of the soybeans were eaten as pressure cooked soybeans; a little oil was added to keep the hulls from clogging up the pressure valve. Stephen Gaskin, The Farm's teacher, expresses an interest in learning more about tofu.

1953 July 5–Carol Ann is born in Medford, Wisconsin. In the fall of 1973, at age 19 and after graduating from high school, she first visits The Farm in Tennessee. In Jan. 1974 she moves there to live.

1973–Tim researches how to make tofu for The Farm by interviewing family acquaintances. He built a forming box, got some cheesecloth, bought all the ingredients necessary to make tofu and made a batch in his family kitchen (West Bloomfield, Michigan–a suburb of Detroit) using soybeans from an Asian food store (in Royal Oak, Michigan), and lemon juice as a coagulant. His parents laughed. However neither Tim nor anyone at The Farm used this information to actually make tofu.

1974 spring–Tim and Carol Ann meet at The Farm in Tennessee. Approximately 600 people are living on The Farm at that time. Tim is a woodcutter and chain saw mechanic. Carol Ann works in the community kitchen and soy dairy–where she learns (briefly) how to make tofu and soymilk.

1974 fall–Tim and Carol Ann move to the "Wisconsin Farm," a sister community of The Farm. The Wisconsin Farm was smaller and better organized than the Tennessee Farm. James Taft is a key person there.

1975 March 9–Tim and Carol Ann are at the Wisconsin Farm; Stephen Gaskin comes up from the Tennessee Farm to marry six couples in one ceremony. Tim's parents are distraught; his father barely escaped from Communist China and now he was losing his son to a commune. Carol Ann (who is a good cook and likes to cook) works with the canning and freezing crew, and becomes involved in making soymilk and tofu regularly for that community; Tim, who is on the wood-cutting crew, helps her occasionally.

1976 Nov. 1–Ethan, the Huang's first child, is born on the Wisconsin Farm.

1977 fall–Tim and Carol Ann leave the Wisconsin Farm and move to Detroit, Michigan, to establish their own business. When they leave, Tim's parents give them some money with which they purchase a Dodge Caravan van. They move into a rented apartment. After several months (with financial help from Tim's parents), they buy and start to make payments on a house on the east side of Detroit.

1977 fall–Tim enrolls in an EMT (Emergency Medical Technician) training program associated with Wayne State University, at Detroit General Hospital; this would qualify him to drive an ambulance. Carol Ann wants to start a business making tofu and/or tempeh.

While looking for work on the side, Tim meets a Mr. James Coleman, a wheeler-dealer, who wants Tim to distribute his breads to Detroit from Ann Arbor. Tim begins distributing the bread but quickly realizes he needs a line of products if his route is to be profitable. He soon adds breads from Wildflour Community Bakery. One night at dinner Coleman tells Tim that he should meet Steve Fiering who is part of the 4th Avenue Food Co-op and who started (in about the spring of 1977) a worker's cooperative making tofu next door in the Wildflour Community Bakery in Ann Arbor.

1978 Feb. or March–Tim and Carol Ann meet Steve Fiering of The Soy Plant worker's cooperative making tofu in Ann Arbor, Michigan. Steve's co-op is now located in the small room in the basement of Eden Foods' restaurant in Ann Arbor. It is agreed that rather than create a competing soyfoods production business, that a cooperative business arrangement between the two companies be formed. The Yellow Bean Trading Co. is established by Tim and Carol Ann in Detroit to distribute soy products for The Soy Plant in the metropolitan Detroit area. In Chinese, *Huangdou* or "yellow bean" means soybean.

1978 July–Tim and Carol Ann attend the first meeting of the Soycrafters Association of North America in Ann Arbor, Michigan, hosted by The Soy Plant. They sign the register as: Yellow Bean Trading Co., 4414 Buckingham, Detroit, Michigan 48224. The conference boosts their interest making a business out of soyfoods. Tim, who is now taking some science classes at Wayne State University, has to decide between two careers: A medical technician or doctor, or a soyfoods entrepreneur. He chooses the latter.

1978 Sept.–Tim starts to distribute refrigerated soy products (tofu, tempeh, soymilk, etc.) made by The Soy Plant in Ann Arbor. He would drive the 40 miles from Detroit to Ann Arbor, would pick up the soy products at about noon, drive them to his home in Detroit in his unrefrigerated van, pack them into a refrigerator in the garage for overnight storage, then deliver them to stores along a distribution route he created in Detroit the next morning. The lack of refrigerated storage space and of a refrigerated van becomes an immediate problem. So Tim soon buys an inexpensive second van, insulates the back, and installs a refrigeration unit. He gradually adds more natural-food products to his line.

1978 late–With Tim realizing the need for a walk-in cooler and Carol Ann wanting to start a soy deli, the Huangs begin to rent a storefront at 15309 Mack Ave. in Detroit–a former natural foods restaurant. Tim borrows some money from his parents to make the rental payments

1978 Nov. 17–The Huang's second child and first daughter, Eva, is born.

1979 March–The deli named Yellow Bean Vegetarian Foods opens at 15309 Mack Ave in Detroit. Yellow Bean also bought tofu from The Soy Plant and used it to create "secondary soy products" including tofu eggless salad, tofu cream pies, and vegetable-tofu pockets.

1980 July 19–The Huang's third child, Emma, is born.

1980–Tim helps The Soy Plant relocate to a larger plant on Airport Blvd. in Ann Arbor.

1981–The Huangs sell the distribution route and trucks to The Soy Plant and sell the store to a private party. Tim decides to finish his undergraduate degree, working in food science and technology. They move to Davis, California.

1982–They separate in California. Carol moves to a ranch in Pima, Arizona; their divorce is finalized. She continues living in Arizona and raises their kids. She starts making jewelry. Address: 1. 155 Ridge Grove Rd., Kerrville, Texas 78028; 2. 438 South Star Ave., Tucson, Arizona 85719. Phone: Tim–830-792-3797; Carol Ann–520-740-0393.

3291. Hirsch, J.M. 2002. Tofu not the only way to get benefits of soy; try using miso. *Advocate* (*Baton Rouge, Louisiana*). Feb. 21.

• ***Summary:*** "The vegetarian love affair with tofu has done as much harm as good for the reputation of the rather mild-mannered soybean." But tofu is not the only source of healthy soy protein. Miso is another tasty source, best known as the primary ingredient in Japanese miso soups. Contains a recipe for "Shish kebabs with miso sauce" from The Book of Miso, by Shurtleff and Aoyagi (Ten Speed Press).

Other soy products besides tofu include: Tempeh, toasted and salted soy nuts, soy milk, breakfast cereals and

breads that contain soy, soy flours, soy protein powders, and edamame (fresh soybeans still in the pods; often served at Asian restaurants).

Also appeared in the Press (Ashbury Park, New Jersey). Address: Associated Press.

3292. Tibbott, Seth. 2002. Update on Tofurky (Interview). *SoyaScan Notes.* Feb. 26. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Sales of Tofurky roasts grew nicely during the past year from 82,000 in 2000 to 105,000 in 2001–an increase of 28% during a recession year in the American economy. The product is sold in two forms: Tofurky Roast, and Tofurky Feast (the 26-ounce stuffed roast plus four Tempeh Drumettes, 14 oz. Tofurky "Giblet" Gravy, and Tofurky Jurky Wishstixs). In recent years, Tofurky has been made for Turtle Island in California. Now Seth is planning to move production in-house, which should enable him to reduce production costs dramatically. Address: Turtle Island Foods, Inc., P.O. Box 176, Hood River, Oregon 97031. Phone: 541-386-7766 OF.

3293. Northrup, Christiane. 2002. Looking to shed some pounds? Try soy. *Dr. Christiane Northrup's Health Wisdom for Women.* Feb. p. 4-6. [17 ref]
• ***Summary:*** Revival is Dr. Northrup's favorite soy product; she is certain that her daily serving of Revival has been a significant factor in helping her avoid midlife weight gain. Many Americans regularly eat high-stress, low-quality foods such as refined flours and sugars, and trans fats, which actually stress the body causing it to produce excessive amounts of insulin. This leads to insulin resistance and weight gain. Address: M.D. (gynecologist), Women to Women, Yarmouth, Maine.

3294. Turtle Island Foods, Inc. 2002. Tempeh goes organic! New packaging celebrates 20 years in business (Leaflet). P.O. Box 176, 601 Industrial Ave., Hood River, OR 97031. 1 p. Front and back. 28 cm.
• ***Summary:*** On the front (see next page) are colorful new labels of Soy Tempeh, Five Grain Tempeh, and (New!) Veggie Tempeh. The ingredients are given in large letters below each package. "Oganic ingredients. New Four-color package. Vacuum packed for freshness and longer shelf life." For more information and recipes www. tofurky.com. Address: Hood River, Oregon. Phone: (800) 508-8100.

3295. Krueger, Carol Ann. 2002. Re: History of work with soyfoods, 1982-2004. Letter to William Shurtleff at Soyfoods Center, April 4. 5 p. + 2 menus. Handwritten, with signature.
• ***Summary:*** 1982–After Carol Ann and Timothy Huang were divorced, Carol Ann lived in Arizona with her kids and started making jewelry. She was director of the Graham County Food Buying Club, grew a huge organic garden, and began traveling to craft fairs, Grateful Dead shows, and festivals where she sold her jewelry. Dealing with rheumatoid arthritis put her on the path of natural healing and interest in diet and nutrition. She found that stress, overwork, lack of sleep, lack of water, lack of green leafy vegetables, and a poor, non-organic diet all made her arthritis worse (it flared up), while their opposite made it better. From 1982 to 1989 she lived on a ranch in Pima, Arizona. In 1982 she met and married Richard Sansom.

1989–Carol Ann and Richard are divorced; she moved to Boulder Creek, California, where she lived for the next 4 years.

1990 June–She met her third life partner, Wild Bill, at the Health and Harmony Festival. He was part of the original Renaissance Festival in Northern California, and he played for a belly dance troupe. They began to co-create the Casbah Tea House. He had created a Bedouin-style tent–40 by 32 feet; he would set it up and serve tea, coffee, and treats. Musicians would play and belly-dancers perform. Carol, who now had a long history of feeding people, began to add more food. Soon they became a traveling tea house on the summer festival circuit, serving an organic vegetarian menu based on the foods she had been involved with for the past 20 years. They served a Middle East type menu–hummus, tabouli, pita sandwiches, Greek salads, etc.–which were very refreshing at a hot festival. However many regular meat-eating Americans couldn't relate to the food. So they added tempeh burgers, vegetarian chili and chili cheese soup, veggie dogs, organic french fries, and tempeh fries–which could serve a wider array of people. Carol bought her basic foods in bulk (e.g., 24 pounds of tempeh) from Mountain People's Warehouse, a natural foods distributor.

1995–They rented a building on 4th Avenue in the university district of Tucson. They put their crafts/imports into a shop in front called the Creative Spirit Gallery. In the back they developed the tea house concept. Over the past six years they have become a full service restaurant with evening entertainment of music and belly dance. "It is a beautiful international scene that embraces many cultures from around the world. It is decorated with low hand carved chairs from Afghanistan, brass trays from India, a bronze gong and carved wooden statues from Bali, and carpets from Persia. The tea house comes into fruition during the International Gem and Mineral Show when Buddhist, Muslim, Hindu, Christian, and pagan people from around the world come together and be at peace drinking tea and sharing a meal... It is a vision of the beauty and diversity of this world in its fullness."

1997–Carol and Bill split up. He went into retirement and she had a new tent made from hemp fabric and ropes. She continued to travel with the Casbah Tea House on the festival circuit each summer, serving a menu based largely on soy.

1999–The hand-written Casbah Tea House Festival

Menu includes Middle Eastern favorites plus: Veggie Dog, Veggie Chili Cheese Dog, Vegetarian Chili, Tempeh (Soy) Burgers, and Tempeh Reuben.

2001 Feb.–The typeset Casbah Teahouse Tour Menu includes some new Middle Eastern favorites plus: Tofu Veggie Stir Fry, Vegetarian Chili, Tempeh Pita, and three types of soy burgers served with blue corn chips and a dill pickle: Tempeh Burger, Tempeh Cheese Burger, and Tempeh Reuben Burger. Veggie Hot Dogs (made from soy and seitan). Veggie Chili Cheese Dogs, and Tempeh Fries. A color photo (8 by 4½ inches) shows the colorful Casbah Tea House tent outdoors at the 2001 Seattle Hemp Fest (Washington state).

2002 spring–Carol Ann expanded, moving the gallery down the street to 549 N. 4th Ave., where it has three times as much space–the fullness to be a real store. The teahouse is now expanding into being a deli, bakery, and cafe in the front of the building. They make a lot of desserts that are vegan and sugar free, using tofu in their frostings. "We struggle with being a commercial operation trying to survive and holding to our values of providing as much organic high quality ingredients as we can.

"All three of my kids are now grown up, ages 21, 23, and 25. Emma attends the University of Arizona in the art department; she is our main baker and cake decorator. Eva is attending Pima College in graphic computer arts and is our main cook. Ethan is a part-time cook. Today I walked in here and there were nine gorgeous girls running around. They're all in their 20s, all vivacious and healthy and beautiful. Emma's assistant in the bakery is Rebecca, who is making tofu cheesecakes; her parents worked with us at Yellow Bean in Detroit, Michigan, when Rebecca was 5 years old. It's pretty neat how everything has come around.

"We are developing are wholesale aspect slowly, providing the co-op with packaged food items that we make. We'll see how it all evolves. What a long strange trip its been. One love." Address: 438 South Star Ave., Tucson, Arizona 85719. Phone: 520-740-0393.

3296. Treloar, Brigid. 2002. Tofu. Singapore: Periplus Editions (HK) Ltd. Printed in Singapore. 112 p. Illust. (color). Index. 25 x 24 cm. Series: The Essential Kitchen.
• ***Summary:*** This is a beautiful book, with stylish and informative full-page glossy color photos on every other page. It is well researched, comprehensive, and generally uses standard tofu and soyfoods terminology. It is also strange: We are not told in which country the publisher is located (perhaps Hong Kong or Singapore) or where the author lives. It is distributed in North America, Japan and Korea by Tuttle Publishing. On the inside rear dust jacket: www.tuttlepublishing.com. It is clearly targeted at a world market.

Contents: Introduction. Tofu glossary (introduction, firm and soft tofu, firm and regular tofu, fresh tofu, silken tofu, soft tofu, extra firm tofu, powdered tofu {or instant tofu or soy milk powder}, nigari tofu, flavored or dessert tofu, grilled tofu {yaki-dofu}, deep-fried tofu {age}, freeze-dried tofu {koya-dofu}, thin deep-fried tofu {aburaage or usuage}, thick deep-fried tofu {atsuage or namaage}, seasoned tofu pouches {for *inari-zushi*}, tempeh). Creating texture and flavor. How to use tofu: How to cut tofu, making a chrysanthemum flower, how to remove excess moisture, how to change soft tofu into firm, how to prepare tofu for cooking (marinating, grilling, pureeing or blending, parboiling / braising, panfrying / stir-frying, scrambling, steaming, deep-frying, smoking, how to reconstitute freeze-dried tofu, how to prepare deep-fried tofu for cooking, substituting tofu in recipes). Appetizers Snacks and light meals. Soups. Baked dishes. Stir-fries. Grilled dishes. Noodles, couscous and rice. Vegetables. Salads. Desserts. Glossary (of general ingredients, incl. soy sauce, Teriyaki sauce). Guide to weights and measures.

Note: This is not a vegetarian cookbook. Some recipes call for pork, chicken, fish (salmon, trout, tuna), etc.

Talk with representative of Tuttle Publishing, Vermont. 2004. May 8. Brigid lives in Australia. Periplus, created in 1997 by Tuttle, is located in Singapore and a sister company of Tuttle. Address: Food writer, stylist, consultant, and cooking instructor [Australia].

3297. Annapurna. 2002. Annapurna: zdrava hrana [Annapurna: Healthy food (Leaflet)]. Zagreb, Croatia. 1 p. Front only. Each panel 15 x 10.5 cm. [Cro]
• ***Summary:*** This small leaflet is printed in dark green ink on beige paper. On the front panel, below the name of the company, Annapurna, are listed four tofu products, tempeh, and 3 seitan products; no weights or prices are given. Address: Zumberacka 36, Zagreb. Phone: (01) 3010 915.

3298. Meeks, Bob. 2002. Daybreak Cafe: A successful restaurant featuring soyfoods in Arcata, California (Interview). *SoyaScan Notes.* Sept. 24. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Bob purchased The Tofu Shop, a soy deli and restaurant, from Matthew Schmit, in 1993. It is an alternative restaurant that features soyfoods, all organic ingredients, and mostly local foods. Approximately 75% of his customers are vegetarians. Bob went to culinary school and has spent his life in the restaurant business. He has owned and run his own restaurants for almost 25 years, and has worked in restaurants for almost 32 years.

More than 20 items on his menu include soyfoods or soy substitutions–not including soymilk as a beverage, in coffee, or in smoothies. His most popular menu items that include soyfoods (in descending order of popularity) are: Vegan Florentine (with cashew gravy). Tofu Scrambler (Bob also sells the a packaged dry seasoning mix for Tofu Scrambler). Omelets with tofu instead of eggs. Other specials

include Tofu Veggie Scrambler, stir fries with tofu, and curry rice with tofu. He also serves a number of tempeh recipes. Some local farmers that grow organically are too small to be certified. This restaurant is doing very well as a business. An important part of its success is the energy that Matthew put into it before Bob arrived–even though Matthew wasn't really a restaurateur–but rather an excellent tofu-maker. Bob gets all of his tofu from Matthew. After people read his menu they are free to color it!

Bob continues to make a new version of the Tofu Turkey that Matthew used to make in Arcata. Bob blends the tofu with seasonings, then stuffs it with bread, and bakes it in a bowl shape in large, medium, and small sizes. It comes with either cashew gravy or a mushroom-miso gravy. It comes out of the oven ready to go, then customers bake it again at home and baste it. "Tofu Turkeys are a pretty big thing in Arcata." He sells it at the restaurant and also wholesales it to a few food outlets in Arcata. He likes keeping it small and local. "With Matthew's tofu its just awesome." His best year he sold about 1,200 Tofu Turkeys from Thanksgiving to Christmas; last year the number was about 300-400. Tofurky changed so that it was more similar to Bob's product; they now have it in a bowl shape, blended and its stuffed. Bob thinks he saw Tofurky spies some years ago at his restaurant trying to steal his secrets. Address: Owner, Daybreak Cafe, 768 18th St., Arcata, California 95521. Phone: 707-826-7543.

3299. Schmit, Matthew. 2002. Tofu turkey in Telluride, Colorado, and Arcata, California (Interview). *SoyaScan Notes.* Sept. 24. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** The first tofu turkey that Matthew is aware of was made in Telluride, Colorado, in 1978 at Thanksgiving by Craig Boyken, a longtime close friend of Matthew's who loaned him $250 to help start The Tofu Shop in Telluride in the fall of 1977. Craig is an amazing, sort of Renaissance man–an artist, mountain climber, musician–among other things. 1978 Craig and his wife, Anne, were living in Telluride in a studio they had built inside an old deserted brick school building. He used to have big banquets in his studio. Shortly before Thanksgiving of 1978 Matthew brought Craig two large blocks of firm nigari tofu, which he sculpted into the shape of a turkey, basted it with soy sauce and oil, baked it in an oven, and continued to baste it from time to time. He probably fashioned some kind of drumsticks on the side. Matthew does not recall any stuffing inside the turkey. As the turkey baked, it shrunk/contracted and lost its distinctive turkey features. It was carved and served with a vegetarian gravy and probably cranberry sauce and stuffing on the side. It was a potluck Thanksgiving vegetarian banquet, with about 30-40 people present, including all people who worked at The Tofu Shop. It was probably the first "Tofu Turkey Thanksgiving" in American history.

After starting The Tofu Shop in Arcata, California, Matthew continued the turkey tradition each year from Thanksgiving to Christmas, starting in about 1982 or 1983. It was a major event. They started carving the turkey from two large blocks of tofu; they would hollow each out, fill the space with stuffing, then put them together and bake them. It would come out like a loaf; when you sliced it you would get a combination of the white meat plus the stuffing inside. The Tofu Turkey came in three sizes (small, medium, and large–which fed 24 people) and was sold as a special-order product via the deli–either for take-home or as a hot plate (sliced, with gravy, stuffing, and cranberry sauce) to eat at the deli; it was not sold to other retail stores. Their record year, they sold $4,000 worth of Tofu Turkeys including mushroom gravy, and a custom stuffing with okara and miso. People could also special-order tofu pumpkin pies, cranberry sauce, etc.–a full meal. The product was last sold by The Tofu Shop in 1993. Bob Meeks now makes it at the Daybreak Cafe in Arcata, but he has improved the recipe. Also, the Arcata Co-op, which has a service deli named Spoons, has for many years made their own Tofu Turkeys in house.

Matthew met Seth Tibbott of Turtle Island Foods (home of Tofurky) years ago when he came down through Arcata doing in-store food demos for his tempeh products, and Matthew has talked with him periodically over the years.

To this day, Matthew is asked to bring Tofu Turkey to his extended family's get-together on Thanksgiving in Arcata–for the vegetarians in the family. Address: Tofu Shop Specialty Foods Inc., 65 Frank Martin Court, Arcata, California 95521. Phone: 707-822-7401.

3300. Murphy, Patricia A.; Barua, K.; Hauck, C.C. 2002. Solvent extraction selection in the determination of isoflavones in soy foods. *J. of Chromatography. B, Analytical Technologies in the Biomedical and Life Sciences* 777(1-2):129-38. Sept. 25. *

• ***Summary:*** Acetonitrile is better than acetone, ethanol or methanol in extracting the 12 phytoestrogenic soy isoflavone forms found in foods.

Gives the content of daidzein, genistein, and glycitein for soy flour, tempeh, tofu, TVP [textured soy flour], and soy germ. Address: Dep. of Food Science and Human Nutrition, Iowa State University, 2312 Food Science Building, Ames, Iowa 50011, USA. pmurphy@iastate.edu.

3301. Schmit, Matthew. 2002. Soy pioneers: Where are they now? Part V (Interview). *SoyaScan Notes.* Aug. 28. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** Continued: In about 1983 Tom Nawrocki was hired by The Tofu Shop as a tofu maker, but he arrived with an interest in tempeh. Later he asked Matthew if he could rent a portion of the space to make tempeh; Matthew liked the idea. Tom built an incubator, founded Arcata Soyfoods Co., and made tempeh at the shop for 2-3 years. He may also

have made a tempeh salad. After leaving Arcata, he lived in Japan for several years. The last Matthew heard, Tom was working in a bike shop in Santa Cruz, California.

The company's logo has always been a small tofu shop on stilts, with an Oriental-style roof with the ends of the rafters curving upward, facing westward on a cliff above the Pacific Ocean, with a tree arching overhead. It was Matthew's dream of the perfect tofu shop and location. In 1999 Matthew met Yevonne Reynolds, a local watercolor painter and graphic artist, who designed their present colorful and impressionistic watercolor logo–based on her interpretation of their earlier logo.

That earlier three-color illustration (blue, green, gold) was done by Bernice Kagan in about 1983 based upon some prints and drawings that Matthew gave her, which he felt captured the essence of the Tofu Shop. "When Bernice Kagan and I were discussing the new logo, I requested that it include those classic Japanese waves, as symbolic of tofu arriving on our shores from across 'the big lake.' In reality, much of the coastline up here is exactly like that, steep, rocky cliffs with moss and pine. I think it was Bernice's idea to put it on stilts. Do we have tsunamis in Humboldt (our county) and Mendocino? Absolutely. A sizeable tsunami wrecked the Crescent City harbor (80 miles north); it was the Alaska tsunami of March 27, 1964. We have in Humboldt a tsunami warning system and hold periodic tsunami drills." Note: A real tofu shop built that close to the ocean could be destroyed by a tsunami, but this illustration was of an idealized tofu shop.

In Oct. 1999 The Tofu Shop introduced its first new labels plus a series of three promotional signs; across the bottom of each is printed: "Tofu Shop Specialty Foods. The company conducted a major signage campaign in all of their accounts to inform customers of the new labels.

A series of recipe cards began with two spring recipes in the spring of 2001. Two more were added each season.

They owned the Tofu Shop deli until 1992; they were manufacturing tofu and other products in the back. In July 1992 they moved the tofu-manufacturing part of the business from 768 18th St. to a small business food incubator (an economic development project), joining about ten other small local companies. The company's new name and address were: Tofu Shop Specialty Foods, Inc., 100 Ericson Ct., Suite 150, Arcata, CA 95521. At that time they remodeled the vegan deli into more of a sit-down restaurant, called The Tofu Shop. Matthew tried to manage both places for about a year and was unable to keep up with it. So he ended up selling the restaurant in 1993. It was on sale for a while, then he had to shut it down, which lowered the sale price quite a bit. It was purchased by experienced local restaurateurs–a husband, a wife, and a partner. The partner, Bob Meeks, ended up buying out the other two. They reopened on the same location (768 18th St. in Arcata) as the Daybreak Cafe. They used a lot of the Japanese decor and kept the theme. They added some fish and a little chicken to the menu but they feature local, organic ingredients. They offer a vegan alternative to just about everything from eggs to meat. They advertise heavily and are very successful. They use a lot of Matthew's soy products in their recipes. The new owner is Bob Meeks (phone: 707-826-7543).

Talk with Linda Redfield. 2002. Sept. 23. She admires Matthew a lot. "He is very disciplined, determined, and focused. The Tofu Shop takes most of his life, energy and time." Address: Tofu Shop Specialty Foods Inc., 65 Frank Martin Court, Arcata, California 95521. Phone: 707-822-7401.

3302. Noble Bean. 2002. Tempeh–Noble Bean (Leaflet). McDonalds Corners, Ontario, Canada. 2 p. 6 panels. Front and back. 28 cm.
• ***Summary:*** The front 3 panels of this color leaflet are printed with black and yellow on a green background: (1) About the company in English, with an oval color photo of Casey, Marty, Susan, and Allan. "Noble bean is a family-run cottage industry nestled in the rolling hills of the Ottawa Valley. Here on 10 acres of land we produce 100 lbs. of tempeh a day." In 1979 the company was started. (2) Six tempeh products (packages and labels) made by Noble Bean, plus one old and two new photos of the family at work. (3) About the company (in French) with a cartoon illustration of the outside of the shop.

The inside 3 panels contain recipes for Tempeh Salad and Tempeh Teriyaki, plus an early photo of Allan and Susan making tempeh. Address: RR#1, McDonalds Corners, ONT, Canada K0G 1M0. Phone: (613) 278-2305. Fax (613) 278-0173.

3303. *Observer* (*London*).2002. Om: Top ten tips to beat high cholesterol. Oct. 13. p. G64.
• ***Summary:*** Tip #3 is "Eat soya products. Studies suggest that soya helps to reduce low density lipoproteins (LDL) cholesterol. Try portions of tofu, tempeh (fermented tofu [sic]), and soya milk."

Note: Tempeh and fermented tofu are two completely different foods made from soybeans.

3304. Stacey, Michelle. 2002. Weighing the health benefits of soy. *Martha Stewart Living.* Oct. p. 90, 92, 94, 96.
• ***Summary:*** Under "the good news" and "the bad news" discusses the benefits and possible (but unclear) disadvantages.

3305. Woods, David. 2002. Magic soy desserts: 125 delicious and healthy recipes. Lincon, Nebraska: iUniverse, Inc. Writer's Club Press imprint. xxix + 153 p. Recipe index. 23 cm.
• ***Summary:*** The author is an experienced African-American cook, who has written two other cookbooks. Contents: About

the author. Introduction. Dessert ingredients (Soybeans, dried soybeans, soy flakes cereal, soyflour, soybean margarine, soymilk, soynuts, soynut butter, Soymage sour cream, tempeh, tofu, soybean oil, soy yogurt). The soy food alternatives: A basic guide to substituting with traditional soy products (incl. silken tofu). Ingredients and techniques (incl. many fruits, coconut milk, craisin [sweet dried cranberries], tahini). Breakfast. Breads and muffins. Puddings. Pies. Soups. Cookies and bars. Ice creams and frozen desserts. Beverages. Side dish desserts.

Soy ingredients. Address: 2501-D Cobble Hill Court, Woodbury, Minnesota 55125. Phone: 651-734-0379.

3306. Arcot, J.; Wong, S.; Shrestha, A.K. 2002. Comparison of folate losses in soybean during the preparation of tempeh and soymilk. *J. of the Science of Food and Agriculture* (*London*) 82:1365-68. April. *

3307. Charney, Ken. 2002. The bold vegetarian chef: Adventures in flavor with soy, beans, vegetables, and grains. New York, NY: John Wiley & Sons. vi + 313 p. Illust. Index. 23 x 19 cm.
• ***Summary:*** Contents: Acknowledgments. Introduction: Vegetarian delights. 1. Starting off right: Appetizers and snacks. 2. Soups and stocks: Warm beginnings. 3. Breakfast, lunch, and brunch: From scrambles to sandwiches. 4. Burgers, fritters, and loaves: Stars of vegetarian cuisine. 5. Outrageous soy: Tempting tofu and tempeh. 6. A bold way with beans: Powerhouse dishes. 7. Pasta, risotto, and polenta: Comfort carbos. 8. Seitan: The power of wheat meat. 9. Vegetables and grains on the side: All the best accompaniments. 10. Green salads: Crisp and well dressed. 11. Just desserts: Sweetness and light.

On the rear cover is a brief bio of Ken Charney; on the front cover is a color portrait photo. Address: Seattle, Washington.

3308. Katzen, Mollie. 2002. Mollie Katzen's sunlight cafe. New York, NY: Hyperion. xvii + 302 p. Illust. (color). Index. 27 cm. *
• ***Summary:*** Offers over 350 easy recipes for vegetarian breakfasts. Address: California.

3309. Kissel, Renate. 2002. Soja & Tofu: Die neue Vitalkueche [Soya & tofu: The new vital cookery]. Frankfurt am Main, Germany: Umschau Buchverlag. 128 p. Illust. (color photos). Recipe index. 24 cm. [Ger]
• ***Summary:*** Contents: Soya–the powerbean for nutrition. 1 Salads and appetizers. 2. Sauces, dips, garnishes, and spreads for bread. 3. Soups. 4. Main dishes. 5. Desserts, baked goods, and drinks. 6. Asian dishes. Glossary. Note: The majority of recipes in this cookbook use tofu.

3310. Lee, Cherl-Ho; Lee, Sang Sun. 2002. Cereal fermentation by fungi. In: George G. Khachatourians and Dilip K. Arora, eds. 2002. Applied Mycology and Biotechnology. Vol. 2. Agriculture and Food Production. Amsterdam, New York: Elsevier. 428 p. See p. 151-70. [50 ref]
• ***Summary:*** Contents: Summary. Introduction. Fermentation starters: History of solid state fermentation starters in northeast Asia, cereal alcoholic fermentation starters, soybean fermentation starters. Fungal fermented foods: Cereal alcoholic products (rice wine, rice beer, alcoholic rice paste, alcoholic rice seasoning), fermented soybean products (Korean kanjang and doenjang, Japanese shoyu and miso, tempe, Chinese sufu), other fermented products (Chinese red rice {Anka}, enzyme foods). Hygienic aspects of fungal fermented foods: Mycotoxins in fermentation raw materials, mycotoxin formed during fermentation. Conclusion.

Page 162: "... soybean sauce, *kanjang,* and soybean paste, *doenjang,* have been used in Korea for more than 2000 years and formed the characteristic flavor of Korean cuisine. The term "Shi" [soy nuggets], the Chinese letter indicating *meju,* first appears in *Jijiupian* written in the Han period (206 B.C. to 208 A.D.) of China. *Bowuzhi* of Jin (265-420 A.D.) of China describes that *Shi* [soy nuggets] originated in a foreign country, and the letter is a dialect. *Xintangshu* of the Tang period (618-807 A.D.) in China names Shi as a special product of Balhai or Bohai (688-826 A.D.), a nation founded by the refugees from defeated Kokuryo (37 B.C. to 668 A.D.).

"It is generally recognized that Koreans were the first to experiment with soybean fermentation, sparking the beginning of the soy sauce culture of the Orient (Lee 2001). Their traditional fermentation technology was so advanced that they taught their techniques to neighboring countries."

Page 162-63: "*Meju* [soybean koji], the fermentation starter for Korean soysauce, *kanjang,* is made from soybean... The ripening of *kanjang* mash in the brine is ended in 1-2 months."

Figures: (12) A combination diagram and flowsheet showing the process of making Korean kanjang and doenjang. Address: 1. Graduate School of Biotechnology, CAFST, Korea Univ., Seoul, 136-701, Korea; 2. Dep. of Biology, Korea National Univ. of Education, Chungbuk, 363-791.

3311. Ling, Kong Foong. 2002. Food of Asia: authentic recipes from China, India, Indonesia, Japan, Singapore, Malaysia, Thailand and Vietnam. Singapore: Periplus. 192 p. Illust. (color photos). Index. 31 cm.
• ***Summary:*** This oversized paperback book, loaded with glossy color photos, is an expanded version of the original 1998 edition. The introduction and essays are by Kong Foong Ling. The index, which is poor, makes the book hard to use if you are looking for particular foods found throughout Asia such as soybeans, soy sauce, miso, salted /

fermented black beans, yuba [bean curd skin], etc.

Contents: The flavors of Asia. Ingredients. The Asian kitchen. Burma. China. India. Indonesia. Japan. Korea. Malaysia & Singapore. The Philippines. Sri Lanka. Thailand. Vietnam. Appendix.

The "Ingredients" section (p. 10-17) includes: Bean curd (incl. cotton or momen tofu, silken bean curd, deep-fried bean curd or aburage, grilled bean curd or yakidofu, fermented bean curd or nam yee). Bean curd skin [yuba]. Black beans, salted (and fermented). Hoisin sauce ("A sweet sauce made of soy beans, with spicy and garlicky overtones"). Miso (incl. red miso and white miso). Salted soy beans (incl. "yellow bean sauce"). Soy sauce (incl. light soy sauce, black soy sauce, red soy sauce, Kikkoman, tamari, thick sweet soy sauce (kecap manis–Indonesian)). Tempeh. Also: Red beans (dried azuki). Seaweed (incl. dried kelp, golden kelp, mozuku, salted dried kelp, laver or nori, wakame). Sesame (black and white seeds, tahina {tahini}). Sesame oil. Sesame rice crackers.

Korea (p. 109+). Page 110: There are also many fermented pastes and sauces for dipping, called *chang*. Every restaurant and home has its own formula for making chang. Based on a fermented mash of soy beans, the three most common varieties are *kan chang* (dark and liquid), *daen chang* (thick and pungent), and *gochu chang* (fiery and hot).

Soybean is mentioned on pages 8, 11, 68, 89.

Beancurd or bean curd is mentioned on pages 8, 10, 11, 26, 32, 33, 35, 36, 40-42, 68, 70-71, 74, 89, 90, 92, 93, 94, 96, 100, 102, 104, 107, 111, 112, 113, 119, 120, 127, 133, 158, 172, 175, 185, 189, 190, 191, 192.

Bean curd skin [yuba] is mentioned on pages 11, 35, 36.

Bean paste and bean paste sauces, p. 8, 32.

Fragrant soy sauce is mentioned on page 128.

Also: Red bean paste, p. 46 (canned, azuki).

3312. Treloar, Brigid; Inge, Karen. 2002. Healthy soy: Cooking with soybeans for health and vitality. Hong Kong: Periplus Editions (HK) Ltd. Printed in Singapore. 112 p. Illust. (color). Index. 24 x 22 cm.

• ***Summary:*** This is a beautiful book, with stylish and informative full-page glossy color photos on every other page. It is well researched, comprehensive, and generally uses standard soyfoods terminology. It is also strange: We are not told in which country the publisher is located (perhaps Hong Kong or Singapore) or where the authors live. It is distributed in North America, Japan and Korea by Tuttle Publishing. On the inside rear dust jacket: www.tuttlepublishing.com. It is clearly targeted at a world market.

Contents: Introduction. The health benefits of soy: The heart, cancer, menopause, osteoporosis, weight control, allergies, lactose intolerance, the nutritional value of soy, protein, phytoestrogens, fats, calcium, soluble fiber, vitamins and minerals, energy, carbohydrates, how much soy do we need? (as an exchange for meat), how to use the nutrition table. Nutrition table (for various soyfoods). Soybeans: Green soybeans–fresh and frozen, dried soybeans, how to buy and prepare soybeans (selecting and storing dried soybeans, preparing dried soybeans, soaking, pan-roasting, boiling, pressure cooking, canned). Soy foods: Tofu (selecting and using, storing, freezing), bean curd sheets (yuba), deep-fried tofu (age; seasoned tofu), miso, tempeh, soya sauce (shoyu; regular, low-salt, light, tamari, ketjap manis), soy milk, soy flour, soy nuts, soy germ powder, soy oil, soybean sprouts, soybean paste (fermented), natto, soy dairy products (soy butter, soy spread {margarine}, soy cheese {plain or flavored}, cream cheese, yogurt, mayonnaise), soy meats (meat alternatives), others (soy breads, cereals, pasta, chocolate, chips, health bars, desserts, tofu ice creams), soy grits, tips (tofu, soy dairy products). Compatible soy flavors. Preparation and cooking techniques: Draining and pressing tofu, cutting tofu, deep-frying tofu, how to reconstitute yuba, how to use deep-fried tofu pouches, how to use miso, miso tips. Soups. Appetizers and dips. Light meals and snacks. Main dishes. Seafood. Vegetables. Salads. Desserts. Soy drinks. Glossary. Guide to weights and measures.

Note: This is not a vegetarian cookbook. Some recipes call for chicken, fish (swordfish, tuna, salmon), shrimp, etc. Address: 1. Food writer, stylist, consultant, and cooking instructor [Australia]; 2. Nutritionist and nutrition correspondent for *Good Morning Australia*.

3313. Stalzer, Dan. 2003. A tempeh pioneer improves the process for making tempeh at home (Interview). *SoyaScan Notes.* March 28. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** Dan has been making tempeh since 1976. He learned the process from Rodale Press then bought a Tempeh Kit from The Farm (Tennessee). On 30 May 1980, while living in Chicago, he attended a talk and color slide show about tempeh given by Shurtleff and Aoyagi in the suburb of Evanston, Illinois. He now lives in Fort Bragg where he makes "greenwood furniture" and is friends with Gordon McBryde and Betty Stechmeyer of GEM Cultures. His innovations are:

(1) Dehulling the soybeans: To get every hull off of every bean, soak 4 cups soybeans overnight in water, then drain well. Have ready a cloth bag / sack home-made of coarse cotton (like a dishtowel) about 14 inches wide and 22-24 inches long. Turn the bag inside out so the seams are on the outside. Now pour the drained beans into the bag, distribute them soybeans evenly in the bottom, then roll it up tightly from the bottom to form a cylinder. Put this on a clean kitchen floor or in the bathtub. Take off shoes and socks. Step on top of the bag, with both feet closely together facing parallel to its axis and both heels at one end. With most of your weight on your heels, tread the beans underfoot, moving slowly the length of the cylinder until your heels are

at the other end. Now repeat, walking the length of the bag / cylinder in the same direction. Unroll the bag and roll it up again tighter. Repeat the process of walking its length twice. Sponge any moisture off kitchen floor. Pour the beans from the bag into the cooking pot and proceed to cook for 30-40 minutes in plenty of water, then drain and spread on a clean towel to dry. Meanwhile, take the empty bag outdoors, turn it inside out, and shake it so the residue flies off; then launder it.

(2) Leave the hulls mixed in with the beans when making the tempeh: This saves the time otherwise required to remove the hulls from the cotyledons, gives finished tempeh which is a whole food with more dietary fiber, and the hulls cause no reduction in the firmness of the finished tempeh. Dan can slice his tempeh into strips 1/16th inch thick and wave them; they hold together nicely.

(3) Perforating Ziploc bags: Staple all bags together, atop one another, near the 4 corners of the stack of bags, with each staple parallel to the side to which it is nearest, about ¼ inch in from each side, and ½ inch in from each end. Get a hatpin with a large round head and grasp it between the thumb and forefinger of your right hand. While seated, use the base of your right hand press the unstapled mouth end of the bags against your right thigh near the knee. Now grasp the bags at the other end with your left hand and pull them tight over the space between your legs. Use the needle to poke about 50 holes in the half of the bags nearest your left hand. Rotate the bags 180 degrees and poke 50 more holes in the other half of all the bags. Remove the staples carefully so as not to tear any large holes. The perforated bags are now ready to fill with soybeans.

(4) Add bulgur wheat before incubation to improve the tempeh's flavor: Add 1 cup coarsely cracked bulgur wheat to 1 cup boiling water in a saucepan. Cover and return to boiling. Turn off heat and, still covered, let stand for 30 minutes. During fermentation, enzymes in the starter will convert starches in the wheat into natural grain sugars.

(5) Add seasonings to soybeans and bulgur before fermentation to make seasoned tempehs: Italian blend–Stir in 3-4 tablespoons fennel seeds, 3-4 tablespoons oregano, and 6 cloves of freshly crushed garlic. The garlic increases the tempeh fermentation time by 4-5 hours–but its worth the wait! Mexican blend: Substitute 3-4 tablespoons of cumin seeds for the fennell seeds. Make sure the garlic is well crushed and well mixed with the spices, and that the mixture is well distributed into the beans (or bean-grain mixture). Mix in 2 tablespoons of white vinegar. Add starter and mix well again.

(6) An incubator requiring no thermostat: This works in Ft. Bragg, California, which is near the Pacific Ocean and has mild winter and summer temperatures, within 10 degrees F. of each other. Use your oven as an incubator with the inoculated mixture in perforated bags on the middle rack. Start with a 40 watt light bulb as a heat source on the oven's bottom. Put a pie plate over the bulb to disperse its heat. After 12-14 hours, replace the 40 watt bulb a 15-watt bulb. The tempeh will be ready after about 30 hours, or when cake is firmly bound with a white mycelium.

Note: Fort Bragg is a Mecca for woodworkers from all over the world. There is a school there, The Fine Woodworking Program at The College of the Redwoods, which began in 1980 when James Krenov agreed to relocate to Fort Bragg from Stockholm, Sweden, to be the inspiration and head instructor of a small school devoted to, as he puts it, "going into the wood." He is well known in the craft and art world for making one-of-a-kind pieces of furniture which express his own esthetic sense, and for "designing as you build," or feeling your way to the most pleasing solution to any design situation. He is famous for making and using wooden planes (with carbon steel blades) in his work. Krenov retired last year but still makes beautiful furniture in his shop at home.

In Aug. 1987 Dan Stalzer relocated to Fort Bragg from Chicago; there he studied with James Krenov and the program's staff for 2 years. In addition he also practices "Green Woodworking" which he learned in 1985 in a traditional chairmaking class taught by Drew Langsner and John Alexander in North Carolina. Green Woodworking means the wood is shaped into project parts before it is seasoned, while it is still "green." In this condition, the wood is easily shaped with hand tools such as the drawknife using a shaving horse, a foot operated workbench and vise which the woodworker sits on. When the pieces are roughed out, the wood is allowed to cure (which it does quickly), then the pieces are finished and joined into furniture. Address: Dan's Workshop, P.O. Box 1321 (221 N. Whipple St.), Fort Bragg, California 95437. Phone: 707-964-9328.

3314. *ASA Today* (*St. Louis, Missouri*).2003. Soyfoods enjoy growing popularity. 9(6):4-page insert after p. 2. April.
• ***Summary:*** Attractive (with 5 color photos), interesting, and original. This is the first such insert in this 4-page newsletter, and the first time this newsletter has contained a significant amount of information about soyfoods. Below the title is printed: "A special publication from the American Soybean Association." On the back page we read: "ASA thanks the sponsors of this publication...: Solae [DuPont & Bunge], Soyatech, and White Wave. Below the logo of each company is 4½-inch-long column describing the company, its history and activities.

Contents of the insert: Introduction. Soyfoods become mainstream. The most common [widely used] soyfoods. U.S. consumers more aware of soyfoods. The push for soymilk in schools. Soyfoods for the future. Export demand for food ingredient beans.

It begins: "No longer are soyfoods considered unusual or hard to find. No longer are they considered the kind of foods only eaten by so-called 'granola-crunchers' or 'health

fanatics'... The menu at the recent American Soybean Association (ASA) awards banquet featured a serving of delicious edamame (sweet green soybeans) that soybean growers and guests alike enjoyed with enthusiasm."

3315. Hobbs, Suzanne Havala. 2003. Nutrition hotline: Alternate Protein Products (vegetarian) in the government's Child & Adult Care Food Program. *Vegetarian Journal* (*Baltimore, Maryland*) 22(2):2, 5.
• ***Summary:*** Federal funding of the Child & Adult Care Food Program (CACFP) supports daily meals and snacks for 2.6 million children and 74,000 adults at home day care programs, day care centers, after-school care programs, and shelters. USDA's Food and Nutrition Service (FNS) administers the program at the federal level; at the state level it is administered by state education and health departments. Modifications to the "Vegetable Protein Products" requirements were finalized in March 2000. With the latest group of changes, "Vegetable Protein Products" were renamed "Alternate Protein Products" (APP). The cap on the amount of APPs that can be used in menus was removed, and the new regulations no longer require that APPs be fortified. Tofu and tempeh don't qualify as APPs because they don't meet the requirement in Appendix A that APPs must contain at least 18% protein by weight when fully hydrated or formulated. Soymilk and soy yogurt don't count as APPs either–even though dairy yogurt does.

3316. **Product Name:** Edamame Veggie Tempeh.
Manufacturer's Name: Turtle Island Foods, Inc.
Manufacturer's Address: P.O. Box 176, 601 Industrial Ave., Hood River, OR 97031. Phone: 1-888-TOFURKY (863-8759).
Date of Introduction: 2003. April.
Ingredients: Beer Brats: Tofu (non genetically modified soybeans, water, magnesium chloride or nigari) vital wheat gluten, expeller pressed non genetically modified canola oil, shoyu soy sauce (water, soybeans, wheat, salt, culture), Full Sail Amber Ale, herbs and spices, water.
Wt/Vol., Packaging, Price: Four vegan hot dogs in 14 oz pack. Suggested retail price: $3.89 to 4.29.
How Stored: Frozen or refrigerated.
New Product–Documentation: Spot in *Vegetarian Journal.* 2003. April. Issue No. 2, rear cover. The makers of Tofurky have introduced "the first tempeh made with high protein organic Edamame soybeans." Sweeter than regular soy tempeh, it is presently available only on the West Coast.

3317. Jones, Christina. 2003. Making tofu in Australia (Interview). *SoyaScan Notes.* May 15. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** She and her partner have been making tofu for a short time and selling a little of it. But they were not the first ones in Tasmania to make tofu commercially. The pioneers were people who made and sold tofu in their restaurant. She plans to order *Tofu & Soymilk Production* and *Tempeh Production* published by Soyfoods Center.

Update. Talk with Christina. 2003. June 11. She first sold tempeh in May 2003. Address: 124 Fourfoot Rd., Geeveston, Tasmania 7116, Australia. Phone: (3) 6297 1293.

3318. Henry's Tempeh. 2003. Tempeh Burger. Scott St., Kitchener, ON N2H 0A3, Canada.
• ***Summary:*** Letter (e-mail) from Henry Schmidt, founder of Henry's Tempeh. 2011. Jan. 12. In May 2003 Henry introduced Tempeh Burger. which was discontinued in April 2004. He made tempeh, then ground it in a meat grinder, seasoned it with dry seasonings and spices (no marinade), put it into a patty machine, made patties, and shaped it into patties–very labor intensive. "It was brutal, just brutal." He no longer has any labels for the tempeh burgers. Address: Kitchener, Ontario, Canada.

3319. Katz, Ellix Sandor. 2003. Wild fermentation: The flavor, nutrition, and craft of live-culture foods. White River Junction, Vermont: Chelsea-Green Publishing Co. xv + 187 p. July. Illust. by Robin Wimbiscus. Index. 26 cm. [78 ref]
• ***Summary:*** This book introduces readers to fermented foods from around the world. Contents: List of recipes. Foreword, by Sally Fallon. Acknowledgments. Introduction. Cultural context: The making of a fermentation fetish. 1. Cultural rehabilitation: The health benefits of fermented foods. 2. Cultural theory: Human beings and the phenomenon of fermentation. 3. Cultural homogenization: Standardization, uniformity, and mass production. 4. Cultural manipulation: A do-it-yourself guide. 5. Vegetable ferments. 6. Bean ferments. 7. Dairy ferments (and vegan alternatives). 8. Breads (and pancakes). 9. Fermented-grain porridges and beverages. 10. Wines (including mead, cider, and ginger beer). 11. Beers. 12. Vinegars. 13. Cultural reincarnation: Fermentation in the cycles of life, soil fertility, and social change. Appendix: Cultural resources. Notes. Bibliography. Index.

Chapter 6, "Bean ferments," includes details on miso, miso pickles, koji, tamari, and tempeh–with instructions for making them at home plus recipes. Other chapters discuss: Kefir, cultured soymilk, and Sunflower sour cream (p. 90). Amazake (p. 118-20). Walt Whitman's poem on compost (p. 162). Von Liebig, whose 1845 monograph "laid the groundwork for the chemical agricultural methods that have become standard practice and that are rapidly depleting soils everywhere."

The author believes strongly that fermented foods have helped him and several friends to survive AIDS–a fascinating hypothesis! Address: Short Mountain Sanctuary, in the hills of Tennessee.

3320. Book Publishing Co. 2003. Fall 2003 fall catalog (Mail

order). Summertown, Tennessee. 64 p. 25 cm.
• ***Summary:*** Contains sections titled Soyfoods Cooking (p. 14-17, including books on tofu, miso, tempeh, soyfoods, meatless burgers, meat substitutes, and TVP), Healthy World Cuisine (Chinese, Japanese, Korean, Indian), Vegan Cooking (p. 24-32), Vegetarian Cooking (p. 33-36), Native Voices (Native American books and authors) (p. 45-61). Address: P.O. Box 99, 415 Farm Road, Summertown, Tennessee 38483. Phone: 1-888-260-8458 or 931-964-3571.

3321. HeartHealth Partnership. 2003. Turning over a new leaf: Your heart-healthy living guide (Vol. 4, No. 2). Health Drivers Publishing. 29 p. Illust. No index. 19 cm. [26 ref]
• ***Summary:*** This booklet gives basic information is for people who want to reduce their blood cholesterol levels. It contains ads and touts specific brands. The National Cholesterol Education Program (NCEP) estimates that 52 million Americans are being treated for high cholesterol levels.

"Cholesterol is a soft fat-like substance, which in moderate amounts is essential for good health. It is part of the makeup of all cell membranes, is found in body tissue, and can be made into various hormones. Cholesterol comes from two sources. Your body produces it naturally, mostly in the liver (about 1,000 milligrams a day). The other source is the food you eat, such as meat, poultry, fish, egg yolks, and dairy products. Fruits, vegetables, nuts, seeds, and other plant-based foods do not contain cholesterol and, in fact, some of these foods have been shown to actually reduce blood cholesterol" (p. 2).

HDL (High Density Lipoprotein) is "good" cholesterol. It contains very little cholesterol in its core, but as it travels through the bloodstream it carries LDL or "bad" cholesterol away from the arteries to the liver, where it is either recycled or excreted.

LDL (Low Density Lipoprotein) is "bad" cholesterol. Its makeup is the opposite of HDL cholesterol; its core is almost all cholesterol. "If LDL levels are abnormally high, as it travels through the bloodstream it builds up on the artery walls. When LDL cholesterol combines with other substances, a plaque-like substance is produced that can clog the arteries.

"The ugly: Triglyceride is a form of fat found in food, body fat, and is also carried in the blood as part of the cholesterol molecule. The visible fat on chicken or steak is actually triglyceride. If you are overweight, your body stores the extra calories you eat as triglycerides. People with high triglyceride levels often have low HDL or 'good' cholesterol levels and this combination is considered by many experts to be associated with an increased risk of heart disease."

Fats in your diet and the role they play. Saturated fats, which are higher in meat, dairy products, palm and coconut oils, tend to contribute to LDL (bad) cholesterol levels. Monounsaturated fats are liquid at room temperature but will start to become solid when refrigerated. They can be found in almond, canola, olive, and peanut oils, and seem to have the effect of lowering bad LDL without lowering protective HDL cholesterol. Polyunsaturated fats are found in corn, soybean, safflower, and sunflower oils. They are liquid at room temperature and remain liquid when refrigerated. They may lower bad LDL cholesterol levels and, if used in large enough quantities, they may also reduce protective HDL levels as well. Trans fatty acids "are fats that do not occur naturally in other words, they are created" by hydrogenation. "Hydrogenated fats act like saturated fats." Look for them on labels; effective Jan. 1, 2006, the FDA will be putting trans-fats content on nutrition labels.

Consider substituting healthier alternatives for the following: Mayonnaise, sour cream (use fat-free), milk (try "soy-milk"), cream, cheese ("many varieties of low-fat soy cheese"), egg yolks, meat (switch to extra lean cuts), butter, and cooking oils ("Almond, canola, olive, and peanut are considered best").

Glossary of label terms related to calories, fats, and cholesterol: Example–"Fat free" means less than ½ gram of fat per serving. Plant sterols and stanols actually help lower LDL (bad) cholesterol.

Fiber (also called roughage or bulk) is the "part of plant foods that cannot be digested or absorbed by the body, yet it plays an important role in promoting good health and protecting against some diseases–such as heart disease. Men consuming 29 grams of protein a day have been shown to have a 40% reduction in heart attacks compared to men with the lowest fiber intake. The National Academy of Sciences recommends the following daily fiber consumption: Women ages 19-50 = 25 gm. Women over age 50 = 21 gm. Men ages 19-50 = 38 gm. Men over age 50 = 30 gm. More than 90% of Americans don't meet these recommendations; they average only about 15 gm of fiber a day (p. 12).

Physical exercise "is very likely to lower your risk of heart disease and enhance your overall sense of health and well being." Almonds can help lower blood cholesterol. In July 2003 almonds received a qualified health claim from FDA (p. 16).

"Soy-anara cholesterol: Research has shown that consuming soy protein, rather than animal protein (meat, poultry, milk, cheese, eggs) can decrease your overall LDL (bad) cholesterol." In 1999 the FDA ruled in favor of "heart healthy" labeling for certain soy products. "The most familiar forms of soy protein are those found in Asian cuisine; tofu, tempeh, and miso. To make soy proteins more familiar to Americans, products have been developed that closely resemble meat, poultry, and fish, in taste and texture. One of the great things about soy is that it can be flavored and shaped in an infinite number of ways." On the facing page is a full-page color ad for Boca Burgers and other "Boca meatless products."

3322. **Product Name:** Tofurky: A Delicious Vegetarian Holiday Feast.
Manufacturer's Name: Turtle Island Foods, Inc.
Manufacturer's Address: P.O. Box 176, 601 Industrial Ave., Hood River, OR 97031. Phone: 1-888-TOFURKY (863-8759).
Date of Introduction: 2003. November.
Ingredients: Roast: Water, vital wheat gluten, tofu (water, non genetically engineered soybeans grown without chemical fertilizers, pesticides, or herbicides, magnesium chloride and/or nigari), white beans, garbanzo beans, non-GE corn starch natural vegetarian flavor, expeller pressed non-GE canola oil, shoyu soy sauce, spices, lemon juice, calcium lactate from beets. Stuffing: Water, organic brown rice, bread cubes...
Wt/Vol., Packaging, Price: 3 lb 8 oz (serves 4).
How Stored: Frozen. But can be kept refrigerated for 30 days.
New Product–Documentation: Product (in box) sent by Seth Tibbott. 2003. Nov. 27. This is a very attractive and well-designed box / label. 8.5 by 6.5 by 4 inches deep. The top is covered with a color photo of Tofurky, sliced in half, served on a white plate with salad. A gold and black seal, ensuring that the box has not been opened, states: "100% vegan. vegansociety.com." Below the product name: "New & improved." Below the product name: "Feast includes a tender, juicy stuffed tofu roast, 8 delicious cranberry-apple dumplings, rich Tofurky "giblet" gravy, and our signature Tofurky Jurky Wishstixs. Net weight 3 lbs. 8 oz. (1.59 kg). Keep frozen. diameter. On the front of the box: "America's #1 turkey alternative since 1995." On the right end panel is a brief company history and a section titled "Travels with Tofurky" showing 3 color photos of Tofurky in Minnesota, India, and above Niagara Falls, Canada. On the back panel are Nutrition Facts and a large panel giving ingredients. On the left end panel are "Preparation Instructions"–quite complex.

Talk with Seth Tibbott. 2003. Dec. 3. The Tofurky is designed to be put into the oven next to a regular turkey on Thanksgiving or Christmas. The Drumettes were not included in this years Tofurky Feast for 3 reasons: (1) They contained isolated soy protein which is made using hexane (a volatile petroleum derivative); Turtle Island has a goal of using only natural ingredients. "The hypocrameter was getting a little too high," says Seth. (2) They took a lot of time to make at a time when Turtle Island is very busy. (3) The dumplings are delicious and could be made by another company. However Seth is getting feedback on the company Website that quite a few people like the tempeh from which the Drumettes were made, so he is looking for a more natural way to make them.

3323. Azeke, Marshall Arebojie. 2003. Characterization and improvement of the nutritional value of African yambean (*Sphenostylis stenocarpa*) by non-traditional processing methods. Aachen: Shaker Verlag GmbH. xiii + 160 p. Illust. 21 cm. [Ger]*
Address: Germany.

3324. Emmons, Didi. 2003. Entertaining for a veggie planet: 250 down-to-earth recipes. Boston, Massachusetts: Houghton Mifflin. viii + 470 p. Illust. Index. 23 cm.
• ***Summary:*** A friendly vegetarian cookbook. The index contains 35 entries for tofu, 19 for tempeh, 5 for edamame, 4 for seitan, 3 for miso

Recipes also call for: Adzuki beans, sesame seeds, and tahini.

The section titled "A friendly guide to unfamiliar ingredients" is a glossary with entries including: Adzuki beans. Asian fish sauce (not vegetarian; usually made of an extract of fermented anchovies. Can be replaced by Lee Kum Kee's Vegetarian Stir-Fry Sauce). Barley miso (See Miso). Black beans, Chinese fermented (See Chinese fermented black beans). Black sesame seeds. Brown miso (See Miso). Chinese fermented black beans ("They are often very salty; do not rinse them, just salt your dish less... They keep indefinitely in the fridge"). Edamame ("Young, blanched soybeans." They are commonly eaten in the pods as a snack; the pod is inedible. Also sold podless for cooking). Hatcho miso (See Miso). Miso: The five types are: Barley miso (*mugi miso*), Brown miso (*genmai miso*), *Hatcho miso* (made from soybeans only), Red miso (*aka miso*), White miso (*shiro miso*). Sesame seeds. Sesame tahini. Tempeh (see also p. 231, "Tempeh: the next great frontier"). Tofu (see also p. 217, "Tofu: the other white meat"). TVP (texturized vegetable protein). Vegetarian oyster sauce (Amoy brand). Vegetarian stir-fry sauce (not as sweet as vegetarian oyster sauce. Look for the Lee Kum Kee brand). Address: Author of the book Vegetarian Planet and the chef of Veggie Planet, a restaurant in Cambridge, Massachusetts.

3325. Farnworth, Edward R. 2003. Handbook of fermented functional foods. Boca Raton, Florida: CRC Press. 390 p. See p. 227, 295. Index.
• ***Summary:*** An overview, with two chapters on fermented soyfoods (natto and miso) cited separately. Chapter 1, titled "History of fermented foods" (p. 1-25) includes brief and vague histories of "Soy foods" including (p. 18-19) soy sauce, miso, tempeh, natto, and sufu [fermented tofu].

Chapter 4, titled "Kefir: A fermented milk product" (p. 77+) states (p. 85-86) that kefir can be made by growing kefir grains in soybean milk (Abraham and de Antini 1999, p. 327-33).

Chapter 9 is "Natto–A food made by fermented cooked soybeans with *Bacillus subtilis* (*natto*)," (p. 227-245).

Chapter 11 is "Miso: Production, properties, and benefits to health" (p. 277-87). Chapter 12 is "Korean fermented foods: Kimchi and doenjang" (p. 287-305). Soyfoods

mentioned on page 289 include ganjang (soy sauce), doenjang (fermented soybean paste), chongkukjang (quick fermented soybean paste), and gochujang (hot chili pepper soybean paste); each of these is a major condiment in Korean cuisine. Address: PhD, Senior Research Scientist, Food Research and Development Centre, Agriculture and Agri-Food Canada, St. Hyacinthe, Quebec, Canada.

3326. Gusman, Jill. 2003. Vegetables from the sea: Everyday cooking with sea greens. New York, NY: William Morrow. ix + 131 p. Illust. (color). Index. 24 x 22 cm.
• ***Summary:*** Learn to identify, buy and prepare sea vegetables. Contents: Introduction: How to use this book, for time-conscious cooks, deep-sea treasures, the history of sea vegetables in world cuisines, how seaweed is cultivated and harvested, sea vegetables in your kitchen. Meet the sea vegetables: Agar, alaria, arame, bullwhip kelp, dulse, fucus tips, grapestone, hijiki, Irish moss, kombu, laver, nori, sea lettuce, sea palm, wakame. Appetizers and meal starters. Soups and stews. Salads, Entrees. Side dishes. Rolls, wraps and sandwiches. Condiments. Sweets and treats. Beauty secrets from the sea. Mail-order sources.

Soy-related recipes include: Soy sauce and tamari (p. 21). Classic miso soup (with wakame and silken tofu, p. 40). Sweet-and-sour tofu stir-fry (with arame, p. 70-71). Age tofu [aburage] in sea palm (p. 77). Hijiki with deep-fried tempeh (p. 82). Contain a large color photos of each of the sea vegetables and each of the recipes. Address: Teacher, Chef's Training Program, Natural Gourmet Cooking School, New York City.

3327. Brown, Allan; Brown, Susan. 2004. Tempeh tofu and other new developments (Interview). *SoyaScan Notes*. March 20. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** They recently had a visitor who makes "tempeh tofu" commercially in Australia. Tempeh is probably pasteurized then crumbled and added to the tofu curds before they are pressed into tofu. When you slice the tofu, there is a marbled effect with tempeh in the middle. The visitor is sending Allan the labels. "What a great, original idea!" It is widely distributed and Australians love it because it has more flavor than tofu and it is not as heavy as tempeh."

In Vancouver, BC, a company named Gaia Enterprises Inc. makes natto and sells the spores. Noble Bean has been thinking about making natto, but Shurtleff warns against letting natto spores (a strong contaminant) get near tempeh.

Two years ago, Soy City Foods joined with another company, Second Nature, to become Sol Cuisine. They still make lots of good tofu but they have stopped making tempeh; they made only okara tempeh (to add value to the okara left over from making tofu) and only for the institutional market (mostly university cafeterias). The nutritional profile and consistency were both poor. Sol Cuisine is using certified organic soy isolates to make meat alternatives (incl. ground round, hot dogs, etc.), thereby challenging Yves, which uses regular isolates–perhaps made using hexane. The sales manager at Sol Cuisine is a close friend of Allan and Susan's from The Farm. Sol Cuisine wanted Noble Bean to private label tempeh for them. Allan now wants to talk with them about making "tempeh tofu."

The Farm in Summertown, Tennessee, is now a good, reliable source of tempeh spores. Noble Bean gets all its tempeh spores from the Farm.

Sooke Soyfoods has become Green Cuisine in British Columbia; established in 1989, they have a vegan restaurant and also make a line of soyfood products. Address: Founders, Noble Bean, R.R. #1, McDonalds Corners, ON K0G 1M0 Canada. Phone: 613-278-2305.

3328. **Product Name:** [Soy Spread (Garlic), Tempeh, Tofu Mayonnaise].
Foreign Name: Tofu Namaz (Cesnjak), Tempeh, Tofu Majoneza.
Manufacturer's Name: Annapurna.
Manufacturer's Address: Nehajska 42, 10000 Zagreb, Croatia. Phone: 01 3385 533.
Date of Introduction: 2004. May.
Ingredients: Garlic spread: Tofu, water, oil, vinegar, salt, garlic, herbs. Tempeh: Soybeans, water, tempeh starter. Mayo: Tofu, water, oil, vinegar, salt, spices.
Wt/Vol., Packaging, Price: Spread: 150 gm vacuum packed. Sells for 8 kn. Tempeh: 300 gm vacuum packed. Sells for 52kn/kg. Mayo: 200 gm vacuum packed. Sells for 8 kn.
How Stored: Refrigerated.
New Product–Documentation: Labels sent by Vlatka Kuzmic. 2005. June 6. She wrote the introduction date and English translation of the product name on the back of each 2½ by 3¼ inch label. Self adhesive. Blue, green, and orange. Color photo of yellow soybeans against a blue background. Product name in white letters on light green background. The dates of introduction in 2004 are: Soy Spread (Garlic)–April. Tempeh–May. Tofu Mayonnaise–June.

3329. **Product Name:** [Grilled Tofu, Soy Burger, Marinated Tofu, Tofu Spread (Mediterranean, or Red Pepper / Paprika), Tofu with Vegetables].
Foreign Name: Tofu Grill, Burger Soja, Tofu Marinirani, Tofu Namaz (Mediterano, or Paprika), Tofu s Povrcem.
Manufacturer's Name: Annapurna.
Manufacturer's Address: Nehajska 42, 10000 Zagreb, Croatia. Phone: 01 3385 533.
Date of Introduction: 2004. May.
Ingredients: Grilled: Tofu, soy sauce, salt, oil. Burger: Soybeans, carrots, onion, oak flakes, breadcrumbs, salt, spices, herbs, oil.
Wt/Vol., Packaging, Price: Grilled: 250 gm vacuum packed. Sells for 56kn/kg. Burger: 148 gm vacuum packed.

Sells for 54kn/kg.
How Stored: Refrigerated.
New Product–Documentation: Labels sent by Vlatka Kuzmic. 2005. June 6. She wrote the introduction date and English translation of the product name on the back of each 2½ by 3¼ inch label. Self adhesive. Blue, green, and orange. Color photo of yellow soybeans against a blue background. Product name in white letters on light green background. The dates of introduction in 2005 are: Grilled Tofu–Feb. Soy Burger–March. Marinated Tofu, Tofu Spread (Mediterranean, or Red Pepper / Paprika), and Tofu with Vegetables–April. The soy burger contains okara.

3330. Schweitzer, Peter. 2004. Re: Soybeans and soyfoods in Nicaragua, at the Huichol Center in Mexico, and in Iraq. Letter sent to *Plenty Bulletin* subscribers, June 21. 2 p. Typed, with signature on letterhead.
• ***Summary:*** "We're not doing a full Bulletin this time, just an update about what's happening with Plenty." After 30 years, "I have come to recognize that what we do together might be described, very simply, as ordinary magic. Where people are connected by their love for each other, miracles are commonplace."

"As you know from the most recent Bulletins, we are working on a new project involving four different organizations–two in Guatemala, one in Managua, Nicaragua and the Huichol Center in Mexico, which have requested Plenty's assistance for their soyfoods and nutrition education efforts. We call it CAFSI (Centra American Food Security Initiative). Through CAFSI we will be purchasing soy processing equipment, and we will help the groups install it, and do trainings in the use and maintenance of the equipment and different ways of preparing soyfoods and making soyfood products for sale. Two of the organizations will be growing soybeans, so seed variety trials have to happen and growing and harvesting techniques learned."

"Thanks to another grant from the Better World Fund, we were able to help the Mayan Soy Dairy operated by ADIBE in San Bartolo near Solola, Guatemala open a shop in a near-by town where they can sell their products. Remember, the ADIBE Soy Dairy is the original Mayan Soy Dairy built by Plenty and the Cakchiquel Maya of San Bartolo in 1979. That Mayan Soy Dairy is 25 years old this year, and they're still making soymilk, tofu, soy ice cream and tempeh using mostly the same equipment we took down in '79. Using your individual donations to Plenty, we were able to provide the funding to upgrade the dairy floor and roof. Now we're raising money to upgrade the equipment."

"The purpose of the Iraq Soy Food Group (ISFG) is to assist economically disenfranchised families improve their access to good planting seed and high nutrient, low cost foods. Plenty is acting as the fiscal sponsor for ISFG. Long-time Plenty soy technician, Charles Haren, is overseeing the project, and Lou Morgan, a Plenty donor for 25 years, has been providing start-up funding. ISFG is working to help families and communities in Iraq improve nutrition intake and financial income by increasing local production, processing, marketing and consumption of soybeans, other dry legumes. Beginning in March ISFG representatives Martin Edwards and Salam Onibi started working with a few farming families and agriculture scientists to re-establish soybean production capabilities (most planting seed has been lost due to the war). The Iraq Soy Foods Group is now seeking funding to establish a Soy Foods Center that will help address immediate and long-term food needs for impoverished populations in Iraq." Address: Executive Director, Plenty, P.O. Box 394, Summertown, Tennessee 38483. Phone: (931) 964-4864.

3331. **Product Name:** Tempeh.
Manufacturer's Name: Rhapsody Natural Foods.
Manufacturer's Address: 28 Main St., Montpelier, VT 05602. Phone: (802) 229-6112.
Date of Introduction: 2004. June.
Ingredients: Certified organic soybeans, filtered water, Rhizopus oligosporus culture.
Wt/Vol., Packaging, Price: 8 oz (227 gm) laminated, printed plastic bag.
How Stored: Refrigerated or frozen.

New Product–Documentation: Talk with Sjon Welters. 2008. March 31. Sjon began making tempeh in his restaurant, Rhapsody, in June 2004, after Todd Pinkham stopped making tempeh in Vermont. Initially he made it only for use in his restaurant, but shortly thereafter he started selling and delivering it to natural food stores in the area–such as Hunger Mountain Co-op in Montpelier, Buffalo Mountain Co-op in Hardwick, City Market in Burlington, and Healthy Living in Burlington. He has always used only organic soybeans and recently they have been grown in Vermont. He has always made this tempeh in his restaurant kitchen; Initially it was made one day a week, but now it is being made two days a week, using 300 lb/week of whole dry soybeans. He now also has a distributor, Black River

Produce. He and has family own 14 acres of land, and he plans to build a tempeh shop on the land, build rooms for two workers above the shop, and then to make tempeh in that shop.

Sjon has just sent a new label (6 by 8 inches) printed in color featuring Rhapsody Tempeh in white and black on red, with faint green edamame in the background. He started using this label / package in Dec. 2007.

New label sent by Sjon Welters. 2008. March. Pea green on white with edamame faintly in the background of the front panel.

Letter (e-mail) from Sjon Welters. 2009. March 6. Our tempeh business is contributing tremendously to the health of our business and sees us through otherwise uncertain times. As of yesterday we are in 12 Whole Foods stores with our tempeh bringing an additional buffer of money.

3332. **Product Name:** Tofurky Deli Slices [Italian Deli, Cranberry & Stuffing, or "Philly Style" Steak].
Manufacturer's Name: Turtle Island Foods, Inc.
Manufacturer's Address: P.O. Box 176, 601 Industrial Ave., Hood River, OR 97031. Phone: 1-888-TOFURKY (863-8759).
Date of Introduction: 2004. June.
Ingredients: Philly Style Steak: Water, wheat protein, tofu (water, organic soybeans, magnesium chloride, calcium chloride), natural vegetarian flavors, non genetically engineered canola oil, non genetically engineered corn starch, white beans, garbanzo beans, spices, lemon juice from concentrate, calcium lactate from beets, autolysed yeast.
Wt/Vol., Packaging, Price: 5.5 oz (156 gm) vacuum pack.
How Stored: Refrigerated.
New Product–Documentation: Glossy color sell sheet for Tofurky Deli Slices sent by Seth Tibbott. 2008. Jan. 1. "New look!" Photos show the front and back panels for six flavors. "Oven Roasted" was introduced in 1998 as "Original." Hickory Smoked was also introduced in 1998.

Letter (e-mail) from Seth Tibbott. 2009. Jan. 25. These three products were first sold commercially in June 2004.

3333. Liu, KeShun. 2004. Edible soybean products in the current market. In: KeShun Liu, ed. 2004. Soybeans as Functional Foods and Ingredients. Champaign, Illinois: AOCS Press. xii + 331 p. See p. 23-51. [76 ref]
• ***Summary:*** Contents: Introduction. Soybean oil. Traditional soyfoods: Nonfermented soyfoods (soymilk, tofu, variety and current market, nutritional value and health benefits, general processing, soymilk film {yuba}, okara, soybean sprouts, vegetable soybeans, roasted {soynuts} or cooked whole soybeans), fermented soyfoods (fermented soy paste {jiang and miso}, soy sauce, Japanese natto, tempeh, sufu or Chinese cheese, soy nuggets {douchi or Hamanatto}). Soy protein products: Soy flour, soy protein concentrated, soy protein isolate, textured soy proteins. Modern soyfoods. Soy-enriched products. Functional soy ingredients / dietary supplements: Soy lecithin, oligosaccharides, isoflavones, tocopherols, phytosterols, trypsin inhibitors.

Figures: (1) Photo of traditional soyfoods. (2) Photo of soy flour and defatted meal after crushing. (3) Bar chart of U.S. soyfood sales since 1992. (4) General flow chart of processing soybeans into various edible products. (5) Flow chart of a traditional Chinese method for making soymilk and tofu. (6) Bar chart of U.S. tofu sales since 1980.

(7) Photo of natto, a fermented Japanese soyfood. (8) Flow chart of natto production outline. (9) Photo of soy protein products. (10) Photo of meat analog made by high-moisture extrusion of soybean protein. (11) Photo of new generation of soyfoods in the market. (12) Photo of soy-enriched bakery products. (13) Photo of concentrated soy isoflavone product.

Tables: (1) Classification of various edible soy products in the current market. Address: Univ. of Missouri, Columbia, Missouri.

3334. Nout, M.J.R.; Kiers, J.L. 2004. Tempeh as a functional food. In: KeShun Liu, ed. 2004. Soybeans as Functional Foods and Ingredients. Champaign, Illinois: AOCS Press. xii + 331 p. See p. 239-247. [38 ref]
• ***Summary:*** Contents: Introduction. Production of tempeh. Functional properties: History of use, predigestion of nutrients, antimicrobial effects, protection against diarrhea, intestinal growth and proliferation, antioxidative properties of fermented soybeans, chronic degenerative diseases. Novel applications.

Figures: (1) Photo of cross section of tempeh showing the fungal mycelium penetrating the mass of soybeans. (2) Simplified process diagram of tempeh manufacture. (3) Bar chart of *in vitro* inhibition of adhesion of enterotoxigenic *Escherichia coli* to intestinal brush border membranes.

Tables: (1) Nutrient comparison of tempeh and chicken egg and vitamin synthesis in tempeh during its fermentation. (2) Changes in *in vitro* absorbability and digestibility as a result of tempeh fermentation. Address: 1. Lab. of Food Microbiology, Wageningen University, 6700, EV Wageningen, The Netherlands.

3335. GEM Cultures. 2004. Catalog [Mail order]. 30301 Sherwood Rd., Fort Bragg, CA 95437-4127. 10 p. Undated. [4 ref]
• ***Summary:*** Contents: Greetings from Northern California. Soycrafters section: Powdered tempeh starter, natto starter, koji starters, fresh koji, seed miso, tofu boxes [kit], coagulants. Bread and crepe cultures: Cultured crepes, cool rise natural leaven, rice or rye sourdough. Dairy cultures: Fil mjolk (subs for piima), viili, kefir. Tea fungus–kombucha. Kitchen items: cheesecloth, super sealers. Ordering information. Address: Fort Bragg, California. Phone: 707-

964-2922.

3336. Iowa Soybean Promotion Board. 2004. Simply soy: Recipes celebrating nature's perfect bean. Urbandale, Iowa: Iowa Soybean Promotion Board. 151 p. Illust. Index. 23 cm.
• ***Summary:*** A gorgeous book, filled with elegant, mouth-watering full-page color photos of prepared recipes. Contents: Introduction, by Linda Funk, Executive Director, The Soyfoods Council. 1. The magical bean: Soy to the world, soy and health, the soyfoods pantry (glossary incl. soybean oil, soymilk, tofu, tempeh, edamame, soynuts, soy flour, textured soy protein, canned soybeans, miso, soy protein powder {soy protein isolates}, dried soy flakes {MicroSoy}, soy yogurt and smoothies, soy pasta {ADM}). Soyfood nutrient chart. 2. Start it up with soy: Appetizers and nibbles. 3. On the sidelines: Sides and salads. 4. Spoon fed: Comforting soups and stews. 5. Vegetarian anyone? 6. Teamwork: Pork, beef, chicken, seafood and soy. 7. The bread box: Breads and muffins. 8. Desserts: Soy and spice and everything nice. 9. Cooking with kids. Resources (Directory of members of The Soyfoods Council and their soy products; Directory of state and national soybean boards).

A smoothie (p. 133) is made at home by combining 1 cup soymilk (plain or vanilla), ½ medium banana (may be frozen, if desired), and optional nondairy ingredients, such as chocolate syrup, peanut butter, fruit juice concentrate, or frozen fruits (alone or in combinations–pineapple, orange, cranberry, raspberry, etc.). "Many of the soy smoothies and soy yogurts on the market today are probiotic, meaning they contain active, live cultures that are beneficial to intestinal health." Address: 4554 N.W. 114th Street, Urbandale, Iowa 50322-5410. Phone: 866-431-9814.

3337. **Product Name:** [Yakso Rice Tempeh].
Foreign Name: Yakso Rijst Tempeh.
Manufacturer's Name: FZ Organic Food Faan Zuidhorn b.v.
Manufacturer's Address: Wolvega, Holland. Phone: E-mail info@fzorganicfood.com.
Date of Introduction: 2004.
Ingredients: Soybeans*, water, rice*, rhizopus culture. * = Organically grown
Wt/Vol., Packaging, Price: 300 gm.
How Stored: Refrigerated.
New Product–Documentation: Label sent by Sjon Welters. 2004. March.

3338. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Natural Vegetarian Food b.v.
Manufacturer's Address: Netherlands. Phone: E-mail info@fzorganicfood.com.
Date of Introduction: 2004.
Ingredients: Soybeans, water, culture.
Wt/Vol., Packaging, Price: 425 gm.
How Stored: Refrigerated.
New Product–Documentation: Label sent by Sjon Welters. 2004. March. Green, yellow and black on white. Only the large "V" in "vegetarian" is green. Phone: +31 (0)321-380606.

3339. Atlas, Nava. 2004. The vegetarian family cookbook. New York, NY: Broadway Books. 339 p. Illust. Index. 23 x 21 cm. [15 ref]
• ***Summary:*** Contains 275 vegetarian recipes, many of which are vegan; a vegan option is provided for almost all of the recipes that are vegetarian.

The index contains 47 entries for tofu (incl. silken, soft, firm, extra firm), 13 for seitan, 4 each for tempeh, soy mayonnaise, and soy milk, 3 for soy yogurt, 2 each for edamame and miso, 2 each for soy nut butter, soy allergy, soy products, and 1 each for soy Canadian bacon, soy cheese, soy cream cheese, soy hot dogs, and soy pasta.

About the author: Nava Atlas is the author of eight previous vegetarian cookbooks. Her website, www.vegankitchen.com, is one of the most widely visited culinary websites on the Internet. She lives in the Hudson Valley with her husband of 25 years (Chaim "Rocky" Tabak) and their two sons, Adam and Evan. A photo (p. 339) shows Nava Atlas. Address: Author and illustrator, New Paltz, New York.

3340. Ceré, Sybille. 2004. Verarbeitung von Rapsschrot zu Tempeh [Processing of rapeseed into tempeh]. PhD thesis, Hochschule Wallis (HEVs), Sitten. [Ger]*
Address: Germany.

3341. Elliot, Rose. 2004. New vegetarian cooking: 120 fast, fresh, and fabulous recipes. New York, London, Toronto, Sydney: Simon & Schuster. 192 p. Illust. (color). 28 cm. Index.
• ***Summary:*** Contains many full-page color photos, mostly of dishes prepared from recipes. Chapter 1: Why I'm a vegetarian: Being a healthy vegetarian or vegan, get slim and stay slim, eating for two, nurturing the next generation, look younger, live longer. Chapter 6 is titled "Tofu, tempeh, and seitan" (p. 138-61). Other soy-related recipes and info include: Soy milk (p. 13, 20, 21, 23, 188). Green soybeans [frozen edamame] (with soba, p. 60, 61). Tofu mayonnaise (p. 66). Breakfast smoothie (p. 118, with soy milk, rice milk, or almond milk). Soy yogurt (p. 119, 188). Soy sauce (p. 153, 188). Soy creamer (p. 169, 188). Also discusses: Sea vegetables (arame, hijiki). Quinoa.

3342. Grimaldi, Polly. 2004. Quick and easy soy and tofu recipes. Hayward, California: Bristol Publishing Enterprises. (A Nitty Gritty book). iv + 155 p. Illust. Index. 14 x 21 cm.
• ***Summary:*** Contents: 1. An introduction to tofu and soy. 2.

Breakfast. 3. Entrees. 4. Side dishes. 5. Salads. 6. Soups. 7. Sauces, spreads, dips and snacks. 8. Breads. 9. Drinks. 10. Desserts. Address: Hayward, California.

3343. Hottinger, Greg. 2004. The best natural foods on the market today: A yuppie's guide to hippie food. Vol. I. Asheville, North Carolina: Huckleberry Mountain Press. 223 p. Index. 23 cm. [94 ref]
• ***Summary:*** This book looks very commercial because it mentions many natural products by brand name. We wonder if companies paid to be mentioned. Contains scattered recipes for branded products, and scattered sidebars titled "Hippie wisdom." Discusses: Almonds, almond butter, almond milk, American Miso Co., antibiotics (used in agriculture in 4 different ways; prevention, treatment, and control of disease, and growth promotion. In 1998 the European Union banned the use of antibiotics to promote growth in livestock. In Oct. 2000 the FDA proposed a ban on two antibiotics also used to treat humans), antioxidants, Bifidobacterium (bifidus), bovine growth hormone, bovine somatotropin (BST), Bragg Live Foods, Bragg Liquid Aminos, breast cancer, calcium, canola oil, celiac disease, cereal & Kellogg Brothers, cheese alternatives, dulse, edamame, Eden Foods (says "Eden Foods opened shop in 1968. By 1969 they were grinding their own flours and bottling their own oils and nut butters"), FDA, flaxseed oil, Galaxy Foods (says they "started in 1972 when founder Angelo Morini invented a new way to make a cheese product free of saturated fat, cholesterol, and the milk sugar, lactose"), genetically engineered foods, ghee, ginger, gluten sensitivity, glycemic index, GMO [genetically engineered] crops, Graham–Sylvester, heart disease, hippie foods, Horizon Organic, hormones, Lactobacillus, lactose intolerance, Lappe–Francis Moore, Lightlife Foods, magnesium, Maine Coast Sea Vegetables, Messina–Mark, milk–problems with, miso, Miso Master brand, nutritional yeast, oils, olive oil, omega-3 and omega-6 fatty acids, organic farming, palm oil, phytochemicals, phytoestrogens, prostate cancer, protein, Red Star nutritional yeast, quinoa, saturated fat, sodium, soymilk, soy products, soy sauce, soy supplements and concerns, soy yogurts, spelt, Stonyfield Farm, tahini, tamari, tempeh, trans fats (hydrogenated oils), WholeSoy Company. Near the back are many color coupons for the companies mentioned in the book by name. Address: MPH, RD, Asheville, North Carolina.

3344. Kozaki, Michio. 2004. Tempe production in Japan. In: Keith H. Steinkraus, ed. 2004. Industrialization of Indigenous Fermented Foods. 2nd ed. Revised and Expanded. New York, NY & Basel, Switzerland: Marcel Dekker. xix + 796 p. See p. 637-45. Chap. 12. [12 ref]
• ***Summary:*** Contents: Circumstances and background of tempe. Starters for tempe production. Tempe *Rhizopus* is derived from hibiscus. Production of tempe. Nutrition and secondary processing of tempe. Future of tempe in Japan.

Before 1998, the origin of the Rhizopus mold used to make tempe in Indonesia was unknown. Research on the subject by K. Tsubaki, S. Tokumasu, and H. Konno, based on investigation of the percentage of mold genera isolated from fresh *usar* and wild hibiscus leaves in Indonesia and Japan, showed that *Rhizopus* was by far the predominant genus. Their results, shown in tables 1 and 2, were published in 1998 in the *Journal of the Japanese Tempeh Society* (vol. 3, no. 1).

Commercial tempeh production in Japan began in the 1980s. However it has gradually decreased until today it has stopped. However total annual production of about 30 tons is now continued in agricultural communities in Okayama and Saga. Address: Tokyo Univ. of Agriculture, Tokyo, Japan.

3345. Kuswanto, Kapti Rahayu. 2004. Industrialization of tempe fermentation. In: Keith H. Steinkraus, ed. 2004. Industrialization of Indigenous Fermented Foods. 2nd ed. Revised and Expanded. New York, NY & Basel, Switzerland: Marcel Dekker. xix + 796 p. See p. 587-635. Chap. 11. [88 ref]
• ***Summary:*** Contents: Introduction. Production and consumption. History of tempe. Outline of essential steps in fermentation: Cleaning the beans, soaking and hydration, boiling, dehulling and washing, steaming or boiling, inoculation, packaging, incubation or fermentation. Indigenous processes: Raw materials used in ancient times and today. Modern industrial and commercial processing methods. Changes from indigenous to modern processing methods: Treatment of raw material, starter culture, packaging and incubation, sanitation and waste management. Major problems in industrialization. Microbiology and biochemistry of fermentation. Optimum fermentation conditions. Biochemical changes during fermentation. Starter culture. Effect of processing on nutritive value. Forecast for future fermentation.

Contains 30 figures and 8 tables. Photos (unless otherwise stated) show: (1) Screening of soybeans to remove foreign matter (at Tempe Murni in Yogyakarta). (2) Whole soybeans, hulls, and dried dehulled beans. (3) Velvet beans and their tempe product (*tempe benguk*). (4) Winged beans and their tempe product (*tempe kecipir*). (5) *Phaseolus lunatus* and their tempe product (*tempe koro*). (6) Soy curd (tofu) solid waste and its tempe product (*tempe gembus*). (7) Tempe bongkrek from Purwokerto. (8) Hand dehuller machine. (9) Usar starter culture for tempe. (10) Tempe wrapped in banana leaves. (11) Flow sheet: traditional small scale Indonesian tempeh production method. (12) Flowsheet: modern large scale tempeh production process (Marusan Ai Company, Japan). (13) Flowsheet: small scale tempe production (The Farm, Summertown, Tennessee). (14) Flowsheet: large scale tempe production (The Farm, Summertown, Tennessee). (15) Soaking whole soybeans

before boiling in the traditional way. (16) Soaking soybean cotyledons after dry dehulling. (17) The first boiling of cotyledons, after the first soaking. (18) The second boiling of cotyledons, after the second soaking. (19) Transferring the boiled cotyledons [in sacks using a pulley]. (20) Draining and cooling tray. (21) Package of Raprima inoculum from Bandung, Indonesia. (22) Inoculation of boiled beans with "ragi tempe." Note electric fan. (23) Inoculation with spore solution. (24) Wrapping the cotyledons in banana leaves at village level. (25) Packing in perforated plastic bags. (26) Packing in plastic trays covered with perforated plastic. (27) Incubating in bamboo baskets. (28) Incubating tempe on bamboo racks. A package of Tempe Murni in a perforated plastic bag. (29) Tempe wrapped in plastic bags. (30) Flowsheet: tempeh processing at Tempe Murni, Yogyakarta, Oct. 2002.

Note: The source of much of the information on the history of tempeh is incorrectly cited. Address: Gadjah Mada Univ., Yogyakarta, Indonesia.

3346. Petrovna, Tanya. 2004. The Native Foods Restaurant cookbook. Boston, Massachusetts: Shambhala Publications, Inc. xxiv + 328 p. Foreword by Deborah Madison. Illust. by Stephen Brogdon. Index. 23 x 19 cm.
• ***Summary:*** The author is co-owner of this chain of four restaurant in southern California. All the recipes are vegan. The index contains 22 entries for soy, 18 for tofu, 17 for tempeh, 16 for seitan, 7 for cheese–nondairy, 6 for soybeans, 5 each for edamame and soy cream cheese, 4 each for meat alternatives and miso, 2 each for soy milk, soy protein textured, soy sour cream, and textured soy protein, 1 each for milk–soy and soy sauce.

On the color cover is a fine photo of Tanya holding out a shallow basket of vegetables. Address: Co-owner and head chef, four Native Foods Restaurants in southern California (in Los Angeles, Palm Springs, Desert Springs, and Costa Mesa).

3347. Steinkraus, Keith H. ed. 2004. Industrialization of indigenous fermented foods. 2nd ed. Revised and expanded. New York, NY & Basel, Switzerland: Marcel Dekker. xix + 796 p. Illust. Pseudo-Index. 24 cm. Series: Food Science and Technology No. 136. [508 soy ref]
• ***Summary:*** This book contains the following chapters on soyfoods: 1. Industrialization of fermented soy sauce production centering around Japanese shoyu, by Danji Fukushima. 2. Industrialization of Japanese miso fermentation, by Hideo Ebine. 4. Industrialization of Japanese natto, by Kan Kiuchi and Sugio Watanabe. 11. Industrialization of tempeh fermentation, by Kapti Rahayu Kuswanto. 12. Tempe production in Japan, by Michio Kozaki. It also contains chapters on the industrialization of the production of sake, tapai, African beers, magehu, ogi, gari, Mexican pulque, Thai fish sauce (nam pla), Thai fermented fish and related products, and Myanmar fish paste and sauce.

The final chapter is titled "Industrialization of indigenous fermented food processes: Biotechnological aspects."

Soy-related chapters are also cited separately.

Note: Cornell Prof. Emeritus Keith H. Steinkraus died on 13 Nov. 2007 at age 89. He was a specialist in indigenous fermented foods and food microbiology. Address: Inst. of Food Science, Cornell Univ., Geneva, New York.

3348. Cadwallader, Keith R.; Klein, Barbara P.; Sullivan, Cheryl L.; Nash, Marilyn; Khanna, Pradeep; Weingartner, Karl E. 2005. Soy for the last minute chef. Champaign-Urbana, Illinois: Illinois Center for Soy Foods. 63 p. Illust. No index. 24 cm. Series: Soy in the American Kitchen.
• ***Summary:*** Contents: Illinois Center for Soy Foods. Bringing soy foods to the American table, the international way. Why eat soy? Soy foods: Soy flour, soy protein isolate, soymilk, tofu (sidebar: What can you do with half a carton of tofu?), textured vegetable protein, edamame, black soybeans, soy nuts, tempeh, miso, soy analogs. Nutrient information. Purchasing soy foods. Recipes. One recipe per page. Contains many excellent full-page color photos (by David Riecks) of prepared dishes. Photos (p. 57) show: Marilyn Nash, Barbara Klein, Cheryl Sullivan, Megan Puzey, and David Riecks. Address: 1. PhD, Director, Illinois Center for Soy Foods, 170 National Soybean Research Center, 1101 Peabody Dr., Univ. of Illinois, Urbana, IL 61801. Phone: (212) 244-1706 or www.soyfoodsillinois.uiuc.edu.

3349. Green Cuisine. 2005. Green Cuisine (Website printout–part). www.greencuisine.com. 2 p. Printed March 20.
• ***Summary:*** Home: The Restaurant. The Products. On the home page two signs flash alternatively: (1) Green Cuisine. (2) Your vegan lifestyle source since 1989.

If you click "The Products:" Ask Andy. Contact us. Links. Where to buy. Wholesale info. Products: Amasake, Super Shake, Super Soy, Mochi, Tofu (Firm or Medium), Baked Tofu, Tempeh, Marinated Tempeh, Tempeh Burgers, Wheat Cutlets.

Note: No address, phone number, or company history is given. Address: #5–560 Johnson St., Market Square, Victoria, BC, Canada. Phone: 250-385-1809.

3350. Noble Bean. 2005. Noble Bean Tempeh Shop (Website printout–part). www.noblebean.ca. 11 p. Printed March 20.
• ***Summary:*** Home: Recipes (4 p.). FAQs (1 p.). About us (2 p.; good history). Links (2 p.). Contact us (1 p.). Nice design, company history, and color photos.

3351. Sol Cuisine. 2005. Sol Cuisine (Website printout–part). www.solcuisine.com. Printed March 20.

• ***Summary:*** Home: Where to buy. Products. Food service. Contact. Recipes. GMO. Links. Products (2 p. of color photos): Burger (Original, Vegetable, Spicy Bean). Falafel & Sauce. T-Nugget. T-Ribz. Sol Shakes (Vanilla, Tropical, Berry). Solgurt (soy yogurt; Strawberry, Blueberry, Natural). Tempeh (Rice, or Quinoa). Organic Tofu.

Note: No company history is given. Address: 5715 Coopers Ave., Unit 1, Mississauga, ONT L4Z 2C7 Canada. Phone: 905-502-8500.

3352. Henry's Tempeh. 2005. SoyBasil Tempeh, SoyCurry Tempeh, SoyRedPepper Tempeh. Unit #22, 237 Arnold St., Kitchener, ON N2H 6E9, Canada.
• ***Summary:*** Letter (e-mail) from Henry Schmidt, founder of Henry's Tempeh. 2011. Jan. 12. In 2005 Henry introduced three more tempeh varieties: SoyBasil, SoyCurry, and SoyRedPepper. He has never made any other foods besides tempeh since Day 1. Address: Kitchener, Ontario, Canada.

3353. Nutrisoy Pty. Ltd. 2005. Home page and four links (Website printout–part). www.nutrisoy.com.au. 9 p. Printed April 12.
• ***Summary:*** Contents: Home (2 p.). About us (1 p.). Product information (1 p.; tofu and tempeh). Nutrisoy products (2 p.). Soyco products. Where to buy. Recipes. Contact us. Privacy policy. email: info@nutrisoy.com.au.

About us: Nutrisoy is a family owned company established in 1984. "In 1992 Nutrisoy attained the standards set down by Biological Farmers of Australia to become a certified processor of organic tofu and tempeh.

"Nutrisoy uses only the finest Australian Grown Soybean (free from genetically engineered soybean) which is a rich source of isoflavones / phytoestrogens, a substance that could offer protection against and help reduce the risk of a wide range of disease in men and women including prostate, breast and skin cancer, osteoporosis, hot flushes, and heart diseases." A large color photo shows Nutrisoy's many products.

Nutrisoy products: The colorful front panel of each of the following is shown: Plain firm tofu. Tofu vegies [sic]. Tofu tempeh (This tofu has chunky tempeh in it and has been marinated in shoyu and ginger). Tofu herbs. Tofu spicy. Tofu teriyaki. Tofu vegies burger. Tofu tempeh burger. Strawberry tofu (dessert in a cup, with real fruit sauce on top). Apricot tofu (dessert in a cup).

Note: Nutrisoy is the inventor of Tofu tempeh, and Tofu tempeh burger. Address: 15 Hannon St., Botany (suburb), Sydney, NSW 2019 Australia. Phone: +61 2 9316 5171.

3354. Wondal, Tony. 2005. Major events of Nutrisoy Pty. Ltd. (Chronology). Letter to William Shurtleff at Soyinfo Center, April 26. 1 p. On color letterhead.
• ***Summary:*** 1984 March–Nutrisoy Pty Ltd is incorporated. The address is 225 Forest Road, Arncliffe, NSW 2205, Australia.

1984 Nov.–Starts making and selling tempeh.

1986 Aug.–Starts making and selling flavoured tempeh.

1989 Dec.–Starts making and selling tofu.

1990 June–Starts making and selling pre-cooked tofu.

1992–Attains the standards set down by Biological [Organic] Farmers of Australia to become a certified processor of tofu and tempeh.

1993 Sept.–Starts making and selling tofu dessert.

1994 July–Starts selling tofu and tempeh to supermarket chain stores.

1994 Nov.–Moves to a larger factory (1,000 square meters). The address is 15 Hannon St., Botany NSW 2019, Australia.

1999 Dec.–Starts making and selling tofu dip.

2002 Jan.–Starts making and selling silken tofu.

2003 March.–Starts exporting soyfoods to New Zealand.

2004 July.–Starts exporting soyfoods to New Caledonia.

2005 Feb.–Moves to a larger factory (3,000 square meters). The address is Lot 1, 19a Baker St., Banksmeadow, NSW 2019, Australia. Address: Founder and President, Nutrisoy, New South Wales, Australia. Phone: +61 2 9316 5171.

3355. Jacobi, Dana. 2005. 12 best foods cookbook: Over 200 delicious recipes featuring the 12 healthiest foods. Emmaus, Pennsylvania: Rodale Press. xv + 336 p. April. Illust. (color photos). Index. 23 cm. [2 soy ref]
• ***Summary:*** Among these 12 foods rich in nutrients and phytonutrients, the author considers soy the best of all. 28 of the 200 recipes include soyfoods.

In Chapter 1 is a section on Soy (p. 17-24) which includes: Introduction. Everyday ways ("Soy is the easiest Best Food to enjoy every day..."). Benefits at a glance. Soy protein in selected foods (Tofu, miso, edamame, soybeans, soynuts, tempeh, soymilk, cultured soy yogurt, soynut butter, soy flour, soy pasta, soy protein powder, soy drink mixes). Guide to soy products: Soymilk, soymilk cooking secrets, more soy dairy (soy cream cheese, soy sour cream, soy cheese, frozen dessert), terrific tofu (regular tofu, silken tofu, baked or smoked tofu), tofu cooking secrets, other soyfoods (black and yellow soybeans, edamame, meat analogs, miso, soy flour, soynuts, soynut butter, soy protein powder and soy drink mixes, soy sauce and tamari, tempeh), baking with soy, cooking with soy.

Chapter 8, titled "Eggs, beans, and soy," contains recipes (p. 196-203). for: Black soybean and butternut squash stew. Black soybeans. Braised black beans with red wine. Braised tofu with kohlrabi and pears. Broccoli, black mushrooms, and edamame with black bean sauce. Asparagus, red pepper, and curried tofu.

Other soy-related recipes: Finger lickin' edamame (p. 50-51). Black bean hummus (with tofu, p. 57). Mushroom crostini (with tempeh, p. 61). Black bean soup (with dried

black soybeans, p. 79). Mushroom consommé with sake (and tofu, p. 88). Double miso soup (p. 89). Nine a day salad (with soynuts, p. 100). Southwestern three bean salad (with canned black soybeans, p. 107). Curry dressing (with silken tofu, p. 115-16). Pepper ranch dressing (with soft silken or regular tofu, p. 116-17). Creamy herb dressing (with tofu, p. 118-19). Blue cheese dressing (with tofu, p. 118). Cracked mustard dressing (with tofu, p. 119). Citrus miso splash (p. 119). Soy and honey drizzle (with reduced-sodium soy sauce, p. 151). Whole wheat linguine with arugula and edamame (p. 164-65). Dirty rice (with tempeh, p. 194). Tempeh, lettuce, and tomato sandwich on rye (p. 207). Honey soynut butter sandwich (p. 208). Grilled pizza (with tofu, p. 210). Soycotash (with shelled edamame, p. 238-39). BBQ collard greens with edamame (p. 240). Miso mashed potatoes (p. 241). Key lime tartlets (with tofu, p. 250-51). Blueberry-lemon trifle (with lemon soy yogurt and soy cream cheese, p. 252-53). Brown rice crisp treats (with salted, roasted soynuts, p. 282). Wild blueberry trail mix (with salted soynuts, p. 283).

On the rear cover is a photo of the author and a brief bio. "After apprenticing at three-star restaurants in France, Dana Jacobi opened a catering business and marketed her own line of gourmet sauces. She has since authored five cookbooks..." Address: Food writer, New York, NY.

3356. Camps, Lisa. 2005. Re: History of work with soyfoods in Goa, India. Letter (e-mail) to William Shurtleff at Soyfoods Center, May 15. 2 p.

• ***Summary:*** 1984–Lisa came to Goa to nurse a friend back to health; he was a vegetarian. While in India she discovered so many alternative styles of life, so many people from all over the world with a similar consciousness related to healthy body, mind, and spirituality. All "seemed to care about the planet, nature, peace, yoga, natural healing, vegetarianism, etc. India is a whole country of vegetarians, but in Goa, a former Portuguese colony, the inhabitants are mostly Christians who eat meat." That year, Lisa became a vegetarian.

She returned to America, only to yearn to come back to India. So she spent 7-8 years coming and going, whenever finances permitted. When in the USA, she worked with food, in restaurants, hotels, night clubs, made good money, then left again. She took many courses in the health and nutrition at community colleges. She had seen many unhealthy vegetarians and wanted to learn how to be a healthy, vigorous vegetarian. Having helped to deliver 4 children by natural child birth in Goa, she was interested vegetarian diets for children and natural healing.

1982–While in Goa, Lisa met an Australian woman, Diane [Froggatt], who was making her own tofu, because it was not available, and all were tired of Dal (lentils). "I asked her to teach me, and she did... I happily made it for myself to fill the protein gap. Along with Tofu also comes Soy Milk and Okara! A bonus! Made soysausage, soya burgers, etc., but only at home at that time."

1986-87–Lisa attended a Michio Kushi Institute in Switzerland; she learned macrobiotics and shiatsu, which she practiced for about a year, then decided that macrobiotics was "excellent for healing purposes, but not for daily life, simply because any diet so extreme and tasteless is doomed to opposite extremes." She observed that most people who regularly ate a macrobiotic diet "craved massive amounts of Chocolate, or some other form of 'naughtiness.'"

1989-90. Lisa decided to settle in Goa. It had really become her home and it was too expensive to fly back and forth. But how to make money in India? Her many Indian women friends adored lingerie. So she did all the necessary paperwork and started a business named Ooh-La-La-Lingerie Pvt. Ltd., importing undergarments from Europe and traveling all over India to sell them to major department stores. The business went well for 2-3 years until the suppliers and buyers connected–leaving her out.

At the same time, Lisa was selling soya burgers, hummus brown bread, and 4 flavors of soy milk in the Flea market [in Anjuna], where she had a food stall; she made these in her home kitchen. "Then a few people started asking me if I could make them some Tofu! So, I thought why not, since I'm doing it for myself anyway." "All our production started in a small room (in my house), which I converted into a special tofu room, with ventilation above a false ceiling, a sink, stainless steel tables, and extreme hygiene. It was about 3 meters on a side with white tiles. We used (and still use) Aqua Guard water filter systems for all production and packing. So I started by making 2-3 kg at a time, squeezing the milk through a cloth by hand, actually burning my hands on a regular basis, until I decided to build a press. Made some wooden tofu boxes, and did the grinding on a grinding stone. Ouch, too much time and labor! We were selling only to shops and Five-Star hotels.

"As time passed and orders got bigger, my friend and now partner, Richard Chabin, helped me get some machinery, Then, I wanted to learn about Tempeh, and how to make it. There was an American fellow named Joseph Papa who had a book and an interest, so I traded him my shiatsu massages for the method on how to make Tempeh. My interest in Tempeh was the vitamin B's only found in Tempeh. Important if you don't eat beef liver.

"So now I knew many soy foods, and was happily cooking for many friends daily. I enjoy cooking, and they enjoyed eating.

"Then I tried to market the tofu to the local market and restaurants, but as they were not familiar with it, they were afraid, even after I gave them many recipes" and even showed them how to prepare it Indian style–like paneer. "That's when I decided to open a small sandwich shop."

1999–The sandwich shop, named Bean Me Up, Soya Station, Salad Bar, was a "raging success from the

beginning." It became too big for the original premises, and there were long lines at peak season. Note: The restaurant name derives from a famous catchphrase from the movie *Star Trek,* "Beam Me Up, Scotty!"

2004 Oct. 31–Lisa took on large premises with 14 rooms to rent and a small health food shop and restaurant. The commercial foods (tofu, tempeh, soymilk, etc.) are made in a separate building (a small factory) on the compound. It opened on Halloween with a costume party. The "real point is the restaurant" (which kept the same name); it is a unit of Ooh-La-La Ling. When people discover that they can get fresh safe salads, Tofu, Tempeh, Seitan, soya ice cream, Tofunaise, etc. after traveling in India, they are so Appreciative. That is a reward in itself! I truly believe that to introduce people to a more healthy diet, and to given up meat, the alternative must taste good, or why would they consider changing? Hence, our theme is 'The Tasty Alternative.' Lisa, now an established businesswoman, has a new source of income from her 14-room hotel!

Two months later, on 24 Dec. 2004 (Christmas eve), a mob of 150 people, escorted by two policemen (for the mob's protection!) went to the Anjuna-Chopra beach belt and rudely demanded that certain restaurants and shops close down. Why? Because their owners were of foreign origin. No matter that Lisa, of American origin with an Indian passport, had lived in Goa for 23 years and had all the legal papers required to run her business. The agitation was probably initiated by indigenous restaurant / shop owners who resented the foreigners' success and had the blessings of local politicians–a familiar theme worldwide. Fortunately, Lisa had some friends with the National Press, *Times of India,* so she and her fellow foreigners showed no fear, followed the procedures, and made a big noise; the actions of the mob were clearly illegal. Her restaurant was never shut down and the problem appears to have gone away.

Lisa is a member of the Vegetarian Society of India, and occasionally they call on her to give seminars for the members.

Note: Diane Frogatt died a few years ago from cancer.

Photos sent by Ratan Sharma in 2010 and taken by him in Jan. 2005 show the entrance to and the inside of this remarkable soy restaurant and salad bar. They serve only soy-based recipes. They also have a branch in Hyderabad. Note: Lisa does not own a SoyaCow. Address: Owner, Bean Me Up, 1629 Deulvaddo, Anjuna / Vagator, Goa, India 403-509. Phone: 0091-(0)832-227349.

3357. Bean Me Up, Soya Station, Salad Bar. 2005. Welcome to the Soya Station (Menu). Anjuna/Vagator, Goa, India. 10 p.

• ***Summary:*** Contents: Welcome. Starters: Side dishes (incl. Spiced tofu {deep fried} with peanut or chilly sauce. Tofu or tempeh {pan fried} with peanut or tahini. Baked potato with sour cream, butter, or tofu cream cheese). Just for kids: 12 years and under (incl. Tofu bolognese, served over spaghetti. Tempeh sandwich with tortilla chips). New York Pizza (incl. Indonesian special {tempeh & pineapple}. Veg. special {tofu, onion, capsicum, mushroom & olives}, Additional toppings–tofu, tempeh). Salad bar (Tofu salad–Beet root, carrots, onions, cucumber, tofu cubes & tofunaise {vegan}, Side order of tofu or tempeh, with choice of tahini, peanut, or tomato sauce).

Good morning–Breakfast (incl. Tofu {scrambled w/ onion capsicum or butter fried w/soya sauce}, Soysage {4 pieces}, Add 10 rupees for soymilk with any breakfast dish). Desserts: Vegan (non-dairy) or dairy. Vegan includes: Soya ice cream in coconut, chocolate, banana, coffee, or berry (seasonal) flavors. Tofu brownie. All desserts served with soya whipped cream. Beverages (incl. soy milk {hot or cold}–Plain unsweetened, vanilla, chocolate, cardamom). Sandwiches (incl. Soya burger, Tofu burger, Tofu (butter fried), Tofu cream cheese {made with garlic & Herbes de Provence}, Tofu scrambled, Tofulafel. Tempeh {fried} in sesame oil & soy sauce. Seitan fried in onion). Dinner menu: All dinners are served with choice of brown rice, baked potato, or spaghetti, and vegetables of the day. Three broad choices (each with one or more of three symbols by it–vegan, dairy, hot 'n' spicy): (1) Tofu–Khadi tofu, Tofu bolognaise, Tofu lasagne, Tofu nori roll, Vegetable tofu quiche. (2) Tempeh–Tempeh potato patties, Thai style tempeh with cashew nuts, Indonesian sampler. (3) Seitan–Seitan scallopini in cream sauce (served over spaghetti). Address: 1629 Deulvaddo, Anjuna / Vagator, Goa, India 403-509. Phone: 0091-(0)832-227349.

3358. Brewster, Elizabeth. 2005. Beans to go: adding soy to the deli case. *Iowa Soybean Review* (*Iowa Soybean Association, Urbandale, Iowa*) 16(7):12k of 12-page insert after p. 14. Spring.

3359. **Product Name:** [Tempeh].
Foreign Name: Tempeh.
Manufacturer's Name: Tempeh Bungkus.
Manufacturer's Address: Av. Aztecas #427, Col. Ajusco, Delegación Coyoacán, C.P. 04300. Mexico D.F., Mexico. Phone: (5255) 5610 4557.
Date of Introduction: 2005. May.
Ingredients: Soybeans, culture.
New Product–Documentation: Call (followed by e-mail) from Luisa Velez. 2005. Sept. 7. She and Yosafat Sainz started making tempeh in May 2005. They deliver to the Indonesian and Malaysian embassies, and to the vegetarian community. "Tempeh has been successfully accepted in Mexico and we are very interested in promoting it widely in our country." e-mail: tempeh_bungkus@yahoo.com.mx. The story of how she got interested in tempeh is on file at Soyfoods Center.

2003 Aug.–She arrives in Jakarta, Indonesia, having

received scholarship to study dance in Indonesia. Her boyfriend (Yosafat) decides to go with her. Their first contact with Tempeh is in Yogyakarta. They greatly enjoyed tempeh recipes, especially tempeh manis [sweet tempeh].

2004 Jan.–They return to Mexico. She enters the university (UAM) to study nutrition. They miss tempeh. For a class in biochemistry she has to study a legume fermentation; she chooses tempeh. Her mother got her starter from Belgium.

May 2005–After finishing the investigation, she thought it would be a good idea to sell tempeh to the Indonesian embassy; the embassy people "went crazy" when they saw tempeh in Mexico after so many years. They were her first clients.

3360. Asociacion Soya de Nicaragua (La). 2005. [Soynica (Website printout–part)]. www.sdnicc.ni/ soynica. Printed July 12. [Spa]
• ***Summary:*** Home: Inicio (Introduction). Sobre Soynica (About Soynica, incl. a list of commercial products, a history of the company, and a mission statement). Programas (Programs). Boletin (Bulletin). Contacto (Contact information). Enlaces (links).

Soynica is a small company that makes foods derived from soymilk and other sources that it sells under the Nutrem brand. It was established on 16 October 1994.

Nutrem products: 11 fresh, incl. 4 flavors of soymilk and 4 types of tofu; 11 dry, incl. Soyavena and soy flour; and 11 alternative meals–incl. tempeh.

History of Soynica: In Nov. 1979 Dr. Arturo Aldama and his wife, Dulce, representative of the organization Friends of the Earth (*Amigos de la Tierra*) in Mexico, and Luci Morren, a Belgian woman, organized a group of 8 volunteers who arrive in Nicaragua with the only mission of sharing their knowledge of home preparation of soyfoods. They brought with them only 20 kg of soybeans, because they had been told that soybeans were widely grown in Nicaragua.

But it was not so. So the engineer Alexander Fernandez helped to find about 60 quintals of soybeans with a producer in Esteli, and demonstration plots were started. And so it began. Address: Managua, Nicaragua.

3361. Cadwallader, Keith R.; Klein, Barbara P.; Khanna, Pradeep; Chen, Dejun; Nash, Marilyn; Puzey, Megan; Sullivan, Cheryl L. 2005. Around the world with soy. Champaign-Urbana, Illinois: Illinois Center for Soy Foods. 62 p. Illust. No index. 24 cm. Series: Soy in the American Kitchen.
• ***Summary:*** Contents: Illinois Center for Soy Foods. Bringing soy foods to the American table, the international way. Why eat soy? Soy foods: Soy flour, soy protein isolate, soymilk, tofu, textured vegetable protein, edamame, black soybeans, soy nuts, tempeh, miso, soy analogs. Nutrient information. Purchasing soy foods. Recipes. One recipe per page. Contains many excellent full-page color photos (by David Riecks) of prepared dishes.

Photos (p. 61) show: Marilyn Nash, Dejun Chen, Megan Puzey, and David Riecks. Address: 1. PhD, Director, Illinois Center for Soy Foods, 170 National Soybean Research Center, 1101 Peabody Dr., Univ. of Illinois, Urbana, IL 61801. Phone: (217) 244-1706 or www.soyfoodsillinois.uiuc.edu.

3362. Haren, Chuck. 2005. Sustainable community food production: Central American Food Security Initiative (CAFSI). *Plenty Bulletin* (*Summertown, Tennessee*) 21(2):1-2. Summer.
• ***Summary:*** On the cover (p. 1) of this issue are large photos showing people and modern sanitary equipment producing soymilk at four locations in Latin America: (1) ADIBE, Molino Belen, Solola, Guatemala. Agostin Xoquic. (2) UPAVIM, Guatemala City, Guatemala. (3) Huichol Center, Huejuquilla, Mexico. (4) Soynica, Managua, Nicaragua.

Molino Belen is a Mayan village near Solola. "Soynica has become widely known for its work with mothers and children and for promoting use of locally produced soy foods to help address nutrition and economic development issues. During March and April of this year Plenty representatives worked for five weeks helping staff managing Casa Nutrem (Soynica's food processing facility) to purchase, install, and learn to use new cooking, packaging, and refrigeration equipment." A photo (p. 2) shows Elena Xoqic pouring soymilk into a bottle. She and her husband, Agostin, both Cakchiquel Maya, "have been managing the Mayan 'Soyaria' near Solola, Guatemala since Plenty set it up in 1980."

A cover letter from Peter Schweitzer, executive director of Plenty International, notes that Louise Hagler has been working with the Huichol people of Mexico, helping them integrate soy-based foods into their diet. The "Soyaria" near Solola, Guatemala, makes "soymilk, tofu, tempeh and soy ice cream using the very same stainless steel equipment we brought down in an old school bus in 1980! Plenty is helping them renovate the original building and upgrade the equipment. Profits from the Soyaria have been used to fund community development projects such as a new water system and an outdoor basketball court for the school."

Note from Chuck Haren (via Lisa Wartinger, Programs Manager, Plenty International). 2005. Oct. 1. Average weekly sales for the Soyaria at Molino Belen are: Soymilk 400 half-liters. Tofu 260 lb. Tempeh 70 lb. Pinole (dry corn and soy drink mix) 50 lb. Soy ice cream cones 300. Okara 200 lb.

"Plenty has stepped up its technical support to the four CAFSI partner organizations in 2005, and that support will continue in 2006." Address: CAFSI Program Director.

3363. Warmuth, Manfred. 2005. Efficient tempeh making. Santa Cruz, California. 6 p. Unpublished typescript. Sept. 21. [1 ref]

• ***Summary:*** Manfred, after more than 6 years of working to develop better ways of growing tempeh at home, has made major improvements on the method for making tempeh at home as given in *The Book of Tempeh,* by Shurtleff and Aoyagi. These are: Crack 1½ lb dry soybeans using a Champion juicer or grain mill. Put cracked beans and hulls in a hemispherical bowl. Remove the hulls outdoors by blowing / winnowing with a blow dryer (used to dry hair). Soak. Pressure cook for 20 minutes with ½ cup warm water, 2 tablespoons vinegar and 1 cup dry millet. Add 1 teaspoon of *Rhizopus oligosporus* spores and mix with an egg beater. Fill into a pan, spread evenly, compact slightly.

Prepare the incubator, which is a plastic tub, filled to a depth of several inches with water, heated with an aquarium thermometer. Float pan of inoculated soybeans on water, then cover incubator with plastic cover. Keep water temperature at 32ºC = 85ºF. Insulate if ambient temperature is low. Incubate for about 26 hours. Flip tempeh out of pan onto cutting board. Cut into pieces. Store in fridge for a week or in freezer for months. For details, Google: efficient tempeh making manfred, or manfred@cse.ucsc.edu.

Note: As of May 2011: Manfred is "UCSC professor of Computer Science with a wide range of hobbies: bee keeping, growing natto, tempeh, onchom, miso, mushrooms, fruit trees, spirulina, meat rabbits. I try to learn new skills and pass them on to others." Address: Professor, E2, Dep. of Computer Science, Univ. of California, Santa Cruz, California 95064.

3364. **Product Name:** Mock Chicken Tempeh Salad, Curried Ginger Tempeh Salad.
Manufacturer's Name: Mediterranean Delights.
Manufacturer's Address: P.O. Box 749, 14 Warner Center, Saxtons River, VT 05104. Phone: 1-800-347-5850.
Date of Introduction: 2005. September.
Wt/Vol., Packaging, Price: 8 or 16 ounces.
New Product–Documentation: Spot in *Vegetarian Journal.* 2005. Sept. (Issue 3). p. 30. "Introducing two incredible ready-to-eat tempeh salads." Visit www.mediterraneandelights.com. Note: These products are not listed on their website on 2 Sept. 2006.
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3365. Shurtleff, William; Aoyagi, Akiko. 2005. Doufu zhi shu [The book of tofu]. Taipei, Taiwan: Persimmon Cultural Enterprise Co., Ltd. viii + 270 p. Sept. 1. Illust. by Akiko Aoyagi. No index. 26 cm. [Chi]
• ***Summary:*** A very attractive, complex character, Chinese-language edition of *The Book of Tofu* (2nd ed. Ten Speed Press). Address: 1. Soyfoods Center, P.O. Box 234, Lafayette, California 94549.

3366. Santoso, Sinta; Santoso, Sugeng. 2005. History of Primasoy [Tempeh maker in Australia]. Victoria, Australia. 1 p. Dec. 13.
• ***Summary:*** Both Sinta (a woman) and Sugeng (her husband) were born and raised in Malang, East Java, Indonesia. They grew up in Indonesia, where they enjoyed "Tempe Malang" as a staple food, eaten with meals at least once or twice a week. Sugeng writes: "I could remember as a child I was taken by my father, who spoke fluent English, to accompany an American to visit the tempeh village near Malang to see the tempeh production. This must have been in the sixties. I wonder if it was you."

Sinta graduated as a food chemist from Braunschweig University, Germany, and Sugeng as a process engineer from Cologne, Germany. They migrated to Australia in 1982, and were married there in 1983. They initially opened an Indonesian restaurant in Melbourne, where Sugeng met Michael Manser, the first tempeh maker in Melbourne as far as he knows. Michael has since retired; he never went to Indonesia but made excellent tempeh. After the restaurant, they worked for large companies in their professional fields. Sugeng worked for a big supermarket as a quality officer; he realized that he was not destined to work in the corporate world and began researching the tempeh industry in Australia. He came to the conclusion, after Michael retired, that there was no good quality tempeh on the market; he believes that vacuum packing and the addition of vinegar makes the tempeh brown, chewy, watery, and bitter. "This has damaged the image of tempeh in Australia, and therefore tempeh is not very popular here now. I would really like to do some more research to extend the shelf life of tempeh so I can distribute my product interstate within Australia without using vacuum packaging." They spent months perfecting the method of making Tempe Malang in order to produce a high quality, sellable product.

"There are several tempeh manufacturers in Australia at the moment. The last of these, Nutrisoy, is owned by an Indonesian born operator. Then there are smaller operators

such as Tally Ho, and Simply Soy and Blue Lotus in Melbourne. There may be more smaller manufacturers in other states which I am not aware of."

2004 July–They rent a small suburban store, close to their home at 2 Dunoon Court, Mulgrave, Victoria; they convert it into a tempeh manufacturing kitchen. The tempeh is made solely by Sinta and Sugeng.

2005 Feb.–Primasoy has its first public debut at *The Age* 'Harvest Picnic at Hanging Rock,' a food festival designed to promote locally made food and beverages. About 30,000 visitors circle the various food stands. Their tempeh was very well received by the public as a new and exciting product.

2005 March–Following the Harvest Picnic success, Primasoy begins promoting their product in selected organic food shops around Melbourne.

2006 Dec.–Sinta and Sugeng are still making tempeh commercially at Primasoy. "Things are very good. We are still experimenting with the MAP vacuum packaging. MAP stands for Modified Atmosphere Packaging. Depending on the product, the atmosphere in the packaging is either nitrogen, carbon dioxide, oxygen, or a mixture of these gases in various ratios. Our experiments show that a mixture of oxygen and nitrogen looks promising. Currently we found pasteurization and light vacuum might be the way to go, but we have not yet validated it. We have been busy doing cooking demos lately and have not been concentrating on shelf life extension." They are now writing a book about tempeh. And they will have two new tempeh products early next year: (1) Tempeh with tamari, ginger and sesame oil. (2) Tempeh with roasted garlic and coriander. "Next project will be okara tempeh (*tempe gembus*) and tempeh burger. I have a leaflet with recipes and I will send it to you."

They have lost touch with Mike Manser; last they heard he was planning to move to Tasmania. Address: 2 Dunoon Court, Mulgrave 3170, Victoria, Australia.

3367. Nakajima, Nobuyoshi; Nozaki, N.; Ishihara, K.; Ishikawa, A.; Tsuji, H. 2005. Analysis of isoflavone content in tempeh, a fermented soybean, and preparation of a new isoflavone-enriched tempeh. *J. of Bioscience and Bioengineering* (*Japan*) 100(6):685-87. Dec. *

• ***Summary:*** By adding soybean germ (hypocotyl) that contained a large amount of isoflavone, the writers prepared a new isoflavone-enriched tempeh in the form of a granular fermented soybean-based food, which can serve as a nutritious supplement, e.g. for the elderly.

Gives levels of daidzein, genistein, and glycitein in tempeh–made from yellow soybeans, black soybeans, and defatted yellow soybean germ, plus isoflavone-enriched tempeh. Address: 1. Graduate School of Health and Welfare Science, Okayama Prefectural University, Kuboki, Soja, Japan.

3368. Richmond, Akasha. 2005. Hollywood dish: More than 150 delicious, healthy recipes from Hollywood's Chef to the Stars. New York, NY: Avery–A member of the Penguin Group (USA) Inc. xi + 310 p. Illust. Index. 25 x 20 cm. [125 ref]

• ***Summary:*** One of the most original and interesting cookbooks seen in decades. This book, originally titled *Healthy Hollywood,* is much more than just a collection of superb recipes and stories about Hollywood celebrities and glitterati. In carefully researched and well-written sidebars, it documents the history of health foods in Hollywood and southern California. The introduction to each chapter tells the history of that type of food, and every recipe has a long and interesting historical headnote. The acknowledgments show vividly Chef Akasha's high and wide circle of Hollywood friends. The introduction–"The Road to Hollywood" tells the story of how Akasha got interested in and researched this subject. History is woven into every page of this book–in the most palatable way. In short, this is a cookbook with a remarkable tale to tell–one to read and study–as well as one to cook from.

Sidebars and illustrations: (1): "The stars and the Hollywood Diet"–Sue Carol (lovely future wife of Alan Ladd) on the cover of *Motion Picture* magazine, Oct. 1929. (2) Mildred Lager (1908-1960). (3) Harry Chandler (1864-1944). (4) Granola (Layton Gentry, Adelle Davis, Dorothea Van Gundy Jones). (5) Photo of silent film star Anita King eating Sun Maid Raisin Pie, 1916. (6) Adelle Davis (1904-1974). (7) Clarke Irvine, 1892-1975. (8) Photo of Radiant Radish health food store, owned by Beach Boy Brian Wilson, Los Angeles, 1969. (9) Otto Carque, 1867-1935, with a photo of his health wagon, around 1912. (10) Gayelord Hauser (1895-1984). (11) "Nature Boy"–Bill Pester and the 1948 hit song by Eden Ahbez. (12) The Ashram–Hollywood restaurant founded by Anne-Marie Bennstrom. (13) The Hollywood diet, with a photo of page 1 of the "18-Day Diet" from *Motion Picture* magazine, Oct. 1929. The sidebar begins: "The first best-selling diet book in America, *Diet and Health, with a Key to the Calories,* was written by Los Angeles-based Dr. Lulu Hunt Peters in 1918, and sold over 2 million copies. The book introduced the concept of counting calories." (14) Alan Hooker (1902-1993). The grandfather of California cuisine, he opened the Ranch House restaurant in 1956 in Ojai, California. (15) Gloria Swanson–Hollywood's Green Goddess. She "was the highest paid and most popular, influential star of the 1920s." (16) Jim Baker (1922-1975). A pioneering organic restaurateur, he Opened the Aware Inn in 1957, then the Source restaurant in 1969. (17) Raw, raw, raw (Arnold Ehret, Vera and John Richter, and raw foods). (18) Photo of silent film star Mary Pickford drinking orange juice made with Sunkist fruit and juicer. (19) The godfather of fitness–Jack LaLanne. Master chef Danny Kaye (1913-1987). (20) The Farmer's Market in Los Angeles, started in 1934. (21) Paul Bragg (1881-1976), with photo of Rita Hayworth on the cover of his *Health Builder* magazine.

(22) Books and cooks–"150 Recipes of the Stars (1928), Helen Evans Brown. (23) Health foods–Dr. John Harvey Kellogg, the rise of health food sections in the late 1800s in L.A. department stores, the rise of health food stores, Sandy Gooch. (24) Mae West (1893-1980). Gypsy Boots (1914-2004). Photo of Boots and Paul Bragg. (25) Food and film. (25) Photo of Donna Reed and Paul Bragg, sometime in the 1950s. (26) Bernarr Macfadden (1868-1955). (27) Celebrity stew and Leo Pearlstein. (28) Vegetables, fruits, and nuts (incl. Frieda Caplan, Albert's Organics). (28) Rancho La Puerta and the Golden Door. Photo of young Burt Lancaster baking bread at La Puerta. (29) Fred Waring (1900-1984), the blender, and smoothies. (30) Hain Pure Foods. "Harold Hain opened his first health food store in downtown Los Angeles on October 17, 1926." (31) Swamis and yogis. Paramahansa Yogananda arrived in L.A. in 1925; he advocated a healthy vegetarian diet, including in his magazine *East West,* first issued in 1926. On 8 April 1951 he opened SRF India Café at his India House compound on Sunset Boulevard. "Yogi Bhajan (1930-2004) came to Los Angeles in 1969, bringing the teachings of Kundalini Yoga and his own unique style of Indian and Ayurvedic cooking. In 1974 his students opened Golden Temple Conscious Cookery in Los Angeles. I [Akasha] was a cook there from 1979 to 1984..."

Soyfoods are used in recipes (and recipe titles) throughout this book: Edamame or fresh green soybeans (used in 2 recipes), miso (1 recipe), soymilk (many, especially in place of milk in desserts, incl. "Chocolate Jack Daniel's soy gelato" and "Soya chocolate" milk), soy flour (1, Bill Baker's bread), soybeans (whole, 1, "Soybean casserole"), tofu (10), and tempeh (4).

Also discusses: Sophie and Harry Cubbison (p. 47), El Molino Mills (p. 106). Early veggie burgers (p. 106). Silk soymilk and Steve Demos (of White Wave, p. 266).

The recipes in this book are largely vegetarian (including 17 vegetarian main dishes), all call for organically grown ingredients, and many are dairy-free (using soymilk instead of cow's milk). However: Beef (used in 2 recipes, incl. "Fillet mignon Japanese"). Pork (used in 1 recipe, "Citrus roasted pork chops with rosemary potatoes"). Chicken (used in 6 recipes, incl. "Endive petals with curried chicken salad"). Turkey and duck (3 recipes). Fish (many recipes as for cod, halibut, salmon, whitefish). Shellfish (crab, scallops, shrimp).

Talk with Akasha Richmond, who calls. 2005. Dec. 7. Her favorite parts of the book are: The smoothie story. Otto Carque. Gloria Swanson. Yogis and Swamis, Granola. She is very happy with everything about the way the book and its promotion turned out ("It looks great")–except she wishes she could have included more photos. Address: Los Angeles, California.

3369. Bennett, Beverly Lynn; Sammartano, Ray. 2005. The complete idiot's guide to vegan living. New York, NY: Alpha. 360 p.

• ***Summary:*** "It's not a diet–it's a lifestyle." The vegan lifestyle means compassion for all living things. It means eliminating animal foods and animal products from one's diet. True vegans avoid the use of honey, and don't wear animal skin (leather, suede) or fur. Many avoid silk, made by suffocating silkworms inside their cocoons.

Contents: Part 1: Compassion for all. 1. Why be vegan? 2. Vegan 101 (incl. famous vegetarians and vegans, the Vegetarian Society of the UK, the Vegan Society emerges, Donald Watson, coming to America–Dr. Catherine Nimmo and Rubin Abramowitz, Jay Dinshah, ahimsa). 3. Key to good health. 4. Starting your vegan transition. Part 2: Clearing up misconceptions. 5. But you need meat for protein. 6. But you need dairy for calcium. 7. But carbohydrates make you fat. 8. Vegans are all weak and sickly.

Part 3: A vegan survival guide. 9. Nourishing yourself. 10. Seeking supplementation. 11. Raw foodists: Raw and uncut. 12. Oh baby! Bringing up baby. Part 4: Veggin' it; Tips for maintaining a vegan lifestyle. 13. Handling family and friends. 14. Dining, vegan style. 15. Supporting your ideals. 16. Buying your vegan eats.

Part 5: Substitution is the mother of invention. 17. Using protein alternatives (incl. Demistifying soy products: soy sauce, the incredible tofu, tempting with tempeh, playing tricks with TVP). 18. Doing without dairy and cheese. 19. Vegan baking substitutions. Part 6: Vegan food for the soul. 20. Breakfast ideas. 21. Lunch and lighter fare. 22. Main and side dishes. 23. Baked goods and desserts.

Part 7: Vegan lifestyle choices. 24. Body care and personal items. 25. Dressing to impress. 26. Other things to consider. Appendixes: Glossary, resources.

The index contains 17 entries for tofu, 16 for soybeans, 7 for tempeh, 3 for seitan, 2 for TVP, and 1 each for edamame, nondairy milk substitutes, shoyu, soy milk, tahini, tamari, and tofurky.

"This book offers a vegan food pyramid, fifty vegan recipes, tips on finding animal-free products and hints for reading ingredient lists and other labels to find 'hidden' animal ingredients or byproducts" (publisher's statement). Address: 1. Vegan chef and author, Eugene, Oregon; 2. Musician, web developer, and Beverly's life partner.

3370. Hellmiss, Margot. 2005. Mit Soja durch die Wechseljahre [Using soy through the menopause years]. Munich, Germany: Suedwest Verlag. 96 p. Illust. (color). Index. 20 x 18 cm. [Ger]

• ***Summary:*** An attractive book, with many fine color photos on glossy paper. Contents: Soybeans–Tradition and history (Healing plant from China): Productive source of protein, tofu–quark with a longer tradition, triumphal procession around the world, great economic significance, soya and genetic engineering. Fundamental changes of the menopause

years (What happens during these years?): Hormonal changes, the right attitude helps, the new understanding of women, many hormones influence the body, men also experience menopause, questionable preparations, Hormone Replacement Therapy–Pros and cons. Natural help from soy isoflavones (remarkable phytoestrogens): The active agent of plant hormones, the effectiveness of isoflavones, natural SERMs, safeguard against osteoporosis, estrogen protects the circulatory system, soy hormones as free-radical catchers, the end of hot flashes, strong powers of resistance and smooth skin, isoflavones will take good care of you.

Soyfoods that contain isoflavones (A great variety): Whole dry soybeans, soymilk, tofu, soy oil, soy flour (*Sojamehl*), soy flakes (*Sojaflocken*), soy bran (*Sojakleie*), tempeh, natto, soy granules, soy sauce, shoyu and tamari, miso, lignans. Soybeans: A powerful package for your health (Plant protein as an alternative): Indispensable protein, lecithin, minerals, B vitamins for strong nerves, vitamin E–the fountain of youth. Recipes for enjoying soya (Basic recipes): Hors d'oeuvres and salads, soups, pasta, main dishes, sauces, dips, and bread spreads, mueslis, desserts, and backed goods, beverages.

3371. Hoegemeier, Oliver. 2005. Untersuchung des Effekts von Tempeh-Isoflavonen auf die in vivo-Angiogenese im Chorioallantoismembran-Assay des Huhns [Investigation of the effects of tempeh isoflavones on the in vivo angiogenesis in the chorioallantois membranes of hens]. PhD thesis, University of Giessen. vii + 33 leaves. Illust. 30 cm. [Ger]* Address: Germany.

3372. Marcus, Erik. 2005. Meat market: Animals, ethics, and money. Ithaca, New York: Brio Press. xi + 211 p. Illust. Index. 23 cm. [432* endnotes]*
Address: Vegan.com, P.O. Box 432, Albion, California 95410.

3373. Moskowitz, Isa Chandra. 2005. Vegan with a vengeance: Over 150 delicious, cheap, animal-free recipes that rock. New York, NY: Marlowe & Co. 258 p. Illust. (color photos). Index. 23 x 18 cm.
• ***Summary:*** The praise for this innovative book is almost as interesting to read as the book itself. The book is great fun to read–a really fine writer. The index contains 1 entry for edamame (in samosas with coconut-mint chutney), 1 entry for miso (Stewed tofu and potatoes in miso gravy), 6 entries for seitan (incl. homemade), 8 entries for tempeh, 22 entries for firm tofu and 7 for silken tofu, and 3 entries for textured vegetable protein (TVP).

The section titled "Get rid of eggs–Veganize it!" (p. 195-97) begins: "Replacing eggs is the most challenging aspect of vegan baking. Those suckers bind, they leaven, and they give structure to our baked goods. However, like a bad boyfriend, they can be replaced, and with pleasing results." The first replacer discussed is flaxseeds. Second is silken tofu. "How to use it. ¼ cup blended silken tofu = 1 egg. Whiz in a blender until completely smooth and creamy, leaving no graininess or chunks. You will want to add other wet ingredients, to this mixture to get it to blend properly. I recommend... extra-firm silken tofu, such as Mori-Nu." Another egg replacer is soy yogurt. ¼ cup soy yogurt = 1 egg. "Soy yogurt works a lot like whizzed tofu as an egg replacer. It makes things moist and yummy."

She uses the creative word "sammiches" instead of "sandwiches." Address: Co-host of The Post Punk Kitchen, New York City.

3374. Nout, M.J.R.; Kiers, J.L. 2005. Tempe fermentation, innovation and functionality: update into the third millennium. A review. *J. of Applied Microbiology* 98(4):789-805. [114 ref]
• ***Summary:*** A good review of the literature on tempeh fermentation from about 1990 to the present. Contents: Summary. Introduction. Manufacturing processes. Microbial aspects. Chemical and nutritional changes. Functionality and safety of soybean tempe. Conclusion. Address: 1. Lab. of Food Microbiology, Wageningen Univ., Bomenweg 2, 6703 HD Wageningen; 2. Friesland Nutrition Research, Friesland Coberco Dairy Foods, Leeuwarden. Both: The Netherlands.

3375. Pradata, Yuni. 2005. Aneka masakan tempe [Various ways of cooking tempeh]. Depok, West Java, Indonesia: AgroMedia Pustaka. 36 p. Illust. (some color). 19 cm. [Ind]*
• ***Summary:*** Note: The title can also be translated as: "Assorted recipes for making tempeh."

3376. Tobing, Hayatinufus A.L.; Hadibroto, Cherry; Kartohadiprodjo, Nies. 2005. Tahu & tempe plus susu kedelai [Tofu and tempeh plus soymilk]. Jakarta, Indonesia: Gramedia Pustaka Utama. 97 p. Illust. (color). 24 cm. [Ind]*
• ***Summary:*** A cookbook of practical yet delicious recipes.

3377. Van Gessel, Ike. 2006. Update on work with tempeh in the Netherlands, and sale of company (Interview). *SoyaScan Notes.* Feb. 17. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** A far-ranging interview on his remarkable innovations and success making and marketing tempeh in the Netherlands. Address: Director, Quality, Pulmuone USA, southern California.

3378. Gandhi, A.P. 2006. The 'greater bean': Scientists continue to find new food and industrial uses for soybeans. *World Grain* 24(2):59-62. Feb.
• ***Summary:*** About 70% of world soybean production is crushed to make oil and meal, 20% is used directly for food, and the rest for seeds. Soybean meal used for human food "must be devoid of residual solvents that may cause

various psychological disorders in humans. The International Standard Organization (ISO) recommends a maximum level of 50 parts per million (ppm) of residual hexane, which is used in the solvent extraction process."

A pie chart shows world soybean production in 2004.

3379. Turtle Island Foods. 2006. Turtle Island (Website printout–part). www.tofurky.com. 5 p. Printed March 22 and May 29.
• ***Summary:*** Home: Products: Deli Slices, Sausages, Tofurky Franks, SuperBurgers, Tempeh, Tofurky Jurky, Tofurky holiday products. Food service products. Purchasing. Recipes. About us: Contact us, Where is Turtle Island, Company background, GMO's & organics, A "curd" of a different feather. Fun stuff: Travels with Tofurky. Essay contest winners, Classic Tofurky TV, Award winning Tofurky, Tofurky in the wild, Tofurky family album.

Company background: "Turtle Island Foods was founded in 1980 by Seth Tibbott in Forest Grove, Oregon. Seth had been making Tempeh for family and friends for 3 years out of an incubator made from an old refrigerator heated by a string of Christmas tree lights. He felt there was a future in American for this product and decided to quit his career as a teacher-naturalist and began working nights at the Hope Coop in Forest Grove.

"Seth made hundred pound batches of Tempeh in 3 flavors: Soy, Five Grain and Tempehroni (a spiced log which we no longer make).

"In 1982 the company expanded with the help of loans from Bob and Betty Tibbott, Seth's brother and mother, and moved to an abandoned schoolhouse with a beautiful commercial kitchen in Husum, Washington, 75 miles east of Portland, Oregon.

"Working days now, the company expanded and became the 3rd largest Tempeh manufacturer in the United States which began to stress among other things the water supply of the tiny (population 50) town of Husum.

"In 1992, Turtle Island moved across the Columbia River to Hood, Oregon, where it renovated an old cannery building where it is housed today. The 8,000 square feet of manufacturing space overlooks the Columbia...

"In 1995, the company introduced the Tofurky Vegetarian Feast... The response was overwhelming..."

Photos show: (1) Seth in about 1980 with his first Tempeh incubator in Forest Grove, Oregon. (2) Seth in the mid-1980s inside a tempeh incubator in Husum, Washington. (3) Two young men making tempeh in Indonesia. (4) Seth with his mother and brother before her death in Aug. 2002. Address: P.O. Box 176, Hood River, Oregon 97031.

3380. **Product Name:** Tempeh (bulk for Restaurants and Institutions).
Manufacturer's Name: Arto Moro Inc.
Manufacturer's Address: 125 N.W. 23rd Ave. #17, Gainesville, FL 32601. Phone: 352-226-5561..
Date of Introduction: 2006. March.
Ingredients: Organic soybeans, water, tempeh culture (*Rhizopus oligosporus*).
Wt/Vol., Packaging, Price: Frozen: 5 x 4 lb cakes, or 10 x 2 lb cakes (20 lb per package).
New Product–Documentation: Talk with Sam Guy. 2008. Dec. 29. His son is Art and the tempeh business was Art's idea. First Art bought a microbrewery, then a small restaurant in the early 1990s. He started making tempeh for the restaurant. The tempeh did well, so he sold the restaurant (which is still in business) to focus on the tempeh. For the first 3-4 months they sold their tempeh only locally, in Gainesville; then they expanded to Jacksonville and Tallahassee. His son delivers his tempeh locally on a bicycle–which has attracted media attention. The business provides detailed nutritional, health inspection, and microbiological info on its product; this has made it possible to attract large customers, such as Aramark food service, a university cafeteria, Mexican restaurants, and vegetarian restaurants. Their tempeh is frozen but not pasteurized. Sam's two favorite ways of serving tempeh: (1) Saute squares in olive oil with miso. (2) Little chunks of crispy fried tempeh in a salad with Mandarin orange pieces, cranberries, walnuts, and Veganaise.

Artie's Tempeh Burgers color postcard. The front has a bold heading with a large photo of the burger and a rayed sun in the background. Text: "Artie's Tempeh is made the traditional way, using a slow fermentation method unlike any other commercial varieties." On the rear is a "Nutritional facts" panel, the company address (factory) and phone number, the ingredients, and round logo, and "12 oz. A vegan food."

3381. Top Cultures. 2006. Tempeh.info (Website printout–part). www.tempeh.info. 8 p. Printed May 20.
• ***Summary:*** Home (What is tempeh? Tempeh history. Tempeh books; 4 p.). Make your own tempeh (soy tempeh, mixed tempeh, user feedback, make your own incubator; 2 p.). Tempeh health. Recipes with tempeh. Get your tempeh starter (a package of 25 gm of [dry] tempeh starter type A sells for US$12.50 plus postage; 5 p.). Fermentation (basic, soy fermentation, lactic acid fermentation, alcohol fermentation, acetic acid). Tempeh FAQ.

Interview with Manfred Warmuth of Univ. of California at Santa Cruz. 2006. May 21. Manfred ordered tempeh starter culture from this website and used it to make tempeh. It grows at about half the speed of regular tempeh starter but the mycelium is very thick and completely white. It does not sporulate or produce black spore spots unless it is allowed to stand in a refrigerator for a long time. Address: Doorlan 16, 2980 Zoersel, Belgium. Phone: +32 47 964 4899.

3382. Annapurna. 2006. Annapurna: zdrava hrana (Website

printout–part). www.annapurna.hr. 4 p. Printed May 22.
• ***Summary:*** A very creative and lovely website–in Croatian. The company makes tofu, seitan, soy yogurt, tempeh, and 5 tofu dips or spreads. Color slides show each of the company's soyfoods products in a large window. Clouds in a blue sky move from left to right. An orange lady bird beetle flies and walks over the homepage. As one's cursor hovers over a new button, it makes a soft "bong" sound. Address: Klanjec 30a, Rakitje, 10437 Bestovje [Croatia]. Phone: +385 (0) 1 3385 533.

3383. Benner, Peter. 2006. Turning to tempeh: The Brown family has been making tempeh since the late seventies. They're having lots of fun with it and still marvel at the process of turning organic soybeans into a fermented food that is high in complete protein and fibre, yet contains no cholesterol. *Canadian Organic Grower* (*The*) 3(2):14-18. Spring. [4 ref]
• ***Summary:*** Contents: Introduction. Turned on to tempeh. Slow food, soyfully. Tempering tempeh traditionally (how the Browns make tempeh). Fomenting a fermented sustainability.

For about 12 years the Browns made about 200 lb/day of tempeh. Recently they have increased their volume to 300 lb/day and soon plan to be producing 400 lb/day of certified organic tempeh. They focus on the process and paying attention. They've joined a slow food convivium in Perth. Photos show: (1) Michell Larin, Susan Brown and Allan Brown at the end of a work day at Noble Bean Tempeh Shop. (2) Susan loading trays for incubation. (3) Michelle bags soybeans while Jake mixes beans for inoculation. (4) Jake cooks the beans. Address: Journalist and salesperson for Monteagle Herbs, living in a solar-powered intentional community named Morninglory Farm in Killaloe, Ontario.

3384. *Indonesian Newsletter* (*Melbourne, Australia*).2006. Old and new a delicious combination: Primasoy. 16(4):7. May.
• ***Summary:*** The article begins: "Who would ever have imagined that in the quiet Melbourne suburbs the application of modern technology to an age-old tradition would produce premium quality (and mouthwatering) results?" There Mrs. Sinta Santoso of Primasoy is making "the finest quality organic tempeh products from Australian organically grown soybeans." Describes how the tempeh is made, without vinegar. Gives recipes for Tempeh curry and Tempeh salad. Photos show both dishes and the front of the Primasoy Organic Tempeh label. Note: This newsletter is published by the consulate general of the Republic of Indonesia, Melbourne.

3385. Mescher, Kelly. 2006. Indonesia: Aquaculture and soyfoods are key selling points. *Iowa Soybean Review* (*Iowa Soybean Association, Urbandale, Iowa*) 17(7):14. Spring.
• ***Summary:*** "In Indonesia, the aquaculture industry is huge and growing. And aquaculture's No. 1 source of protein is soybean meal." In fact, "aquaculture is the fastest growing use of soybean meal right now."

The market for soyfoods in Indonesia is also huge and growing. They consume 2 million tons a year of soybeans. Since they have no soybean crushing plants, the soybeans are imported largely for food use. "Tempeh producers are the biggest customer of whole soybeans in Indonesia." No. 2 is tofu makers. Both tempeh and tofu are basic foods in the Indonesian diet.

Photos show: (1) Directors of the Nebraska Soybean Association observing undersea aquaculture cages. (2) Many cakes of tempeh produced in the backyard of a small mom and pop shop in Indonesia.

3386. *Vitality* (*Toronto's Monthly Wellness Journal*).2006. Healthy product news: Tempeh, the soyfood with culture. May. p. 98. [2 ref]
• ***Summary:*** Based on a 25th anniversary news release from Noble Bean, "Canada's largest and oldest tempeh producer." "Noble Bean is a family-run cottage industry nestled in the rolling hills of the Ottawa Valley. There, on 10 acres of land, Allan and Susan Brown and friends produce from 250 to 400 pounds of tempeh a day." They firmly believe that "small is beautiful."

"After using certified organic ingredients for over 20 years, Noble Bean is now an OCPP (Organic Crop Producers and Processors) certified facility."

3387. Noble Bean Tempeh Shop. 2006. Noble Bean: 25th anniversary. Thank you tempeh lovers everywhere (Leaflet). McDonalds Corners, Ontario. 1 p. Single sided. 28 cm.
• ***Summary:*** The Canadian original. Certified organic / OCPP. Naturally pure water. Fresh frozen / Not pasteurized. Tasty traditional tempeh. Genuine slow food. The right half is in French. Printed with black ink on mottled tan paper. Two smaller versions (22 cm) are in either English or French, printed with black ink on a cardstock light green background. A pressure sensitive logo in light green, black and white on a dark green background is affixed to the top one-third of each.

3388. Warmuth, Manfred. 2006. Re: Studying tempeh and oncom [ontjom] production in Indonesia. Letter (e-mail) to William Shurtleff at Soyfoods Center, Aug. 22. 1 p.
• ***Summary:*** "I visited a number of tempeh production facilities in Bali and Malang. Most people now use plastic bags as well as starter from a lab. I am collecting starter cultures. There is one main factory in Bandung.

"Most tempeh makers boil the soybeans twice and use wet dehulling. Tomorrow I am visiting somebody in Yogyakarta who does dry dehulling.

"I am also connected with some university people: Profs. Kuswanto Kopti and Mary Astuti from Gadjah Mada

University [Indonesian: Universitas Gadjah Mada or UGM].

"Going to Bandung next... I am curious to find out about oncom. Do you know Prof. Suharto from the Padjadjaran University in Bandung? He is supposed to be a specialist in oncom.

From an internet cafe in Jogja [Yogya]. Address: Prof., Dep of Computer Sciences, Univ. of California at Santa Cruz, California 95060.

3389. Hymowitz, Ted. 2006. Why did the West (Europe and the Middle East) know so little about China in the 12th and 13th centuries? (Interview). *SoyaScan Notes.* Sept. 1. Conducted by William Shurtleff of Soyfoods Center.

• ***Summary:*** Because the Arabs blocked most European travel over the Silk Road / Route from about the 7th century until the 12th or 13th century. The Arab conquest blocked the overland route, in part to control the trade. There were actually two phases in the history of the Silk Road. The first phase ended in about the 6th or 7th century, before the origin of Islam.

Note: Both of these "Silk Roads" was actually a series of interconnected routes that ran from about Xian (Chang'an) in eastern China, along the northern part of China, branching into today's Central Asia, south of the Caspian Sea, through today's Turkmenistan, Iran (formerly Persia), and Iraq, to Damascus (today's Syria) and Antioch (in today's Turkey). The first famous and documented Chinese traveler, Zhang Qian (W.-G. Chang Ch'ien) led two expeditions to the Western Regions in the 2nd century BC, during the Former / Western Han dynasty.

As early as the 1st century AD, there were already some oceanic routes that were part of the "Silk Road." They hugged the coast from central China, around India, into the Persian Gulf and the Red Sea, then on to Italy!

This Arab blockade was one of the reasons for the search for a water route to China. The blockade began to fail as sea routes were developed. For example, in May 1498, Vasco da Gama was the first European to discover a sea route to India.

Another reason it took so long for information about the soybean to reach Europe from China was that the soybean is unlike rice, wheat, and maize / corn, where the product of the crop is associated very closely with what is growing in the field; everyone knows what rice, wheat and corn look like because they are so widely consumed as food. The main products of the soybean, especially those in commerce (such as soy sauce), bear no resemblance to the seed or plant from which they are made. It took a long time before Europeans realized that soy sauce (for example), which was known in Europe by the late 1600s, was made from the soybean–which did not arrive in Europe until the late 1730s. Even in Asia, the various names of the soybean were very different from the names of its major products. For example in China: Soybean is *dadou* or *huangdou,* soy sauce is *jiangyou,* tofu is *doufu,* and soymilk is *dounai* or *doujiang.* In Japan: Soybean is *daizu,* soy sauce is shoyu, tofu is tofu, soymilk is *tonyu,* miso is miso, natto is natto, and green vegetable soybeans are edamamé. In Indonesia, tempé is tempeh. Even in the Western World today, many of these traditional foods and condiments do not have "soy" as part of their name. Moreover, the foods look totally different from the seed / bean from which they are made.

The first European to understand the connection between the soybean and its products was Engelbert Kaempfer; he made this clear in his book *Amoenitatum exoticarum...* vol. 5. Yet most Westerners did not understand this connection until more than a century later, and quite a few even today don't realize that tofu (for example) is made from soybeans.

Ted is convinced that Marco Polo and the various early Western missionaries who traveled to China probably tasted soyfoods over and over again–but they didn't realize they were made from soybeans. A good example is milk. The early Western travelers in China often mentioned that Chinese drank milk; in some cases they were probably drinking soymilk. Address: Prof. of Plant Genetics (retired), Dep. of Crop Sciences, Univ. of Illinois, Urbana, Illinois.

3390. Mateljan, George. 2006. Healthy foods: Tempeh, the soyfood with culture. *Healthy Directions* (*Ontario's Natural Health & Nutrition Guide*). Aug/Sept. p. 37.

• ***Summary:*** A nice introduction to tempeh. Note: Two business cards photocopied with the article show: (1) Noble Bean's 25th anniversary. (2) Noble Bean, "Culturing fine tempeh since 1979. Allan and Susan Brown."

3391. Weil, Andrew. 2006. How foods can affect cancer. *Time.* Nov. 20.

• ***Summary:*** The article begins: "What do steak, tofu and sushi have to do with cancer? Plenty, it seems, if several" new studies are to be believed. One study found a disturbing association between red meat consumption and cancer. A epidemiological study showed that Asian women consuming diets rich in soy have significantly lower rates of breast cancer than Western women have.

The report that interested Dr. Weil most examined the association between breast cancer and "soy-based foods" [soyfoods]. This has become a controversial subject because "soy contains isoflavones;" some of these, in an "isolated form, can stimulate the growth of estrogen-receptor-positive breast-cancer cells. That's why many Western doctors warn women against eating soy." Yet the epidemiological evidence looks promising: Asian women who consume "diets rich in soy have significantly lower rates of breast cancer than Western women have."

Dr. Weil was particularly pleased to see a new study of Asian-American women done by the National Cancer Institute. It studied women who ate a lot of soy-based foods as children, adolescents and adults. "The strongest and most consistent association was among women who ate the most

soy-based foods from ages 5 to 11." Their risk of developing hormone-fueled breast cancer was only 58% as much as the women who ate the least soy-based foods. Women who ate a lot of soy as adolescents or adults reduced their risk by 25%. "Regular, moderate consumption of whole-soy foods (such as soynuts, edamame, soymilk, tofu and tempeh) probably affects the development of breast tissue in young females, possibly making it more resistant to carcinogens, including estrogenic agents in the environment."

Dr. Weil believes that women who have a history of breast cancer should be introducing their kids to soy foods at as early an age as possible. "Substituting soy milk for cow's milk is one way to start." He believes the same thing will be shown to hold true for boys; a diet that includes soy foods may reduce their future risk of prostate cancer.

A large color photo shows a white bowl filled with edamamé (green vegetable soybeans in the pods). A sidebar across bottom of article, titled "What we eat," states: (1) In 2004, U.S. per capita consumption of red meat was nearly 120 lbs. (2) In 2005 Americans ate, on average, 5 oz. of soy protein (equivalent to 12 oz. of soybeans), including ½ gallon of soy milk and 7 oz. of tofu. (3) In 2004 the average American ate 16½ lbs. of fish and shellfish.

Note: This is the 2nd earliest known article in *Time* magazine that mentions tempeh. Address: M.D.

3392. Stechmeyer, Betty. 2006. New developments at GEM Cultures (Interview). *SoyaScan Notes.* Nov. 29. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Since Gordon McBride, Betty's long-time partner, died about 3 years ago (2 Nov. 2003) of heart failure while on a hunting trip, Betty has a very full life trying to run GEM Cultures by herself, and take care of her house and property on the California Coast. She stopped selling commercial tempeh starter in about Sept. 2006 (2 months ago). She feels that the tempeh starter made by Cynthia Bates and Vicki at the Tempeh Lab on The Farm in Tennessee is very good quality.

She is now in the process of giving (actually selling for $1) GEM Cultures to her daughter (Lisa) and his husband (Russell Dunham) who live in Tacoma, Washington. They are in their 40s, have a lawn care business and 3 kids, and are eager to continue GEM Cultures. The only product they will discontinue is the commercial tempeh starter (for businesses). Betty hopes to write a book on Supermarket Botany (the little green thing atop a strawberry is called the "calyx"), and to finish a cookbook. She is an active volunteer in the local food bank (where people in need can come to pick up a bag of free groceries), where she also teaches nutrition (including the health benefits of fermented foods and soyfoods) and donates large amounts of the kefir she makes. George Carlin, the comedian, is part of the local community and food bank. It is a thriving community doing lots of good work, and Betty feels blessed to be alive and part of it. Address: GEM Cultures, Ft. Bragg, California 95437-4127.

3393. Northrup, Christiane. 2006. The wisdom of menopause: Creating physical and emotional health and healing during the change. Revised ed. New York, NY: Bantam Books. xvii + 631 p. Illust. Index. 24 cm. [36 soy ref]
• ***Summary:*** This revised edition contains a very positive and accurate section on the ability of soyfoods to relieve menopausal symptoms. But the benefits are dose-dependent. Discusses: Soy and menopause (p. 188-93; "Each of the following servings contains approximately 35-50 mg of soy isoflavones: 1 cup soy milk, ½ cup tofu, ½ cup tempeh, ½ cup green soybeans (edamame), available fresh or frozen, 3 handfuls roasted soy nuts"). Brain foods: Omega-3 fats [fatty acids], and DHA, soy and Japan (p. 337-38). Beautiful skin and soy (p. 364-66). Bone building and soy (p. 407-08). Eating for breast health and soy; Why soy is safe for breast tissue (p. 450-53). Heart health and soy (p. 524-25). Resources–Soy (incl. Revival Soy, p. 549).

At least 36 scientific studies on soy and women's health are cited, each with a full bibliographic record in the notes, chapter by chapter.

"Is there a soy-thyroid connection?" (p. 189-90). "Here's the bottom line: there is no convincing evidence that soy intake increases the risk of hypothyroidism during perimenopause. However, women often begin increasing their intake of soy during perimenopause, a time when they often get their thyroid function checked for the first time as well. And given that fully 25 percent of perimenopausal women have a thyroid problem, many believe that soy is responsible. If you have any doubt about your thyroid function, get it tested. Make sure you test for TSH (thyroid-stimulating hormone) along with T3 and T4, the two thyroid hormones. Its a simple blood test, and it will put your mind at ease." Address: M.D. (gynecologist), Women to Women, Yarmouth, Maine.

3394. Kuzmic, Vlatka. 2006. Update on Annapurna's work in Croatia (Interview). *SoyaScan Notes.* Nov. 29. Conducted by William Shurtleff of Soyfoods Center.
• ***Summary:*** Annapurna now has 27-29 products. They are the biggest tempeh maker in Croatia; there is one other maker, which is smaller. Seven people working at Annapurna, plus Vlatka's husband who is the owner. Six of them work in production and one person is in their shop in Nehajska 42, Zagreb, which opened in June 2006. The biggest chain of health food stores in Croatia says that they sell more of Annapurna's products than those of any other Croatian manufacturer, and that Annapurna is among the top 15 suppliers worldwide in terms of sales. All is going well. Address: Klanjec 30a, Rakitje, 10437 Bestovje, Croatia. Phone: +385 1-3639-092.

3395. Feng, Xin-Mei. 2006. Microbial dynamics during barley tempeh fermentation. PhD thesis, Swedish University of Agricultural Sciences, Uppsala. 52 p. Illust. (some color). 24 cm. [194 ref. Eng]
• ***Summary:*** The writer has successfully made barley tempeh from pearled barley, without the use of soybeans (see p. 15). "Introduction of food-grade lactic acid bacteria (LAB) and yeasts to tempeh fermentation may enhance tempeh nutritional and hygienic quality.

"The abilities of LAB and yeasts to grow together with *R. oligosporus* during barley tempeh fermentation and their possible effects on tempeh quality were studied. The LAB *Lactobacillus plantarum* and *L. fermentum* and the yeasts *Saccharomyces cerevisiae, Pichia anomala* and *Kluyveromyces lactis* could grow during tempeh fermentation and the yeasts even during cold storage. LAB and yeasts did not negatively affect growth of *R. oligosporus* at an inoculation level of 10,000 cfu/g [colony forming units per gram], respectively, but did so at higher inoculation levels.

On pages 9-10 is a very interesting but brief discussion of *Mei Dou Za* (okara tempeh, called Meitauza in several early English-language documents). It is still made by "spontaneous fermentation" in about 3 days in several places in China. On page 10 are 6 photos taken by the writer in 2006 showing how the product is made, and then sliced and dried in Qian Jiang, Hubei Province, China Address: Dep. of Microbiology, Swedish University of Agricultural Sciences, Box 7025, SE-75007 Uppsala, Sweden.

3396. Golbitz, Peter; Jordan, Joe. 2006. Soyfoods: Market and products. In: Mian A. Riaz, ed. 2006. Soy Applications in Food. Boca Raton, Florida, London, New York: CRC Press (Taylor & Francis Group). [x] + 288 p. See p. 1-21.
• ***Summary:*** Contents: History of soyfoods: Growth and development in the Western world, soybean industry blossoms in the United States, soybeans grow around the world. Soybean production and utilization for food: Soyfoods in Asia, soyfoods in Europe, soyfoods in Africa, soyfoods in the United States: Development of the U.S. soyfoods industry, Americanization of soyfoods. Soybean nutritional components: Soy protein, soy oil, carbohydrates and fiber, vitamins and minerals, isoflavones. Soyfoods and protein ingredients: Whole dry soybeans, tofu, soymilk, tempeh, soymilk yogurt, miso, soy sauce, okara, natto, soynuts, meat alternatives, cheese alternatives, nondairy frozen desserts, green vegetable soybeans (edamame), soy sprouts, full-fat soy flour, defatted soy flour, textured soy flour, soy protein concentrate, soy protein isolate. Conclusions.

Tables: (1) World soybean production by major producers. (2) Annual per capita consumption (2001) of soybeans for direct food. (3) U.S. soyfoods market (1996 to 2005).

This chapter suffers from a lack of references, and contains several basic errors concerning the early history of the soybean. Contrary to what Mr. Golbitz says: (1) The Chinese have not considered the soybean a basic source of nutrition for almost 5000 years (see Hymowitz 1970, "On the domestication of the soybean"). For "a little more than 3000 years" would be much more accurate. (2) The first reference to soybeans in Chinese literature does not date back to 2853 B.C. (see Hymowitz 1970, and Hymowitz and Shurtleff 2005, "Debunking soybean myths and legends in the historical and popular literature"). It dates back to about 1100 B.C. (3) Natto was not developed at least 3000 years ago in Japan (the earliest known document that mentions natto dates from 1450 CE–or about 560 years ago). Address: Soyatech, Inc., Bar Harbour, Maine.

3397. Lee, Yuan Kun. ed. 2006. Microbial biotechnology: principles and applications. New Jersey: World Scientific. xiii + 724 p. 23 cm. *
• ***Summary:*** Tempeh and koji are both mentioned.

3398. Null, Gary. 2006. Gary Null's power foods: the 15 best foods for your health. New York, NY: New American Library. 327 p. Plus 8 unnumbered pages of color plates. Illust. No index. 24 cm.
• ***Summary:*** A vegan cookbook. Gary has eaten a vegan diet for more than 30 years. He owns a juice bar named Gary Null's Uptown Whole Foods in New York City. He advocates eating soybeans and soy products; because of their "extensive and well researched health benefits" and because it comes in such a wide variety of forms, from "tofu and tempeh, to nondairy products like milks, cottage cheese, cheese, yogurt and ice creams. No other legume can be used in so many delicious ways" (p. 10, 24-25). One of his 15 "power foods" is soy (p. 13). He likes juicing and raw foods; in the chapter on beverages he sometimes adds 1-2 tablespoons soy protein powder, or a cup or so of soymilk or rice milk, or soy yogurt. For dips, he likes silken tofu. The chapter on "Entrees" (p. 240-88) includes 13 recipes that call for tofu, and 8 that call for tempeh. Edamame, whole soybeans, tamari, and soy cheese are included. His daughter, Shelly Null, is a gourmet chef. The book has no index. Address: Author of more than 70 books, New York City.

3399. Oishiku tabete kirei ni naru reshipi: daizu no chikara o shinjinasai. Nattô, tenpe, chongutchan [Delicious recipes to make you beautiful: Please believe in the power of soybeans: Natto, tempeh, Korean-style natto]. 2006. Tokyo: Gakushû Kenkyûsha. 81 p. Illust. (Color). 26 cm. Series: Gakken mook. [Jap]*
Address: Japan.

3400. Oseland, James. 2006. Cradle of flavor: home cooking from the spice islands of Indonesia, Malaysia, and

Singapore. New York and London: W.W. Norton & Co. 384 p. + 16 unnumbered pages of plates. Illust. (some color). Maps. Index. 26 x 21 cm. [41 ref]
• ***Summary:*** Lavishly praised. "James Beard Foundation Book Award Winner: Asian Cooking."

In Chapter 3, "At the market, ingredients" (which has many fine color photos) is a long, interesting entry for "Indonesian sweet soy sauce (*kecap manis,* p. 72). "Sweet soy sauce is hugely popular in the cooking of Indonesia and, to a lesser extent, Malaysia and Singapore. (The word *kecap,* by the way, is derived from the Cantonese *koe-chiap,* or 'sauce,' from which we get the word *ketchup.* It was probably handed over by traders from southern China who long ago traveled extensively to the Indonesian islands.)" Its main use is as a table condiment or dipping sauce, although cooks also use it in marinades and to flavor stews. When Indonesian sweet soy sauce is mixed with sliced red chiles and lime juice, it becomes the widely used *sos kecap rawit.* In the U.S., the two most widely available brands, both imported from Indonesia, are Cap Bango (which the author prefers) and ABC.

There are also entries for "Soy sauce (*kecap,* p. 87. Of the two types, the first is called simply soy sauce, whereas the second "is double-black soy sauce, which has been aged longer and mixed with a small quantity of molasses." It has a more robust flavor than regular soy sauce). Sweet soybean paste (*tauco* or *taucheo,* p. 88-89, a Hokkien word. A "thick, golden brown, misolike condiment made of fermented soybeans, rice flour, sugar, and salt). Tempeh (p. 90-91, "one of Indonesia's great gifts to the culinary world"). Tofu (*tahu,* p. 91-92).

Chapter 13 (p. 318-35), titled: "Tempeh, tofu, eggs," has a long and very interesting introduction about the author's visit to Rahmat, a traditional tempeh maker and his shop in Yogyakarta, Java; he wanted to learn how tempeh is made. Recipes: Garlic-marinated tempeh (*Tempe goreng, Indonesia*). Tempeh sambal with lemon basil (*Sambal tempe, Bali, Indonesia*). Carmelized tempeh with chiles (*Tempe kering, Central Java, Indonesia*). Tofu and summer vegetables in coconut milk (*Sayur lodeh, Malaysia*). Twice cooked tofu with coriander (*Tahu goreng bacem, Central Java, Indonesia*).

Tempeh, tofu, soy sauce, and sweet soy sauce are also discussed in many places throughout the book. Address: Executive editor of *Saveur,* New York City.

3401. Planck, Nina. 2006. Real food: What to eat and why. New York and London: Bloomsbury Publishing. [viii] + 343 p. Index. 22 cm. [30+ ref]
• ***Summary:*** This book is carefully researched and very well, thoughtfully and fairly written; the author has written for *Time* magazine and comes with very good credentials for this book. Born in 1971 in Buffalo, New York. "She was a speechwriter to the U.S. ambassador to Britain when she opened the first farmers' market in London on June 6, 1999. Six months later she quit her job to open ten more markets, write *The Farmers' Market Cookbook,* and host a British television series on local food. In 2003 Nina created the Mount Pleasant Local Food Market in Washington, D.C. In New York City she ran Greenmarket, the largest network of farmers' markets in the United States. Nina's new company, Real Food, runs markets for farmers and purveyors of regional and traditional foods" ("About the author," p. 344).

The author advocates the following: (1) Eat real, traditional foods rather than more modern "industrial foods." These real foods include plenty of meat, fish, poultry, eggs, and dairy products made from whole raw (unpasteurized) milk from cows grazed outdoors on grass (rather than corn and soybeans, which cows were not designed to eat by nature) without synthetic hormones–plus real, organically grown fruits, vegetables, whole grains and legumes (including traditional soy foods), real salt, and dark chocolate

(2) Eat real fats–including butter, beef fat, coconut oil, lard, and extra-virgin olive oil, including saturated fats and cholesterol. Avoid industrial fats–such as margarine, polyunsaturated vegetable oils (including soybean, corn, and sunflower oil), and shortening. (3) Go beyond and disregard the cholesterol myth; the evidence supporting it is weak. (4) Stop eating a vegetarian diet, and especially a vegan diet (which no traditional society has ever practiced).

To start with the section on soy foods: In the Chapter 8, titled "Other real foods," the section on soy foods is titled "Traditional and industrial soy are different" (p. 225-34). Traditional soy foods are those that have a long history in the diet, and are still made in pretty much the way they used to be. Her information on the early history of the soybean and soy foods (p. 225-26) contains many errors, as well as some interesting observations. Some of the earliest soyfoods were fermented (starting with soy nuggets and jiang in China). She lists five health benefits of fermentation. Fermentation (along with cooking) helps to reduce the phytic acid in soybeans. Soy foods do not contain reliable vitamin B-12. The author states several times that soy protein is not complete protein. Most nutritionists for the past 50 years have correctly avoided this "is" vs. "is not" labeling and instead have listed all foods along a continuum from high quality to low quality. By the latest measures of protein quality, soy protein (by itself, without supplementation by cereal grains) has about the same quality as beef, but lower than that of eggs or milk. While noting that about 85% of all soybeans are genetically engineered, she fails to mention that most traditional soyfoods in the USA are made from organic, non-GE soybeans. She discusses the important part that soy plays in the Okinawan diet, where the people have the highest longevity in the world. Yet soy "should be viewed as part of a diverse diet, not as a nutritional silver bullet." We heartily agree. She lists the many traditional soyfoods (p. 231-32), made basically the traditional way, including: Bean sauce

(jiang), miso, natto, soy milk (non-industrial), soy sauce. sufu (fermented tofu, incl. Filipino tahuri), tofuyu (fermented tofu from Okinawa), tamari (liquid left after miso is made), tempeh, tofu, and edamame. She recommends that we avoid modern soy protein products made from defatted soybean meal (typically extracted with hexane solvent), including soy protein isolate, "industrial soy milk," soy based infant formula, and soy sauce which uses defatted soybean meal instead of whole soybeans. But what would she do with all the oil left over after using whole soybeans?

Concerning a diet rich in fish, meat, and poultry. She partly ignores the ethical issues involved in killing billions of those animals each year and the environmental issues involved in raising them. These are both huge issues. Several complex issues that she addresses head-on and in a fair, interesting way: (1) Is milk good for humans (p. 39-86).

One of the basic hopes / agendas behind this book is that people will start to leave cities, buy a piece of land (as the author's own family did when she was age 2), grow their own food and raise their own animals for milk, meat, and eggs. There is a steadily growing number of books advocating this traditional way of life.

The Glossary (p. 306-15) contains many good definitions that most people will be able to understand. The bibliography (p. 316-21) is substantial, and there are also endnotes (p. 290-303) but the book would be better if more of its controversial or historical statements cited authoritative sources. Address: USA.

3402. Sugano, Michihiro. 2006. Nutritional implications of soy. In: Michihiro Sugano, ed. 2006. Soy in Health and Disease Prevention. Boca Raton, Florida: Taylor & Francis. [xii] + 313 p. See p. 1-16. [10 ref]

• ***Summary:*** Contents: Introduction. Structure of soybean. Components of soybean: Proteins, oil, carbohydrates, minerals, vitamins. Composition of soy products. Nutritional aspects of soy products: Protein, peptide, oil, oligosaccharide, vitamins, other components. From "A Meat in the Field" to "A Treasure Box of Functionality."

Tables: (1) Major soybean components and their health effects. Two columns: Components and functions. (2) Nutrient contents of dried soybean (incl. minerals and vitamins). (3) Nutrient contents of soybean products (gm per 100 gm): Kinako (parched soybean flour, full-fat). Tofu (bean curd). Abura-age (fried bean curd). Kori-tofu (frozen bean curd). Natto (fermented soybean). Okara (Tofu refuse). Tonyu (soymilk). Yuba (Soymilk skin). Tempe. Miso (bean paste). Shoyu (soy sauce). Soy protein isolate. (4) Mineral contents of soybean products (sodium, potassium, calcium, magnesium, phosphorus, iron, zinc, copper, manganese; same products as in Table 3). (5) Vitamin contents of soybean products (retinol, carotene, D, E, K, B-1, B-2, niacin, B-6, B-12, folic, pantothenic, C; same products as in Table 3). (6) Amino acid and protein composition of Japanese soybean products. (7) Proposed patterns for essential amino acid requirements and composition of soybean proteins (soy protein concentrates and isolates). (8) Fatty acid composition of soybean oils (% of total fatty acids) (Products: Refined soybean oil, genetically modified oils, low linolenic, high oleic, low palmitic, low saturated fatty acid, high palmitic, high stearic).

Figures: (1) Pie chart of intake of soybean and its products in Japan (gm per day of tofu {38.2 gm}, fried tofu {7.9 gm}, natto {6.9 gm}, whole soybeans {2.0 gm}, other {2.3 gm}; Total 57.3 gm per day). (2) Bar chart: Amino acid score of dietary proteins in humans (casein 1.0, egg white 1.0, soy protein concentrate 9.9, soy protein isolate 9.5, beef 9.5). (3) Graph and bar chart: Soybean protein lowers liver delta-6 desaturase activity and liver phospholipid delta-6 desaturation index in rats–relative to casein. Address: Director, Fuji Foundation for Protein Research, Japan; Professor Emeritus Kyushu University and President, Prefectural Univ. of Kumamoto, Japan.

3403. Sumi, Hiroyuki; Yatagai, Chieko. 2006. Fermented soybean components and disease prevention. In: Michihiro Sugano, ed. 2006. Soy in Health and Disease Prevention. Boca Raton, Florida: Taylor & Francis. [xii] + 313 p. See p. 251-278. [76 ref]

• ***Summary:*** Contents: Introduction. Natto: Antibacterial activity of natto and natto bacillus, fibrinolytic enzyme substances contained in natto, depressor effects, carcinostatic effects, and dissipation of the effects of alcoholic drinks, preventive effects for osteoporosis. Tempeh: Strong antibacterial activity and effectiveness against intestinal disorders, antioxidant, antiallergic, and beauty care effects, starters for tempeh and high nutritional value. Shoyu (soy sauce): Antibacterial, antioxidation, and depressor effect, antitumor effects. Miso (soybean paste): Effectiveness of soybean paste for cancer prevention, depressor effects, antioxidation and antiradioactivity effects. Tofuyo.

Tables: (1) Dipicolic acid in natto and *Bacillus subtilis* natto. (2) Fibrinolytic activity in human plasma after the intake of natto. (3) Expired gas and intestinal gas after intake of tempeh. (4) Isoflavone content in tempeh. (5) Antioxidation activity of the aromatic components of shoyu (soy sauce). (6) Functional effects of melanoidine contained in shoyu (soy sauce) and miso (soybean paste).

Figures: (1) Graph of the effects on *O-157* as a result of the addition of natto bacillus. (2) Graph of the effects on *H. pylori* (Sydney strain) resulting from the addition of natto extracts. (3) Photo of fibrinolytic activity of natto. A piece of natto commonly sold on the market was placed in a petri dish with artificial thrombus. (4) The molecular structure of nattokinase. (5) Photo of fibrinolytic activity of nattokinase. (6) 3 graphs of changes in the fibrinolytic parameters in the blood after oral administration of nattokinase to human volunteers. (7) Graph of the effects of natto extracts

on blood pressure. (8) Graph of the inhibitor activity of platelet aggregation. (9) 2 graphs of the concentration of vitamin K_2 in human blood after the intake of natto. (10) Bar chart of change in the concentration of menaquinone-7 in plasma after ingestion of natto. (11) Graph of the effects of the tempeh bacteria on aflatoxin-producing bacteria. (12) Diagrams of the aromatic components of shoyu (soy sauce). (13) Bar chart of the effects of the concentration of nitrous acid on the antitumor activity of shoyu (soy sauce). (14) Chart of the carcinogenesis inhibitor effects of HEMF against proventriculus tumors induced by benzo[a]pyrene. (15) Bar chart of standardized mortality from stomach cancer relative to the level of frequency of eating miso soup. (16) Graph of changes in blood pressure by oral administration of miso (soybean paste) extracts. (17) Graph of reaction between coloring degree of miso and its antioxidative activity. Address: Dep. of Physiological Chemistry, Kurashiki Univ. of Science and the Arts, Kurashiki, Japan.

3404. Wang, Yi-Chieh; Yu, R.C.; Chou, C.C. 2006. Antioxidative activities of soymilk fermented with lactic acid bacteria and bifidobacteria. *Food Microbiology* 23:128-35. [34 ref]

• ***Summary:*** Probiotics can serve as antioxidants. "Previous research has demonstrated that the antioxidative activity fermented soyfoods such as miso, natto, and tempeh, was remarkably stronger" than that of unfermented steamed soybeans,

To develop a probiotic dietary adjunct / supplement, soymilk was fermented with two different lactic acid bacteria: (1) *Lactobacillus acidophilus* CCRC 14079, or (2) *Streptococcus thermophilus* CCRC 14085. And with two bifidobacteria: (3) *Bifidobacterium infantis* CCRC 14633, or *Bifidobacterium longum* B6–individually and in conjunction (all together). Several antioxidative activities were investigated: The inhibition of ascorbate autoxidation. The scavenging effect of superoxide anion radicals and hydrogen peroxide, and the reducing activity exerted by different varieties of fermented soymilk. In addition, the effects of freeze-drying and spray drying were also investigated.

"In general, antioxidative activity in soymilk fermented with lactic acid bacteria and bifidobacteria simultaneously is significantly higher ($P<0.05$) than that fermented with either individually. Moreover, antioxidative activity as the fermentation period is extended.

Freeze drying causes much less reduction in antioxidative activity than does spray drying. Address: Graduate Inst. of Food Science & Technology, National Taiwan Univ. 59, lane 144, Kelung Road, Section 4, Taipei, Taiwan.

3405. Chalmers, Elizabeth. 2007. Business history of the Chalmers family: Making soyfoods in New Zealand (Interview). *SoyaScan Notes*. Jan. 16. Conducted by William Shurtleff of Soyinfo Center.

• ***Summary:*** At Easter 1980 Rick & Elizabeth Chalmers, together with Rick's brother Greg (his formal name is "Stephen"), opened Harvest Wholefoods, 403 Richmond Road, Grey Lynn, Auckland. They borrowed the money from Elizabeth's mother, and were all equal owners. It was New Zealand's first wholefoods / natural foods store as well as the country's first macrobiotic foods retail store. They were idealists and purists, refusing to sell any vitamins, or minerals, or dairy products.

They started the store partly as a result of becoming interested in macrobiotics, and partly because Elizabeth and Rick had a 3 year old son (Daniel) who could not tolerate dairy products. As the Chalmers could not get the food they wanted anywhere, they thought that they would open a shop to also provide it to others. Moreover, Greg, who had been overseas in London (where he had worked in a restaurant) and the USA, was a pioneer in bringing macrobiotics to New Zealand. "He brought home miso and some seaweeds–foods we had never seen before."

After about six months, in Oct. 1980, in order to attract customers to the shop, they started to make nigari tofu (for their own store only) in a small room at the back of the store, designated just for that purpose. They made the simple equipment themselves, and they learned the process from *The Book of Tofu,* by Shurtleff and Aoyagi.

After another six months they were inundated with other store owners, and cafe & restaurant owners from all over New Zealand wanting to buy their tofu. "It was just amazing." The tofu was completely unpackaged and they sold it under water in bulk buckets only. So in about April 1981 they started to sell their tofu outside of Harvest Whole Foods. "Sometimes they would pick it up, and sometimes we would deliver it."

Sanitarium Health Food Co. was making many kinds of breakfast cereals and canned nut meats, but no soyfoods. Several Chinese restaurants were making tofu (they called it "bean curd"), but only for use in their own restaurants; they did not sell it elsewhere. One of these was named Sun Sun, located in Khyber Pass, Auckland.

Their daughter, Jesse, was born on 1st October 1981, and by this time it was becoming difficult to manage both the shop and making tofu. So they sold the shop and with the capital gained they brought in special tofu making equipment from Japan, moved to new premises at 1 Wallingford St., Auckland, and started Harvest Soyfoods. Harvest Whole Foods is still at its same original location today; it is going strong and doing well financially.

Harvest Soyfoods' first product was nigari tofu; to this they soon added Tofu Spreads (Feb. 1981) then Tempeh (April 1981). The business grew very rapidly, and during this period Greg also had a child, so they all had very young children and were trying to manage their lives as well as an extremely rapidly increasing business.

Greg's partner decided that she wanted to leave Auckland, and as they could not picture another partner in his place and were feeling very overloaded anyway they decided in 1983 to sell the business to Paul and Trevor Johnston, who renamed it Bean Supreme. The Johnstons paid half the money at the time of sale and the remainder a year later; Elizabeth and Rick Chalmers worked for the Johnstons during that year. This business is also still in existence, although it was bought out by Sanitarium Health Food Co. in about Aug. 1986. Note: Trevor is no longer with the company; Paul sold the company to Sanitarium Health Foods.

From 1983 to 1986 Rick and Elizabeth had a commercial cleaning business, which suited the family structure very well, but was very unsatisfying workwise and environmentally.

In about 1980 or 1981 Austin Holden had started a largely macrobiotic import and wholesale business, Kiaora Naturals, at 374 West Coast Road, Glen Eden, in west Auckland. Holden soon started a very small shop in the corner of his warehouse and called it East West Wholefoods. For the first few years, his only customer was Harvest Wholefoods. "We kept him going."

Then in 1986 Rick and Elizabeth started East West Organics, taking over the building (and business) formerly occupied by Austin Holden and Kiaora Naturals. They knocked out all the walls, resulting in a much larger shop that specialised in organic food, with a big emphasis on fruit and vegetables.

They had no intention of making soyfoods. However there was suddenly an influx of Asian immigrants to New Zealand and Asian Tofu (usually made with calcium sulfate in aluminum pots) became widely available. By this time organics was really growing in New Zealand. Elizabeth and Rick wanted to stock organic tofu in their store, but they couldn't find a source. They talked with Trevor and Paul Johnston about making it for them, but the brothers felt there was no future in it, so they declined to do it.

So in 1996 Elizabeth and Rick started The Organic Soy Company, again in a small food factory out the back of East West Organics. They started making nigari tofu again–for their own store only. For the first time, they started to use organic soybeans, and as many other organic ingredients as they needed and could get. "We were right back where we started. And then exactly the same thing happened again. Once the word got out that organic nigari tofu was available again, people started coming from everywhere to buy it. It was not our intention to get back into the soyfoods business; we'd already sold our company. But we wanted the quality, so we had to make it ourselves." East West Organics is still operating today, although out of new premises (outgrew old one), and has just moved up the road slightly.

Their son Daniel joined them in January 1998, and in October of 1998, they sold East West Organics and moved the Organic Soy Company to their current premises at Unit A, 2 Corban Avenue, Henderson, Auckland.

Elizabeth and Rick separated the same year, but continued on in the family business together. In 2001 their daughter Jesse returned from Europe and also joined us in the business. Later that same year Rick left the business to go to University and currently, Elizabeth, Daniel and Jesse are in joint ownership, with Rick still having a 10% share. They started using the brand names (the first being Tonzu) in 2002.

The business is growing slowly, currently producing tofu, tempeh, soy yoghurt, tofu burgers and teriyaki sauce, all 100% organic. Elizabeth has moved to part time as the younger generation are taking on the responsibility for the business. They currently have 3 full time employees as well as themselves, so are still reasonably small.

"We see a great future for the business and will probably outgrow our current premises within the next few years. We love making traditional soy products, and eventually hope to make miso and tamari, which will be export products as well as for the domestic market."

First sold commercially by the organic soy company: Tofu (1996), Teriyaki Tofu (1999), Tempeh (1999), Tofu Burgers (2001), Teriyaki sauce (2003).

All current labels and packaging are new, and have changed very much from the original. They once made two tofu spreads, one teriyaki and the other curry flavour. However it was hard to get a good enough shelf life out of them to make them viable, so reluctantly they discontinued them. They have also changed their burgers significantly. When they first produced a burger in 2001, they had 3 varieties: Garlic and Cheese, Sundried Tomato, and Feta, and Vegan. They have discontinued them all and now just make one that is actually Vegan, although they do not call it that. The burgers did not sell well; they are not certain why that was, maybe they were too expensive with all the organic ingredients and very labour intensive. So they have simplified and streamlined our current burger making the whole process more viable.

As the population of the whole of New Zealand is around 4 million and only 15% of them are vegetarian, they are playing to quite a small market, this can sometimes be quite a challenge. In the long term it will be sensible to develop products that they can export. Address: Founder and owner, The Organic Soy Company, Ltd., Unit A, 2 Corban Ave., Henderson, Waitakere, Auckland 0612, New Zealand. Phone: +64 9 835 3617.

3406. Tibbott, Seth. comp. 2007. Tofurky brand products overview: Natural foods segment. Hood River, Oregon: Turtle Island Foods, Inc. [36] p. 28 cm. [1 ref]
• ***Summary:*** A full-color booklet bound with a handsome, black ProClick plastic spine. On the front cover: "1980-2006: 26th anniversary Turtle Island Foods, Inc." "Sales data from: SPINscan Natural and SPINscan Conventional. 52

weeks ending December 30, 2006. All statistics are for the total U.S. market.

Contents (unnumbered pages): (1) "Turtle Island Foods honored by Inc. magazine: 2,240th fastest growing small business in the USA (of 6 million total). 159.7% growth rate over last 4 years. 57th fastest growing food and beverage company in the USA. 19th fastest growing food processor.

(2) About Tofurky products: 100% vegan. Based on organic soy products. Use non hexane extracted proteins. VejNews. Winner veggie awards–Best meat substitute.

(3) Natural foods market without Whole Foods (which no longer shares sales info with the industry). Growth of top ten brands ranked by dollar volume. Frozen and refrigerated meat alternatives. 52 weeks ended Feb. 24, 2007. Category: $35.5 million. Growth: 4.7%. Turtle Island is the fastest-growing brand: 16.1%, followed by Quorn, Nates, Amys Kitchen, Morningstar Farms, Gardenburger, and Yves. Lightlife, Boca Foods, and White Wave all have negative growth.

(4) Natural foods market. Frozen and refrigerated meat alternatives. Top ten of 478 items by dollar volume. 52 weeks ending Dec. 30, 2006. #1. Quorn Chicken Style Nuggets. 10.6 oz. $1,507,537. 5.6%. #2. Turtle Island Tofurky Italian Sausage (organic) 14 oz. $1,262,616. 25.7%. #3. Quorn Chicken Style Patties. #4. Lightlife Gimme Lean Sausage. #5. Quorn Veg. Naked Chicken Cutlet. #6. Turtle Island Tofurky Deli Slices, Hickory Smoked. 5.5 oz. $1,131,760. 19.2%. #7. Lightlife Smart Dogs. #8. Boca Original Patties Chicken Natural (4-pack). #9. Amys Burger California Veggie. #10. Quorn Meat Free Chicken Tenders.

(5) Natural foods market. Refrigerated meat alternatives, Top 10 of 260 items by dollar volume. 52 weeks ending Dec. 30, 2006. Turtle Island currently as the #1, #3, #9 and #10 best selling items among the 260. They are: Tofurky Italian Sausage. Tofurky Deli Slices Hickory Smoked. Tofurky Deli Slices Oven Roasted. Tofurky Kielbasa (sausages).

(6) Tofurky deli slices: Six features, incl. "Organic tofu based." The six types of deli slices are: Oven roasted, Hickory smoked, Peppered, Italian deli, Cranberry & Stuffing, "Philly-style" steak.

(7) Tofurky deli slices. Bar charts of refrigerated meatless deli sales, 2001-2006. For each year are given: Competitor #1. Competitor #2. Turtle Island. Overall category. "While the competition sales have been flat, Turtle Island has grown the subcategory 72 and has become the #1 brand.

(8) Deli slice standings. (9) Tofurky gourmet sausages. (10) Frozen and refrigerated meat alternatives. (11) Tofurky Jurky: 5 features.

(12) Top 10 jerky items (meat and meatless)–SPINscan natural channel. 52 weeks ending Feb. 24, 2007. The category is $8.3 million. There are three vegetarian jerkys among the top 10. Tofurky Jurky Original is the #2 seller and Tofurky Jurky Peppered is #7. The other vegetarian brand (#6 seller) is Primal Strips Seitan Teriyaki.

(13) Tofurky "foot long" veggie dogs: 5 features, incl. organic tofu based. (14) "Open mouth, insert foot."

(15-17) Turtle Island tempeh: Five features.

(18-22) Happy Tofurky Day: Five features.

(23-35) Glossy color sell sheets, printed on both sides, with the following titles: (23-24) Happy Tofurky Day! (25-26) Brave New Tempeh. (27-28) Tofurky Jurkey. (29-30) Frankly speaking Tofurky Franks & Links are the best! (31-32) There's 3 big new dogs in the house. (33-34) Go beyond the bun: Introducing Tofurky 'foot long' veggie dogs. (35-36) Tofurky deli slices: New look. Other Turtle Island glossy color sell sheets. Address: Founder and President, Turtle Island Foods, P.O. Box 176, Hood River, Oregon 97031.

3407. Brown, Allan; Brown, Susan. 2007. Re: Photographs of making tempeh at McDonalds Corners, Ontario, Canada. Letter (e-mail) to William Shurtleff at Soyinfo Center, March 29-30. 14 p.

• ***Summary:*** Each of these color digital photos is accompanied by a caption or explanation. In chronological they are: 2005 summer–Allan and son Casey Brown cranking a wooden grain cleaner / winnower by hand. They soon motorized it.

2005 June–A color poster (see next page) celebrating Noble Bean's 25th anniversary of making tempeh commercially at R.R. #1, McDonalds Corners, ON K0G 1M0 Canada. Susan and Allan founded the company that June, having previously lived with Farm folks (and made tempeh) in Wisconsin, Tennessee, and Lanark, Ontario, Canada. To celebrate the occasion, Allan writes (March 2007): "We did have a toast and a large feeling of accomplishment. We advertised and ran stories in 3 mags [magazines] that get out all over Ontario... Then we ate some chocolate and had a distinct lightness of being experience."

2005 summer–Rosemary Kotze, a neighbor, with the wooden grain cleaner.

2006 Jan/Feb.–Noble Bean headquarters in the snow.

2006 spring–Susan and Allan Brown, pioneer tempeh makers in Canada, standing together, his arm around her shoulder, in their tempeh shop. Caption: "The boss and her assistant."

2006 spring–Susan Brown carrying a tray of burger size tempeh to incubator; each plastic bag makes nine 3 x 3-inch burgers (see previous page).

2006 spring–Jake Dixon cranking cooked soybeans out of the kettle with a cool custom colander (under sheet of stainless steel that is used as a ramp between kettle and centrifuge).

2007 Jan.–Jake Dixon cleaning the centrifuge.

2007 March 18–Noble Bean's tempeh products displayed on a table at Manger Santé Montreal. Note recent Kosher certification symbol OVH (Ottawa). Address: Founders, Noble Bean, R.R. #1, McDonalds Corners, ON K0G 1M0 Canada. Phone: 613-278-2305.

3408. Sullivan, Cheryl L.; Nash, Marilyn. 2007. Soy on the menu: Recipes for foodservice. Champaign-Urbana, Illinois: Illinois Center for Soy Foods. 52 p. Illust. No index. 26 cm. Series: Soy in the American Kitchen.
• ***Summary:*** This book has a creative format: (1) An outer color cover folds over the white spiral binding. (2) The pages are spiral bound across the top. (3) The bottom unfolds like a gusset so the book stands up by itself on a table with the pages angles slightly back on a table. (4) A CD-ROM comes with the book. Remarkably, the whole package sells for only $3.00!

Contents: Bringing soy foods to the American table: Soy in foodservice, why choose soy?, soy foods, vegetarian and vegan recipes [in this book], recipe information, nutrient information, acknowledgements. Recipes: Appetizers. Breakfast. Breads. Salads. Soups. Side dishes. Main dishes. Desserts.

The recipes in this book use: Soy flour, soymilk, tofu, textured vegetable protein / TVP [texture soy flour], edamame, black soybeans, soy analogs [meat and dairy analogs].

Sidebars include: Biodiesel (p. 10). Research shows kids like soy in school lunches (p. 11). Uncommon soy foods: Tempeh, miso, okara, natto. Are you soy savvy?: Why is soy flour added to baked goods? (p. 14) U.S. soybean production, yield, exports, and domestic usage (1979 vs. 2004) (p. 16). Industrial uses of soybeans: Soy candles, ink, biodiesel, soy cleaners, waterproofing sealants, soy silk (fabric). Are you soy savvy? Edamame (p. 19). INTSOY (p. 22). NSRL (p. 24). What is the soybean checkoff? (p. 27). WISHH initiative for soy in human health (p. 29, 30). Illinois Soybean Association (p. 34). What is okara? Why should you shake up a carton of soymilk? (p. 39). Make your own tofu (p. 47). Address: 1. M.A., R.D., Research Dietitian; 2. Ph.D., Project coordinator. Both: 170 National Soybean Research Center, 1101 W. Peabody Dr., Urbana, Illinois 61801. Phone: (217) 244-1706 or www.soyfoodsillinois.uiuc.edu.

3409. **Product Name:** Tempeh.
Manufacturer's Name: Henrietta Vlugter
Manufacturer's Address: Greyton, 150 km East of Capetown, South Africa.
Date of Introduction: 2007. July.
Ingredients: Soybeans, water, starter culture.
Wt/Vol., Packaging, Price: 600 gm in perforated Self-sealing bag.
How Stored: Frozen.
New Product–Documentation: Talk with (phone call from) Henriette Vlugter [Dutch] in South Africa. She started selling her soy tempeh commercially about 3 weeks ago. She still has no label. She uses starter from Belgium. She teaches a yoga class in her village and she is involved in this project with her yoga teacher, to help him make a living.

3410. Pirello, Christina. 2007. Cooking the whole foods way: Your complete, everyday guide to healthy, delicious eating with 500 vegan recipes, menus, techniques, meal planning, buying tips, wit & wisdom. Revised and updated edition. New York, NY: Home Books. xiii + 354 p. Aug. Illust. (by Christina Pirello). Index. 24 cm. [38 ref]
• ***Summary:*** On the cover: "Includes 80 new recipes. Revised and updated–Now 100% vegan." This is basically a macrobiotic cookbook with 500 vegan recipes. One long chapter is titled "Tasty tofu, tempeh and seitan" (p. 115-40). Other soy-related recipes include: Basic miso soup (p. 35). Miso millet stew (p. 64). Minute miso soup (p. 82). Black soybean relish (p. 101; as black soybeans are simmered, they create their own gravy). Baked beans with miso & apple butter (p. 109). Tofu cheese (with miso, p. 118-19). Lemon miso sauce (p. 276). Also contains recipes for amasake, azuki beans, mochi, and sea vegetables.

The recipe for "Tofu cheese" (p. 118-19) is very creative and delicious.

About the author: A brief biography is on the rear cover; a color portrait photo is on the front cover. Address: Emmy Award-winning host of national public television's *Christina Cooks*.

3411. Berne, Amanda. 2007. Meaty alternatives: The accidental vegetarian. Chefs find winning ways to cook seitan, tempeh and tofu. *San Francisco Chronicle.* Sept. 19. p. F1, F4-F5. Food section.
• ***Summary:*** Many Bay Area restaurants cater to vegetarians and vegans. "It's all about fake meat." While tofu has become well known, chefs are now experimenting with tempeh and seitan. Contains many tempeh and seitan recipes. Address: Chronicle staff writer.

3412. **Product Name:** Artie's Tempeh Burgers, and Artie's Fresh Organic Soy Tempeh.
Manufacturer's Name: Artomoro Inc.
Manufacturer's Address: 125 N.W. 23rd Ave. #17, Gainesville, FL 32601. Phone: 352-226-5561.
Date of Introduction: 2007. September.
Ingredients: Organic soybeans, water, Rhizopus oligosporus.
Wt/Vol., Packaging, Price: Frozen: Burgers: 4 x 3 oz burgers per pack; Not vacuum packed. Tempeh: 1 lb retail.
New Product–Documentation: Talk with Sam Guy. 2008. Dec. 29. His son is Art and the tempeh business was Art's idea. The tempeh burgers were introduced in Sept. 2007 and the retail tempeh in Oct. 2007, one month later. His son delivers his tempeh locally on a bicycle–which has attracted media attention. The business provides detailed nutritional and microbiological info on its product; this as made it possible to attract large customers; the company has about 80 customers, big and small. Their tempeh is frozen but not pasteurized. See www.artiestempeh.blogspot.com. On this website is a list of "Some of the fine grocery stores that are selling Artie's Tempeh." Many nice recipes are given (each with a color photo) on the website.

3413. Dorff, Erik. 2007. The soybean, agriculture's jack-of-all-trades, is gaining ground across Canada (Web article). http://www.statcan.gc.ca/ pub/ 96-325-x/ 2007000/ article/10369-eng.pdf. 14 p. Oct. 26. Printed 28 Jan. 2010. [7 ref]
• ***Summary:*** An outstanding overview and description of the current status of soybeans in Canada.

Contents: Introduction. Development of the soybean sector in Canada. Growth in soybean area across the country. The soybean–an international super-crop. Soybean dollars make sense to farmers. One crop, many uses. Food for human consumption. Animal feed. Industrial products. Soybean not a "has-bean" crop in Canada. The gift of the bean (a brief early history of the soybean in the USA and Canada).

Figures: (1) Gains in soybean area reflect crop development efforts (1951-2006; 000 hectares). (2) One crop many uses. Diagram showing uses as: Food for human consumption, animal feed, industrial products. (3) Bred in Canada: soybeans of prominence. AC Proteus, Toki (for tofu), Nattawa (for natto), Maple Arrow (expanded soybean range out of southern Ontario), Maple Presto (the fastest maturing soybean). (4) Traditional soy foods: a brief guide (with a description of each). Edamame, miso, natto, soy sauce, soy milk, tempeh, tofu.

Tables: (1) Census of agriculture tracks growth in soybean area. Gives the area planted in Canada, Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, and Alberta in the census years of 1976, 1981, 1986, 1991, 1996, 2001, and 2006. Soybeans were planted in each of these provinces in the three most recent census years. (2) Top 10 soybean producing nations (Average 2000 to 2005): After the USA, Brazil, and Argentina, China is 4th, India 5th, Paraguay 6th, Canada 7th, Bolivia 8th, Indonesia 9th. and Italy 10th. (3) Average soybean composition. Columns: Characteristic, oil, feed and meal beans, soy milk / tofu soybeans. For the latter: 100 seeds should weigh more than 20 gm. Colour very light with clear hilum, oil content 17-19%, protein content 44-47%, soluble sugar content 11-13%, insoluble sugar content 21-25%, minerals 5%. (4) Nutritional comparisons: Tofu and soy milk with ground beef and cow's milk.

Maps: (1) Soybeans in Canada (3 maps on one page). Map A shows that quite a bit of Quebec's soybean acreage lies south of the Saint Lawrence River, in the region named "Southern Quebec" (which includes the Eastern Townships at its southernmost area–its south-western end).

"Until the mid-1970s, soybeans were restricted by climate primarily to southern Ontario. Intensive breeding programs have since opened up more widespread growing possibilities across Canada for this incredibly versatile crop: The 1.2 million hectares of soybeans reported on the Census of Agriculture in 2006 marked a near eightfold increase in area since 1976, the year the ground-breaking varieties that perform well in Canada's shorter growing season were introduced" (p. 1).

"For years, soybeans were being grown in Canada but it wasn't until the Second World War that Statistics Canada began to collect data showing the significance of the soybean crop, with 4,400 hectares being reported in 1941. In fact, one year later the area had jumped nearly fourfold, to 17,000 hectares. In 1943 a program aimed at actively breeding soybeans suitable for southern Ontario was initiated.

"During the Second World War, North American manufacturers used oil from soybeans not only as a food but also to produce a wide number of industrial products including glycerine for the manufacture of nitroglycerine used for explosives and ammunition.

"By 1951, 62,967 hectares had been planted with soybeans (Figure 1), but they were still mostly confined to southern Ontario, the region with the longest and warmest growing season in Canada" (p. 2).

"It wasn't until varieties with earlier maturity and

improved tolerance of cooler climates were successfully developed–the 'Maple' series of soybean cultivars–that significant soybean production was pushed beyond southern Ontario. The 1976 release of the Maple Arrow variety in particular is credited with expanding the range of soybean production into eastern Ontario (Table 1)."

The "growth between 2001 and 2006 was particularly notable in the Prairie provinces, with Manitoba's soybean area increasing sevenfold to over 141,869 hectares and its more western neighbours, Saskatchewan and Alberta, beginning to actively pursue soybean production. These gains in area were the payoff from research aimed at finding and breeding soybean varieties suited to the Prairies as well as from crop promotion and market development" (p. 5).

"In the 2006 calendar year, farm cash receipts from soybeans amounted to $680 million in Canada, making it the fifth most valuable field crop, trailing canola ($2.5 billion), wheat ($1.8 billion excluding durum), potatoes ($899 million) and corn ($753 million). In Ontario, where it was also the most planted crop, it was the top crop in terms of farm cash receipts, at $547 million, eclipsing the receipts from corn ($449 million) and wheat ($275 million)" (p. 6).

"International trade contributed to the value of soybean receipts. Preliminary figures place soybean exports at over 40% (1.5 million tonnes) of the soybeans grown in Canada in the 2006 crop year (3.5 million tonnes).

"Of the four top buyers in 2006, Japan led the list, importing $138 million in Canadian soybeans, followed by Malaysia ($52 million), the Netherlands ($49 million) and Iran ($43 million). At the same time, Canada imported about 302,000 tonnes of soybeans valued at approximately $81 million, 99% of which came from the United States" (p. 7). Address: Statistics Canada.

3414. *SoyaScan Notes.* 2007. Chronology of major soy-related events and trends during 2007 (Overview). Dec. 31. Compiled by William Shurtleff of Soyinfo Center.
• ***Summary:*** Jan. 1–Soyfoods Center changes its name to Soyinfo Center.

Feb.–The Soy Connection for the Food Industry (Vol. 1, No. 1) starts to be published by United Soybean Board as a free e-newsletter. The subject of the first issue is Qualisoy soy oil.

March 6–8 International Soy Utilization conference in Bangkok, Thailand. It is organized by: The Institute of Nutrition, Mahidol University (INMU), ASA International Marketing (ASA IM), and the Soy Food Forum Southeast Asia (SFF).

April 4–Organizations listed in the Soya & Oilseed Bluebook are invited and enabled to update their own listings online. The update listing will appear as soon as the Bluebook editors review it and in the print edition in the fall. The Bluebook will continue to be printed as a bound book. Preferred customers will receive a free copy. Qualified people or organizations in the industry who request a copy pay shipping and handling. Those outside the industry must pay for shipping and handling plus a $95 fee.

June 11–The Hain Celestial Group completes its acquisition of the tofu and meat-alternatives business of WhiteWave Foods Co., a subsidiary of Dean Foods. The product line includes grilled and baked tofu, seitan, tempeh, etc. These products are expected to complement Hain Celestial's existing meat alternatives under the Yves brand in Canada and the United States. The White Wave tofu business generated sales of approximately $8 million in the last financial year.

July 11–Solae announces that it has completed its purchase of Cargill's Prolisse line of isolated soy proteins (ISP; soy protein isolates), including the patented membrane technology for processing ISP.

Aug. 16–CPM (Waterloo, Iowa) acquires Crown Iron Works (Minneapolis, Minnesota). CPM is owned by Golbert Global, a private equity group. The acquisition doubles the size of CPM.

Aug. 7–SunOpta (incl. SunRich), headquartered in Canada, announces that it has acquired a soymilk plant in Heuvelton, New York, from ProSoya Corporation (Ottawa, Ontario). Allan Routh is president of the SunOpta Grains and Foods Group.

Sept. 11–Hain Celestial Group announces it will delay filing its annual report with the U.S. Securities and Exchange Commission (SEC) pending a review of its practices in granting stock options. Thus, the annual report was received by shareholders in April 2008, rather than the typical Nov. 2007.

3415. Turtle Island Foods. 2007. Cirque du Tofurky (Painted steel lunch box) (Memorabilia). P.O. Box 176, Hood River, Oregon 97031. Dec. 7 by 8¼ by 4 inches deep.
• ***Summary:*** This colorful sheet metal lunch box, with a sturdy plastic handle, is 7 by 8¼ inches by 3.75 inches in deep. On the lid is the embossed (raised), a happy-looking, colorful "Wild" Tofurky" symbol happily dancing in a circus ring. On the four sides are color photos of Tofurky product labels, each with wheels like cars on a train, being pulled by a locomotive. On the bottom is a circus tent. On it, in big letters, are the words "Meatless. Gourmet. Delicious." A "Wild Tofurky" symbol is walking overhead on a tightrope, while three others dance on the ground.

How will Turtle Island use this? Seth Tibbott (president) writes on 24 Jan. 2008. (1) Give to buyers. (2) Give to customers who send in 5 UPC codes, etc. (3) My main idea though is to sell to the public through perhaps a "Tofurky Foundation" that would send all of the proceeds to worthy causes and non profits around the world. We bought 5,000 lunchboxes and I have 3,000 in my barn now in Trout Lake. Plan is to take orders here and have my son Luke and his other teenage friends do order fulfillment and possibly run

that side of things including having input on where the money goes. Important to introduce kids to non profits which along with English Majors are the two best things about America. Address: Hood River, Oregon.

3416. Tamang, Jyoti Prakash. 2007. Fermented foods for human life. In: Ashok K. Chauhan, A. Varma, Harsha Kharkwal, eds. 2007. Microbes for Human Life. New Delhi, India: I.K. International Publishing House. And: Tunbridge Wells, Kent, England: Anshan. xvi + 678 p. See p. 73-87. 25 cm. [77 ref. Eng]
• ***Summary:*** Contents: Abstract. Key-words. Introduction. 1. Enrichment of diet. 2. Bio-preservation. 3. Bio-enrichment of nutritional value. 4. Degradation of undesirable compounds. 5. Improvement of lactose metabolism (for people suffering from lactose intolerance or malabsorption). 6. Probiotic function. 7. Production of enzymes (which break down / hydrolyze complex molecules, making them easier to digest). 8. Antimicrobial properties (help preserve foods and destroy pathogens). 9. Anticarcinogenic properties. 10. Reduction in serum cholesterol (from consumption of fermented milks). 11. Therapeutic values (koumiss, kvass). Conclusion.

This article is primarily about the benefits of fermentation and fermented foods, as well as about functional foods and probiotics.

The following fermented soyfoods are mentioned: kinema, natto, tempe [tempeh].

Note: Another list of the primary benefits of fermented soyfoods from a PowerPoint presentation by Jyoti Tamang in 2010 is as follows: 1. Improvement of flavour and aroma. 2. Bio-enrichment of nutritional value (vitamins). 3. Improved digestibility. 4. Degradation of anti-nutritive factors. 5. Improvement in bio-availability of minerals. 6. Production of enzymes. 7. Low-fat and low-cholesterol food. 8. Anti-allergy. 9. Antioxidant activities (anticarcinogenic properties). 10. Therapeutic values: prevention of osteoporosis, heart disease. 11. Low-cost high plant protein food. Address: Food Microbiology Lab., Sikkim Government College, Gangtok, Sikkim 737 102, India.

3417. Berley, Peter; Singer, Zoe. 2007. The flexitarian table: Inspired, flexible meals for vegetarians, meat lovers, and everyone in between. Boston, Massachusetts: Houghton Mifflin. viii + 342 p. Illust. (color photos by Quentin Bacon). 25 cm.
• ***Summary:*** A "flexitarian" (noun) is: "1. A person who is mainly a vegetarian but who occasionally eats fish or meat. 2. Someone who is not a vegetarian but enjoys meatless meals."

Provides menus and recipes for the "flexitarian," or "flexible vegetarian" family, offering ideas for how to prepare vegetarian and meat versions of entrees simultaneously without extra effort and menus based on seasonally available foods (Publishers blurb).

Contents: Introduction: What's a flexitarian? How to use this book. About the ingredients. Poultry. Meat. Fish and Seafood Vegetables. Tofu, tempeh, and seitan. Dairy. Eggs. Beans. Seeds and nuts. Spices. Cooking with the Seasons: Chapter 1: Spring menus. Chapter 2: Summer menus. Chapter 3: Fall menus. Chapter 4: Winter menus.

Ingredients include miso, tempeh, tofu, sea vegetables, and seitan.

Note: This is the earliest book seen (June 2010) with the word "Flexitarian" in the title. Address: Author and former chef of the all-vegan Angelica Kitchen in New York City.

3418. Blereau, Jude. 2007. Wholefood: heal–nourish–delight. Philadelphia, Pennsylvania: Running Press. 332 p. Illust. Index. 23 x 19 cm. [8 ref]
• ***Summary:*** This cookbook is not vegetarian. Vegan recipes are so labeled. One chapter, titled "Soy" (p. 92-110) is divided into two parts: Tofu and tempeh The index contains 18 entries for tofu, 14 for tempeh, 3 each for miso and tamari, 2 each for miso soup, soy beans, 2 and soy milk, and 1 each for soy flour, teriyaki marinade, and textured vegetable protein.

"Jude Blereau is a natural foods chef, food coach, and cooking teacher who has been involved with the organic and wholefoods industry for more than 15 years. She first became involved in the natural food industry while living in the U.S. in the late 1980s. In 1997, Jude co-founded The Earth Market, a much loved wholefood store and cafe; in Perth, Western Australia. Her focus is on helping people learn about good food-what it truly is, where to get it, how to use it-and to give them the tools and information to make healthy eating a part of their everyday lives. Blereau lives in Australia." From publisher's description. Address: Natural Foods Chef, Australia.

3419. Clark, Emily. 2007. Tempting tempeh. Doncaster East, Victoria, Australia: Aduki Independent Press. 48 p. Illust. (photos by Rhonda Bonnici). *
• ***Summary:*** A tempeh cookbook, with 20 vegan / vegetarian tempeh recipes, color photos, and a glossary.

3420. Freedman, Rory; Barnouin, Kim. 2007. Skinny bitch in the kitch: kick-ass recipes for hungry girls who want to stop cooking crap (and start looking hot!). Philadelphia, Pennsylvania: Running Press. 192 p. Illust. Index. 20 cm.
• ***Summary:*** This vegan cookbook contains over 100 recipes. Both authors are women and both previously wrote the best-selling manifesto *Skinny Bitch,* a foul-mouthed book that "exposed the horrors of the food industry while inspiring people to eat well and enjoy food."

The index contains 26 entries for tofu, and 1 each for seitan, tempeh, and textured soy protein.

3421. Ismiatun, -. 2007. Kudapan berbahan tempe. Cet. 2

[Tempeh snacks. 2nd ed.]. Surabaya, Indonesia: Tiara Aksa. viii + 40 p. Illust. (some color). 21 cm. [Ind]*

3422. Moskowitz, Isa Chandra; Romero, Terry Hope. 2007. Veganomicon: the ultimate vegan cookbook. New York, NY: Marlowe & Co. Distributed by Publishers Group West. xvii + 298 p. + [16] unnumbered pages of plates. Illust. (some color). 26 cm
• ***Summary:*** A hefty collection of 250 recipes, with a good glossary. Both authors are young women. One section is titled "Tofu, tempeh, and seitan" (p. 125-33) with these recipes: Chile cornmeal crusted tofu. Basic broiled tofu. Tangerine baked tofu. Curried tofu. Baked BBQ tofu. Marinated Italian tofu. Marinated Asian tofu. Hot sauce glazed tempeh. Smoky grilled tempeh. Simple seitan [homemade]. Seitan cutlets. Chickpea cutlets.

Tempeh is mentioned on 21 pages, tofu on 21, seitan on 20, miso on 7, and edamame on 1 page.

Five icons are used with the appropriate recipes in this book: (1) Soy-free. (2) Gluten free. (3) Low fat / reduced fat. (4) Under 45 minutes. (5) Supermarket friendly. Address: Brooklyn & Queens, New York.

3423. Oliveira, Karla. 2007. Tassajara cookbook: lunches, picnics & appetizers. Layton, Utah: Gibbs Smith. 224 p. Illust. (color). Index. 26 cm. [1 ref]
• ***Summary:*** From the Tassajara Zen Mountain Center, a beautiful Buddhist monastery north of the Carmel Valley, in California's Ventana Wilderness of Los Padres National Forest in the Santa Lucia Mountains. Full-page color photos accompany many recipes. On page 15 is a color photo of the beautiful Tassajara kitchen building with natural stone walls 18 inches thick and entire trees for rafters.

Soy related recipes: Artichoke Walnut Spread (with ½ cup firm silken tofu, or ricotta cheese, p. 25). Creamy tempeh [spread] with garlic and dill (p. 62). Tempeh spread with capers and onions (p. 66). Western-style shira-ae (with 6 ounces soft tofu, mashed, p. 65). Creamy tofu dip (p. 66). Pâté tempeh (p. 76).

One chapter is titled "Tofu, tempeh & egg salad sandwich fillings" (p. 85-95): Herb-crusted tofu. Happy tuna salad (with tempeh). Eggless egg salad (with tofu). No egg salad (with tofu). Tofu salad sandwich spread. Mexican tempeh salad. Tofu mayonnaise. Tempeh salad (p. 94).

Tofu "bits" in Kosho's secret tenzo sauce (p. 95). Miso sauce (p. 109).

Another chapter is "Marinades for tofu, tempeh & vegetables" (p. 117-26; speaks of a "block" of tofu): Orange balsamic marinated tofu. The Tassajara marinated tofu. Tofu teriyaki. Tofu marinated with parsley and olive oil. Honey-mustard tofu. Hoisin marinade (with soy sauce).

Edamame salad (p. 132). Cabbage salad with miso "floating cloud" dressing (p. 140). Japanese marinated salad with diced tofu (p. 141).

In the Index is a long entry for "Vegan cookies" and another for "Vegan spreads." Address: M.S., R.D., Nutritionist and professional chef, San Francisco Bay Area.

3424. Reinfeld, Mark; Rinaldi, Bo. 2007. Vegan fusion world cuisine: extraordinary recipes & timeless wisdom from the celebrated Blossoming Lotus restaurants. New York, NY: Beaufort Books. 243 p. Foreword by Dr. Jane Goodall. Illust. (color photos). Index. 26 cm.
• ***Summary:*** A beautiful, inspirational book. Chapter 8 is titled "Tempeh, tofu & seitan" (p. 114-33). The index contains 28 entries for tofu, 13 for tempeh, 4 for seitan, 3 for soymilk, and 2 for miso.

Includes a resource guide, a good glossary with entries for miso, nama shoyu, seitan, shoyu, soy milk, tamari, tempeh, textured vegetable protein, and tofu.

Note: Unfortunately the quotation near the beginning, supposedly by Albert Einstein, is a mish-mash by various wise writers including Albert Schweitzer. Address: 1. Founding chef, Blossoming Lotus Restaurant (Kaua'i, Hawaii), and author; 2. Author and teacher. Both: Kaua'i, Hawaii.

3425. Yeager, Selene. 2007. The doctor's book of food remedies: the latest findings on the power of food to treat and prevent health problems–from aging and diabetes to ulcers and yeast infections. Fully revised and updated. [Emmaus, Pennsylvania]: Rodale Inc. Distributed to the trade by Macmillan. xii + 707 p. Index. 24 cm. 1st ed. 1998.
• ***Summary:*** The chapter titled "Soy foods: Help for weight loss" (p. 579-83) explains that in the late 1990s the media strongly soy, made it into a sort of miracle food or cure, and rode the wave up, then after about 2005 when scientists found that soy was not a miracle food, the media decided that "The party's over," and they rode the wave down. In 2005 soy foods faced big setbacks, when a U.S. government panel said there wasn't clear evidence that soy could guard against heart disease, ease menopause, or protect bones from osteoporosis. "In response the National Institutes of Health (NIH) said it would stop paying for new soy studies." That fall, the soyfoods industry withdrew a petition that asked the FDA to permit food labels that claim that soy protein helps prevent cancer.

This chapter explains: "But flash forward to 2006, where one dour headline–'Soyonara–tells the sad tale. Has this promised [by the media] superfood become a has-bean?" Maybe not."

It proceeds to give a fair assessment of what current science says can and cannot be expected of soyfoods. Cannot (by itself): Significantly reduce cholesterol. Protect against breast or prostate cancer. Build bones or reduce osteoporosis. Cool hot flashes or reduce menopause symptoms. This is followed by a long list of its many well-known health benefits. "That's good news because soy seems to be here to

stay." It has gone mainstream, and sales of soy foods in the United States rose dramatically from $300 million in 1992 to $3.9 billion by 2004–a 13-fold increase in 13 years.

The section titled "The joy of soy" gives brief definitions of some of the most popular soyfoods: Edamame, soy nuts, meat substitutes [sic, alternatives], soy flour (made from roasted, ground soybeans), soy milk, tempeh, and texturized soy protein.

A sidebar titled "Doctor's top tip" recommends eating soy (such as edamame, tofu, soy nuts, and some soy burgers) in place of foods high in animal fats. The head of the American Heart Association's nutrition committee reminds us: "Heart disease is a major problem–using soy protein instead of animal protein is still a win."

Dr. Mark Messina, a prominent soy researcher, says there are many reasons to add soy to your diet from just a basic nutritional point of view: (1) Soyfoods such as tofu or tempeh are high quality, low-cost, versatile sources of protein. (2) A half cup of tofu, curded with calcium sulfate, can provide more than 25% of the Daily Value (DV), plus a significant amount of iron. (3) Soyfoods contain little of the artery clogging saturated fats found in meat and many dairy products.

Contains recipes for: Soy fruit smoothie (with vanilla-flavored soy beverage, p. 583). Mocha Tofu Pudding (with 2 packages {10½ ounces each} silken tofu and 2/3 cop packed light brown sugar).

The index contains 34 entries for soy, 13 for tofu, 4 for tempeh, 3 entries for miso, 2 entries each for edamame and for soy milk, 1 entry each for soy nuts soy yogurt, and textured soy protein.

Note: This book is not vegetarian.

3426. Tibbott, Seth. 2008. Update on Tofurky and Turtle Island (Interview). *SoyaScan Notes.* Jan. 17. Conducted by William Shurtleff of Soyinfo Center.

• ***Summary:*** In about 1998 Turtle Island changed from being mainly a tempeh company to being mainly a meat alternatives company; that year sales of Tofurky-brand products passed sales of tempeh and tempeh products. Today, tempeh products (including two burgers, which are meat alternatives) account for only 7.2% of sales. In 2002 tempeh and products accounted for 18% of company sales.

Seth and his step-son, Jamie (who has a PhD and is very bright) are working on an innovative new process for making tempeh. Seth believes that the flavor and texture of the finished product maybe slightly improved. Seth still considers homemade tempeh, with its magical snowy white mycelium on top, to be the very best. Vacuum-packing gives it a slight bitterness, which degrades the quality about 30%. Freezing is much better, as it lowers the quality less than 10%.

Tempeh is making a comeback nationwide. Sales were up 11% in 2007 compared with the 52 weeks before Dec. 2007. Seth can think of five possible reasons for this. Tempeh is: (1) a whole-grain food; (2) A fermented food, with the many benefits of fermentation; (3) A vegan meat alternative at a time when veganism is growing in the USA; (4) A low sodium food–all meats are high in sodium; (5) Gluten free.

In Dec. 2007 Tofurky got a great deal of free publicity. Citigroup, which lost about $10 billion in the 4th quarter of 2007, ran a very nice, positive 2-page color ad featuring "'tofurkey' tofu" as the center of a family's Thanksgiving meal. It appeared at the very front of magazines such as *People, Time, Newsweek. Gourmet, The New Yorker,* etc. Note that Citigroup carefully misspelled and lowercased "tofurkey."

In 2007 Turtle Island sold 275,634 Tofurky Roasts, up 37% from the 201,000 sold in 2006. This was the largest percentage increase since 1999 and is a key indicator of vegetarianism in America. In addition, Turtle Island was No. 2,240 in the INC, 5,000 fastest growing small, independently held companies in the USA and the 19th fastest growing independent food company. Seth's company has grown 159% over the last four years.

Seth is always surprised and disappointed at the disconnect between environmental groups and vegetarianism. Such groups almost always serve plenty of meat at their various gatherings–as if to say that they are just regular American folks out to save the environment.

Steve Demos recently launched Goodbelly, an organic fruit juice containing a patented probiotic culture; he has apparently started a new company. Address: President and Founder, Turtle Island Foods, Inc., P.O. Box 176, Hood River, Oregon 97031. Phone: (503) 386-7766.

3427. **Product Name:** Tempeh [Spicy Veggie, Organic Five Grain, Organic Soy].
Manufacturer's Name: Turtle Island Foods, Inc.
Manufacturer's Address: P.O. Box 176, 601 Industrial Ave., Hood River, OR 97031. Phone: 1-888-TOFURKY (863-8759).
Date of Introduction: 2008. January.
Ingredients: Spicy Veggie: Organic soybeans, water, dehydrated red peppers, dehydrated organic onions, habanero peppers, organic apple cider vinegar, starter culture (Rhizopus oligosporus). Soybeans certified organic by Oregon Tilth.
Wt/Vol., Packaging, Price: 8 oz. paperboard box.
How Stored: Refrigerated or frozen.
New Product–Documentation: Labels (boxes) sent by Seth Tibbott. 2008. Jan. 22. This is a very attractive and well-designed box / label. 5.5 by 4.25 by 1 inch deep. Full color. Front panel of Spicy Veggie shows tempeh slices and veggies wrapped in a burrito on a yellowish-beige plate. Text: "Made with organic soybeans. Family owned and independent since 1980. Gourmet, meatless, and delicious! Gluten free. Vegan. Keep refrigerated or frozen. Rear panel: Nutrition facts.

Ingredients. Recipe for Tempeh fajitas. Cookbook offer (*The Tempeh Cookbook,* by Dorothy Bates)." Note: This tempeh is packed in recycled paperboard cartons.

3428. Wulandari, Fitri. 2008. Indonesian tempeh makers struggle as soybean prices rise (News release). Feb. 4.
• ***Summary:*** "Jakarta (Reuters)–Indonesia's traditional soybean cake, known as tempeh, is a source of livelihood for millions of people, many of whom are now struggling to cope with spiraling soybean prices."

The soybean is a staple in Indonesia. Small tempeh makers are finding it difficult to pass on the higher cost of ingredients to their customers. So their own earnings are dropping.

The price of imported soybeans is now double what it was a year ago. In an effort to control these rising food prices, the Indonesian government announced on Friday that it would partially subsidize the price of soybeans for six months, paying about 13% of the imported price.

Nevertheless, the soaring prices of staple foods have sparked protests among producers, sellers and consumers who are also trying to cope with a rising prices of many basic foods, including cooking oil.

New statistics from Indonesia's Industry Ministry show that there are 92,400 household workshops or small factories that make soyfoods; 60% of these (55,440) make tempeh.

Indonesia uses 2 million tonnes (metric tons) of soybeans a year; 70% of these are imported from the United States, the world's leading soybean exporter.

Until the late 1990s, Indonesia depended almost entirely on domestically-grown soybeans to fill its needs. Then the International Monetary Fund instituted reforms in which the state procurement agency lost its monopoly; imported soybeans began to flood the market.

In 1992 production of soybeans in Indonesia reached its peak of 1.87 million tonnes; by 2007 it had decreased by 67.5% to 608,230 tonnes as a result of cheaper soybean imports, the higher quality of imported soybeans, lack of incentives for farmers, and poor, small-scale farming practices.

The government has tried to soften the impact of surging prices by discontinuing its 10% import duty on soybeans. However some believe that this change will only benefit importers, who will not necessarily pass the 10% they now save on to the food producers.

Some Indonesian's are learning to live without their favorite protein source–tempeh; others say they have no alternative because tempeh is much less expensive than chicken.

Today $1 = 9.285 rupiah.

3429. Shurtleff, William; Aoyagi, Akiko. 2008. Le livre du tofu: La source de protéines de l'avenir–dès maintenant! [The book of tofu: Protein source of the future–now! Translated from the English by Nathalie Tremblay]. Varennes, Quebec, Canada: Éditions AdA Inc. 430 p. Illust. by Akiko Aoyagi. Index. Feb. 28 cm. [53 ref. Fre]
• ***Summary:*** Contents: Preface. Acknowledgements. Part I. Tofu: Food for mankind. 1. Protein East and West. 2. Tofu as a food. 3. Getting started. Our favorite tofu recipes (lists about 80 recipe names for each of the different types of tofu, plus soymilk, yuba, whole soybeans, gô, okara, and curds; very favorites that are also quick and easy to prepare are preceded by an asterisk).

Part II. Cooking with tofu: Recipes from East and West (500 recipes). 4. Soybeans: History, cooking with whole dry soybeans, roasted soybeans (*iri-mame*), fresh green soybeans (*edamame*), kinako (roasted full-fat soy flour), soybean sprouts (*daizu no moyashi*), natto (sticky fermented whole soybeans, with "gossamer threads"), tempeh (fermented soybean cakes), Hamanatto and Daitokuji natto (raisin-like natto), modern western soybean foods (natural soy flour [full-fat], soy granules, defatted soy flour and grits, soy protein concentrates, soy protein isolates, spun protein fibers, textured vegetable protein (TVP), soy oil products). 5. Gô (a thick white puree of well-soaked uncooked soybeans). 6. Okara or Unohana. 7. Curds and whey. 8. Tofu (includes history, and preparatory techniques: Parboiling, draining, pressing {towel and fridge method, slanting press method, sliced tofu method}, squeezing, scrambling, reshaping, crumbling, grinding).

9. Deep-fried tofu: Thick agé or nama agé, ganmo or ganmodoki (incl. *hiryozu / hirosu*), agé or aburagé (incl. "Smoked tofu," p. 197). 10. Soymilk. 11. Kinugoshi ("*Kinu* means 'silk'; *kosu* means 'to strain'; well named, kinugoshi tofu has a texture so smooth that it seems to have been strained through silk"). 12. Grilled tofu. 13. Frozen and dried-frozen tofu. 14. Yuba (incl. many meat alternatives such as Yuba mock broiled eels, Buddha's chicken, Buddha's ham, sausage). 15. Tofu and yuba in China, Taiwan, and Korea (incl. Savory tofu {*wu-hsiang kan*}; see p. 258 for illustrations of many meat alternatives, incl. Buddha's fish, chicken, drumsticks, and duck, plus vegetarian liver and tripe, molded pig's head, and molded ham). 16. Special tofu.

Part III–Japanese farmhouse tofu: Making tofu for more and more people. 17. The quest. 18. Making community tofu. 19. The traditional craftsman. 20. Making tofu in the traditional way. Appendices: A. Tofu restaurants in Japan (many are vegetarian). B. Tofu shops in the West (Directory of 43 shops in the USA, 3 in Europe {Germany, Austria, Belgium, Denmark, Finland, France, Ireland, Italy, Netherlands, Portugal, Spain, Switzerland, UK, Wales}, and 3 in Latin America {Brazil, Colombia, El Salvador, Guatemala, Mexico}). C. People and institutions connected with tofu. D. Table of equivalents. Bibliography. Glossary. Index. About the authors (autobiographical sketches; a photo shows Shurtleff and Aoyagi, and gives their address as New-Age Foods Study Center, 278-28 Higashi Oizumi, Nerima-

ku, Tokyo, Japan 177). Sending tofu in the four directions.

Pudding recipes include: Rice pudding with gô and apple (p. 76, incl. 2 cups soymilk). Tofu chawan-mushi (p. 147; Steamed egg-vegetable custard with tofu). Tofu fruit whips (p. 148). Tofu rice pudding (p. 150, incl. 1 cup soymilk). Tofu custard pudding (p. 152). Soymilk custard pudding (p. 208). Brown rice pudding (p. 208, with 2 cups soymilk). Soymilk chawan-mushi (p. 209). Chawan-mushi with yuba (p. 249).

Dessert recipes include: Tofu whipped cream or yogurt (p. 148; resembles a pudding or parfait). Tofu ice cream (p. 149, with chilled tofu, honey, vanilla extract and salt). Banana-tofu milkshake (p. 149). Tofu cream cheese dessert balls (p. 149). Tofu icing (for cake, p. 149). Tofu cheesecake (p. 150). Tofu-pineapple sherbet (p. 151). Also: Soymilk yogurt (cultured, p. 205). Healthy banana milkshake (p. 206). On p. 160 is a recipe for "Mock tuna salad with deep fried tofu." Address: Soyinfo Center, P.O. Box 234, Lafayette, California 94549 USA. Phone: 925-283-2991.

3430. Welters, Sjon. 2008. Re: Soyfoods in western Europe. Letter to William Shurtleff at Soyinfo Center, March 24. 2 p. Handwritten.

• ***Summary:*** Sjon just returned from a trip to Europe (to visit parents and inlaws) where he collected some soyfoods labels. He "noticed a proliferation of soyfoods, especially of tofu products."

Rinatura is a brand he had not seen before. Also: Rinatura.de, and Rila. They sell tofu sterilized in a glass jar for 2.29 euros for 130 gm drained weight.

Some prices: Yakso Tempeh 1.95 euros for 350 gm. Viana Tempeh 3.49 euros for 200 gm. Viana tofu (nigari) 1.99 euros for 300 gm. Demeter tofu (nigari, calcium sulfate) 2.29 euros for 300 gm in Germany or 2.45 euros for 300 gm in the Netherlands. Provamel tofu (nigari, calcium sulfate) 1.99 euros for 400 gm in Germany or 2.20 euros for 400 gm in the Netherlands. These are both packaged 2 x 200 gm in one box. Taifun tofu (nigari) 1.49 euros for 225 gm in Germany. Taifun tofu (calcium sulfate) 1.99 euros for 400 gm in Germany. Taifun silken tofu (*seiden tofu,* nigari only) 2.59 euros for 400 gm in Germany.

Svadesha.de in Munich is another new name, yet apparently the oldest tofumaker in Germany.

Alpro and Provamel are all over with their soymilk.

3431. Johnson, Katherine Quimby. 2008. Fresh and full of beans: Vermont Soy. From the good earth. *Green Edible Mountains* No. 2. Winter. p. 18-21.

• ***Summary:*** About Vermont Soy, which makes four flavors of soy milk and a firm tofu in Hardwick, Vermont. Their products debuted in the summer of 2007 at the Hardwick and Waitsfield farmers markets. The company grew from the desire of co-owner Todd Pinkham to turn the tempeh he made at home into a commercial venture. Todd's partner is Andrew Meyer. With support and technical assistance from the Innovative Agricultural Initiative developed by the University of Vermont (UVM), about 6 farmers around the state (in Alburh, Highgate, Bridport, Orwell, Glover, and Hardwick) have begun growing food-grade soybeans organically. Extra-firm tofu, Vermont Soy's newest product, is curded with nigari. The soy plant in Hardwick is located next to Meyer's other venture, Vermont Natural Coatings; tofu is made there every Thursday. Tofu recipes are given for: Chinese noodle soup. Pumpkin pie.

Color photos show: (1) James Lewinsky, Sophia Smith, Andrew Meyer, and Todd Pinkham holding a Vermont Soy sign. For more: www.vermontsoy.com. (2) Bright yellow soaked soybeans in a large metal bowl. (3) A thermometer held above hot soymilk. (4) Yoshikawa Maruzen nigari, for curding tofu.

3432. Liu, KeShun. 2008. Food use of whole soybeans. In: Lawrence A. Johnson et al. eds. 2008. Soybeans: Chemistry, Production, Processing, and Utilization. Urbana, Illinois: AOCS Press. viii + 842 p. See p. 441-481. Chap. 14. [85 ref]

• ***Summary:*** Contents: Introduction. Non-fermented soyfoods: Soymilk (traditional soymilk, modern soymilk {techniques to reduce beany flavors, formulation and fortification, homogenization, thermal processing, and packaging}), tofu (preparation methods, factors involved in tofu-making {soybean varieties, storage and pretreatment, solids concentration, heating, type of coagulants, coagulant concentration, coagulation temperature, coagulation time, process automation, packaging}, varieties of tofu {silken tofu, regular and firm tofus, varieties of tofu products}), green vegetable soybeans, soybean sprouts, yuba, okara, roasted or cooked soybeans. Fermented soyfoods: Terms (Koji {fermentation, koji starter, inoculum}), fermented soy paste (preparation method {preparing rice koji, treating soybeans, mixing and mashing, fermenting, pasteurizing and packaging}, processing principles), soy sauce (preparation method {treating raw materials, koji making, brine fermentation, pressing, refining}, processing principles, chemical soy sauce), Japanese natto (preparation method, processing principles), Indonesia tempeh (processing method, processing principles), fermented soymilk, fermented tofu (preparation method, processing principles), soy nuggets (Chinese douchi, Japanese hamanatto). Conclusion.

Figures show: (1) Flowchart of a traditional Chinese method for making soymilk and tofu. (2) Photo of savory tofu dices. (3) Photo of soy sprouts. (4) Photo of yuba (soymilk film). (5) Photo of Chinese jiang and Japanese white and red miso. (6) Flow chart of a common method for making Japanese rice miso. (7) Photo of Japanese natto. (8) Flow chart of a traditional Indonesian method for making tempeh. (9) Photo of Chinese douchi (soy nuggets or fermented whole soybeans). Address: Research Chemist,

U.S. Dep. of Agriculture, Agricultural Research Service, Grain Chemistry and Utilization Lab., Aberdeen, Idaho 83210.

3433. Hogervorst, E.; Sadjimin, T.; Yesufu, A.; Kreager, P.; Rahardjo, T.B. 2008. High tofu intake is associated with worse memory in elderly Indonesian men and women. *Dementia and Geriatric Cognitive Disorders* 26(1):50-57. June. [28 ref]
• ***Summary:*** High consumption of tofu was associated with worse memory, while high consumption of tempeh was independently associated with better memory. Tempeh contains high levels of phytoestrogens, but (due to fermentation) also contains high folate levels which may exert protective effects. But some of the tofu was made using formaldehyde as a preservative. Address: 1. Dep. of Human Sciences, Brockington Building, Loughborough Univ., Loughborough LE11 3TU, UK; 2. Univ. of Respati Health Inst., Yogyakarta, Indonesia; 3. Oxford Institute of Ageing, Oxford, Somerville College Woodstock Road, Univ. of Oxford, Oxford, UK; 4. Center for Health Research, Univ. of Indonesia, Jakarta, Indonesia.

3434. Messina, Mark J. 2008. Update on research on the health benefits and risks of soy (Interview). *SoyaScan Notes.* July 26. Conducted by William Shurtleff of Soyinfo Center.
• ***Summary:*** Analysis of the strengths and weaknesses of the Harvard study showing an association between isoflavone intake and sperm counts, by Cavarro et al., and of the Indonesian study showing an association between tofu consumption (but not tempeh consumption) and mental function. In the latter study formaldehyde used as a preservative in tofu may have caused the problem.

Different basic types of scientific studies involving humans: Epidemiologic studies, case control, cross sectional, prospective (Framingham), intervention, in vitro, in vivo, food frequency questionnaires. Pilot studies vs. full studies.

Second incarnation of the Harvard study. Biological basis for the Harvard study. Effect more pronounced on overweight people. Four biggest weaknesses in the Harvard study: (1) Only looked at 15 different soyfoods but not at other foods consumed, nor at exercise. (2) Four quartiles based on soy intake did not show a dose response. (3) In the 2nd group soy intake was too low to be significant. (4) Ejaculate volume increased.

Another very important study by J.H. Mitchell in 2001 was titled "Effect of a phytoestrogen food supplement on reproductive health in normal males" (Clinical Science (London)). Involved 12 men

Vittorio Unfer has done important research and a case study on use of soy isoflavones to increase sperm count and fertility. A five-year study on endometrial hyperplasia is of long-term concern.

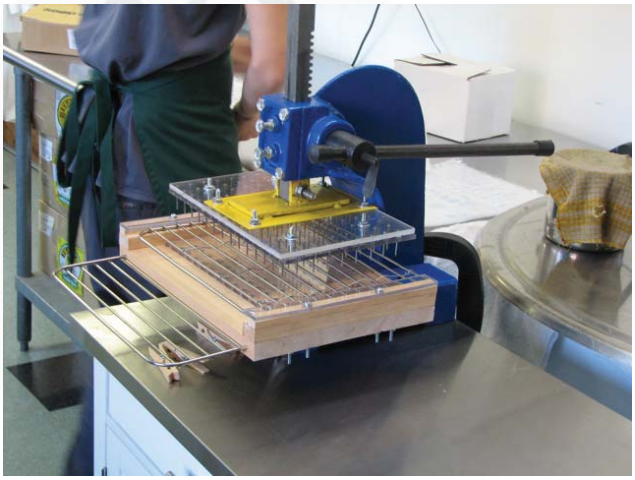
Feminizing effect is a big unknown. What kind of study could be designed. Two cups of Silk contains 50 mg of phytoestrogens.

Mark is organizing a soy symposium in Japan in November. At least 12 of the papers are good enough to be the subject of news coverage.

The scientific health evidence in favor of a vegetarian diet over a prudent diet that contains meat is no longer impressive. The evidence in favor of fruits and vegetables has grown weaker.

The evidence that soy is good for health is stronger now than 5-10 years ago, but in a more modest way. But the industry has gotten so small: ADM, Solait, and Silk ($400 million retail sales). Revival Soy has reformulated many of its products. Address: PhD, 439 Calhoun St., Port Townsend, Washington 98368. Phone: 360-379-9544.

3435. Brown, Allan; Brown, Susan. 2008. Re: Photographs of improved technology for making tempeh at McDonalds Corners, Ontario, Canada. Letter (e-mail) to William Shurtleff at Soyinfo Center, Aug. 21-22. 2 p.



• ***Summary:*** Each of these two color digital photos is accompanied by a caption or explanation. They are:
(1) Improved bag puncher. In the western world, many companies incubate their tempeh in perforated plastic bags. This bag puncher, designed and built by John Drozdowski, Allan's equipment engineer, was first used in Sept. 2007. Allan says: "The holes we punch in our bags are much bigger than the industry standard." He thinks every tempeh maker in North America "gets their bags or rolls in tube stock punched with really small perforations from the same supplier." That size of hole did not give us the growth and quality of tempeh we are used to."

(2) Improved soybean dehuller. Allan writes: Here is a picture of a dehuller we designed from that article you sent to us from *Soyfoods magazine* [Fiering, Steve. 1981. "Low technology soybean dehuller." *Soyfoods.* Winter. p. 52]. Wow! This knocks 2/3 of our time off of our old system of dehulling. Plus very little clean up and virtually no dust in

the air. Note dust collector sucks the hulls out of the falling split beans from the grinder and into the lower bag. Upper bag is for air release. We now can do this inside our shop instead on the cold, cold porch. Address: Founders, Noble Bean, R.R. #1, McDonalds Corners, ON K0G 1M0 Canada. Phone: 613-278-2305.

3436. Mintz, Sidney W. 2008. Fermented beans and western taste. In: Christine M. Du Bois, C.-B. Tan, and S.W. Mintz, eds. 2008. Urbana, Illinois: University of Illinois Press. viii + 337 p. See p. 56-73. [37 ref]
• ***Summary:*** Contents: Introduction. The distribution of fermented legumes in local food systems. The absence of fermented legumes from western food history. The future of fermented legumes in the West. Address: Johns Hopkins Univ., USA, emeritus professor of anthropology..

3437. Sidharta, Myra. 2008. Soyfoods in Indonesia. In: Christine M. Du Bois, C.-B. Tan, and S.W. Mintz, eds. 2008. Urbana, Illinois: University of Illinois Press. viii + 337 p. See p. 195-207. [17 ref]
• ***Summary:*** Contents: Introduction. The promotion of soybeans. The story of tofu in Indonesia. Indonesia's *Oncom*. *Tempe*–what is it, and how is it made? The story of *Tempe*. Other soyfoods. Soy products as a source of proteins. Conclusion. Notes. Address: University of Indonesia, lecturer of Faculty of Letters..

3438. Associated Press 2008. As prices for U.S. soybeans rise, so does hunger in Indonesia: The country relies on imports to produce staples such as tempeh and tofu. But with costs soaring, producers and vendors are cutting back or going out of business. *Los Angeles Times.* Nov. 2.
• ***Summary:*** Many of Indonesia's poor have long relied on tempeh and tofu and tasty, nutritious, low-cost sources of protein and basic food. But now the cost of the two foods has doubled, driven by the soaring price of soybeans imported from the United States.

The same problem is found in countries worldwide. During the past 10 years, Indonesia–a nation of 220 million people–went from growing more than half its soybeans, to importing 70% of its needs from the USA. This is the negative side of globalization. Address: Los Angeles Times.

3439. Sudiarno, Tarko. 2008. Rustono: King of tempeh in Kyoto. *Jakarta Post* (*The*) (*Indonesia*). Dec. 1. www.thejakartapost.com /news/2008/12/01 /rustono-king- tempeh-kyoto.html.
• ***Summary:*** A color photo shows Rustono looking very happy and standing next to a tempeh making machine that he ordered from Bantul, Yogyakarta. Rustono, age 40 was born in Purwodadi, Central Java, Indonesia. He now lives in a Japanese village about an hour's drive from, Kyoto, Japan, with his wife and their two children. He likes living there, and finds the people friendly, just like villagers in Java.

Previously a bellboy for a star-rated hotel in Yogyakarta, he now has about 350 tempeh customers in Japan. One winter, in the snow, he and his wife built their own tempeh factory, 4 by 8 meters. Some 60% of his customers are Japanese. Address: Staff writer, Japan.

3440. **Product Name:** [Natural Way Tempeh].
Foreign Name: Natural Way Tempeh (Marinovany, Party, Uzeny).
Manufacturer's Name: Vyrobce: Oldrich Plsek.
Manufacturer's Address: Sazovice 185, 763 01 Myslocovice, CR [Czech Republic]. Phone: 577 663 6665.
Date of Introduction: 2008.
Ingredients: Incl. soybeans.
Wt/Vol., Packaging, Price: 200 gm. Prices: 39.80, 35.90 and 42.90.
How Stored: Refrigerated.
New Product–Documentation: Label sent by Sjon Welters. 2008. Dec. 26. Three flavors (see above). The company's website is www.naturalway.cz.

3441. Atlas, Nava. 2008. Vegan express. New York, NY: Broadway Books. viii + 247 p. + 8 unnumbered pages of plates. Foreword by Neil Barnard, M.D. Illust. (some color). Index. 23 x 20 cm.
• ***Summary:*** On the cover: "Featuring 160 recipes for quick, delicious and healthy meals." Chapter 2 is titled: "The protein trio: tofu, tempeh, seitan." This book contains: About 37 recipes using tofu (she says, for example, "Cut each block of tofu into six slabs"). 10 recipes using seitan. 9 recipes using vegan cheese. 9 recipes using tempeh. 5 recipes using Tofurky sausage. 4 recipes using miso. 3 recipes using edamame. Address: Hudson Valley, New York.

3442. Bennett, Beverly Lynn; Sammartano, Ray. 2008. The complete idiot's guide to vegan cooking. New York, NY: Alpha Books. Published by the Penguin Group. xix + 328 p.

Illust. Index. 23 x 19 cm.
• ***Summary:*** Being vegan is "not a diet–is a lifestyle." The index contains 48 entries for tofu, 37 for tamari, 30 for soymilk, 8 for tempeh, 6 for TVP, 4 each for miso, soy yogurt, tofu cream cheese, and seitan, 2 for silken tofu and Soyrizo, and 1 each for edamame, soynut butter, and Soyatoo (natural nondairy whipped topping).

"There are so many reasons to go vegan-health and nutrition, weight loss, green and sustainable living, and prevention of cruelty to animals. With over 200 mouth-watering recipes and tips for converting meat- and dairybased dishes into vegan ones, The Complete Idiot's Guide to Vegan Cooking will help readers enjoy a healthy vegan diet without sacrificing taste" (publisher's description). Address: 1. Vegan chef, author, and host of veganchef.com since 1999; 2. Long-time vegan cook and "foodie".

3443. Farnworth, Edward R. 2008. Handbook of fermented functional foods. 2nd ed. Boca Raton, Florida: CRC Press. xviii + 581 p. See p. 333, 341-45. *
• ***Summary:*** Partial contents: Chapter 6. "Natto: A soybean foods made by fermenting cooked soybeans with *Bacillus subtilis.* Chapter 11. "Miso: Production, properties, benefits to health."

Chapter 12. "Korean fermented foods: Kimchi and doenjang," by Jeonghee Surh, Young-Kyung Lee Kim, and Hoonjeong Kwon, has a long section on doenjang, including: Cancer: Epidemiology, anticarcinogenic and antimutagenic activities *in vitro* and animal models. Cardiovascular disease: Inhibition of angiotensin converting enzymes, antithrombotic peptides, isoflavones.

Chapter 17. "Tempeh: A mold-modified indigenous fermented food."

3444. Fiore, Toni. 2008. Totally vegetarian: easy, fast, comforting food for every kind of vegetarian. Philadelphia, Pennsylvania: Da Capo / Life Long. xi + 273 p. + 16 pages of unnumbered plates. Illust. (some color). Index. 24 cm.
• ***Summary:*** A mostly vegan cookbook; each recipe that calls for milk as an ingredient gives soy milk as an alternative. Rarely, if ever, have we seen such a dazzling and delicious variety of vegetarian soy recipes and information in one book. One purpose of this book is to demystify the world of vegetarian cookery and vegetarianism–especially for non-vegetarians.

The Introduction tells the story of the author's gradual transition from typical meat eater (living in Europe to animal rights activist in Maine, to vegetarian). She advises: Buy locally, eat seasonally, buy organic, use your intuition (and imagination).

The chapter "Stocking the pantry" contains basic information (p. 39-42, 45-46) about sea vegetables, seitan, and soy products, including edamame, miso, tempeh, textured vegetable protein (TVP), tofu, and soy sauce (Light Chinese soy sauce, shoyu, and tamari), and Worcestershire sauce (vegetarian; without anchovies)

Soy related: Golden tofu bites (with one 14-ounce package firm tofu, frozen, then thawed... p. 50). Red pepper tofu dip (p. 67). Vegetarian Caesar salad (with "silken soft tofu, p. 76). Edamame and apple salad (p. 81; kids love edamame). Boiled edamame pods. Curried lima bean and rice salad with tempeh (p. 92). Tofu lime dressing (with silken tofu, p. 102). Spinach and tofu soup (p. 108). Miso soup. Hot and sour soup (with firm tofu, p. 109). Roasted pumpkin bisque (with soy milk, p. 114). Corn bread (with soy milk, p. 130).

One chapter is titled "Tofu" (p. 145-53): Seared tofu. Tofu sour cream. Baked tofu meatballs. Tofu with parsley sauce. Tofu kebabs with tamari-ginger sauce. Tofu pot pie.

The next chapter is "Tempeh and seitan" (p. 155-69): Best braised tempeh (with sweet and spicy marinade, p. 197). Tamari tempeh. Barbequed tempeh. Jamaican jerk tempeh. Malaysian curried tempeh. Greek stuffed cabbage (with lemon cream sauce and tempeh). Tempeh and cabbage. Moroccan stew. Tempeh cacciatore. Tempeh fajitas. Tempeh marsala. Homemade seitan (from bulk vital wheat gluten). Penne with onions and vegetarian bacon (p. 175). Spaghetti tofunese (p. 176). Tofu ravioli with butter and sage (p. 181-82). Bechamel (with soy milk, p. 184). Tofu lasagna (p. 185-86). Vegetable lasagna (with tofu filling, p. 187). No-egg salad sandwiches (with tofu). Mock fish salad sandwiches (with tempeh). Mock Maryland crab cakes (with tofu, p. 196). Tempeh club sandwiches (p. 197). Cornhusker's reubens (with tempeh, p. 198). New York hot dogs and onions (with vegetarian hot dogs, p. 199). Soysage-pepper sandwiches (with Italian-style vegetarian sausage links, p. 200). Eggplant meatballs (with tofu, p. 214). Stuffed sugar pumpkins (with tempeh, p. 215). Fluffy mashed potatoes (with soy milk, p. 219). Spinach tortillas with potatoes (and seitan, p. 228). Pfannkuchen (with soy milk, p. 239). Rye bread French toast (with soy milk, p. 240). Loaded bagel (with tofu cream cheese, p. 243). Tofu cannoli (p. 250). Tofu coconut cream pie (p. 251). Basmati rice pudding (with soy milk, p. 252). Banana chocolate chip cake (with soy milk, p. 256).

About the author: "A vegetarian for over 20 years, Fiore is a self-taught chef who first embraced Mediterranean culinary techniques and philosophy while growing up in Italy." But she spent the first six years of her life in Germany. Address: Portland, Maine. Host of the national public television show Delicious TV's Totally Vegetarian.

3445. Nishi, Dennis. 2009. Perseverance answers vegans' prayers. *Wall Street Journal.* Jan. 6. [1 ref]
• ***Summary:*** About Seth Tibbott, Turtle Island (his company), and Tofurky, in question and answer format. he key to his success: Stick with it. His company's sales have

doubled between 2003 and 2007 as a growing number of nonvegetarian consumers include meat alternatives in their diet. Seth has been a vegetarian since 1974. He was inspired to change by *Diet for a Small Planet,* by Frances Moore Lappe. Before 1980 Seth had made tempeh for friends on the side while teaching for outdoor schools in Oregon. When Ronald Reagan became president money for such outdoor education programs disappeared, so in 1980 he tried to sell tempeh full time–and to live as inexpensively as possible. In 1984 he built a tree house, which he live in until 1992. He rented the tree for $25 a week, and had a wood stove, a phone, and hot and cold running water. In 1982 he recapitalized the business by borrowing money from his brother and mother. In 1987 his brother (presently Turtle Island's vice president) entered this business in about 1987, when he bought a large share of it. The company broke even for the first 15 year; after the debut of Tofurky, it became profitable. The company used to make most of its money during Thanksgiving and Christmas, but today those holiday sales are only about 18% of the total.

3446. Turtle Island Foods, Inc. 2009. Announcing the arrival of tempeh 2.0: Marinated tempeh (Leaflet). P.O. Box 176, 601 Industrial Ave., Hood River, OR 97031. 1 p. Front and back. 28 cm.
• ***Summary:*** A glossy color sell sheet. At the front top are the fronts of three marinated tempeh packages (Lemon Pepper, Coconut Curry, Sesame Garlic) against a background that fades from black at the top to deep blue. In the lower one-third is a photo from outer space of vast curve of Planet Earth with the white rayed sun starting to rise over it. The text: "Delicious. Marinated. Gluten free. Tempeh strips." The company logo: "Turtle Island Foods, Inc. Since 1980. Family owned and independent." www.tofurky.com.

On the back is a photo of an astronaut walking on the surface of the moon, holding a package of marinated tempeh strips. The bold text reads: "One small change for tempeh: One giant savings for human's time." Below that: "For centuries the miracle fermented food known as tempeh has been sold as a plain cake of soybeans and grains. To fully enjoy, most cooks take time to slice the tempeh and soak for hours in a variety of marinades. When thus prepared, tempeh takes on a zesty wholesome flavor that's hard to bet. Yet many people do not have the time..." Below that are the front panels, nutrition facts, and ingredients of the 3 new types of marinated tempeh. Address: Hood River, Oregon.

3447. Viavant, Suzi Jenkins. 2009. Re: Introducing soyfoods to the highlands of Guatemala. I. Letter to William Shurtleff at Soyinfo Center, Feb. 5. 6 p. 28 cm.
• ***Summary:*** A cry for help on the ham radio: On February 4, 1976, a devastating earthquake hit Guatemala at 3:01 a.m. local time, while most people were asleep, taking at least 23,000 lives. Approximately 76,000 were injured, and many thousands left homeless. Some areas went without electricity and communication for days, but a desperate cry for help on the ham radio managed to reach "The Farm," a self-sufficient spiritual community in Summertown, Tennessee, founded by Stephen Gaskin. In response, Plenty, The Farm's community outreach program, chose three carpenters to help with the reconstruction efforts. Dennis Martin, Pedro Grey and Melvyn Stiriss were soon flying to Guatemala armed with only their skills, a backpack full of tools and a desire to help rebuild.

Reconstruction Project: Dennis Martin, a natural at networking, was quick to forge strong connections with members of the Canadian Embassy, Clive Carruthers, acting as the Canadian Chargé d'Affaires, and Rick Bronson, administrator of funds for the Canadian International Development Agencies (CIDA). Martin soon discovered that CIDA had a shipment of prefab housing materials and funds on the way for the reconstruction of Guatemalan towns that had been destroyed in the earthquake. Martin pledged to CIDA that if they were to grant him funds and these materials, Plenty would aid in the reconstruction of the town of San Andres Itzapa, in the municipality of Chimaltenango, and build thirteen schools. CIDA agreed, and thus began Plenty's Guatemalan Project.

The Clinic Program: With a few months, many carpenters from The Farm had volunteered for the reconstruction effort, and the Project was quickly underway. However, as they began clearing debris and rubble, a new crisis emerged. They were horrified to find infants, many orphaned, in dire need of medical attention. The Project urgently requested volunteers with medical knowledge to come and provide assistance. Mary Louise Perkins and her medical and public health crew from The Farm answered that call and soon set up a medical clinic in the Plenty camp, which at that time was no more than one kitchen structure, a few platformed tents surrounded by a coffee plantation and corn field. The clinic was later joined by Thomas Wartinger acting as site physician.

The Orphanage: The number of infants and children orphaned by the earthquake had reached a critical point. The Farm sent out request to its members for single female volunteers to help establish an orphanage. In June 10, 1977, I volunteered along with five other women to go to Guatemala and help set up the orphanage. We became known as the Angel Crew. Our responsibilities involved one-on-one parenting of a single infant, collectively caring for 37 children, and preparing three meals a day for around 90 people consisting of orphans, patients at the clinic, and volunteers involved in the Project. Along with the orphans, many locals joined our team, including several teenagers who had been living on the streets of Guatemala, who we helped recover from drug addictions. My baby was Maria Cruz who was severely malnourished. After several months of nursing her back to health using primarily diluted soy

formula she regained her health and was later adopted by Alan and Jane Graf, one of the Plenty couples.

At that time the infant mortality rate was around 50%. Some of the infants came to us extremely malnourished and underweight–at an age of eight months some weighed a mere eight pounds (the weight of most infants at birth!). We fed these babies diluted soy formula through an eyedropper, but in some cases it was simply too late. The only thing that made the heart-breaking experience of losing a child bearable was that we were able to save others. Some returned home if they had one, and others were adopted. However, many of the children we treated went home only to return to us again in a short time, again malnourished. Most of the children in Guatemala were given only tortillas to eat, and it became increasingly clear to me that many Guatemalan mothers needed to be educated about how to provide for their children's basic nutritional needs.

Soy Agriculture & Demonstration Program: Aware of the undernourishment of the people of Itzapa and the high nutritional benefits of soybeans and soy products, we forged a plan to introduce soybeans as a new crop to the local farmers. Our goal was to supplement the diet of the local villagers with high-quality protein while also providing a source of income to the farmers. Soybeans seemed like a viable solution since the farmers had only small plots of land and soybeans can yield high amounts of protein per acre.

In October of 1978, Darryl Jordan, a member of the Plenty team who specialized in agriculture, initiated the soy program. He contacted INTSOY at the University of Illinois and asked if he could conduct one of their international soybean variety trials; he was sent 20 soybean varieties, written procedures to follow, and forms showing results to fill out and return to INTSOY. Itzapa sits at an elevation of 5,860 feet, which at that time, was the highest growing elevation ever tested. Darryl was joined later by Craig Bialick, another team member, who planted and tested the different varieties of which Cobb, Bosier & Davis proved to yield well. As the interest in the new crop increased among the passing farmers, they wanted to know about the new bean and how could they grow it. Since I had a background in producing tempeh for The Farm, Darryl approached me with the idea of teaching the locals about soy products and how to prepare them.

I began by writing a proposal which I submitted to UNICEF Guatemala requesting $6,000.00 to fund in-home soy cooking classes in the area of Itzapa. They gave me the funds I requested along with a two-gallon stainless steel pot and The Soy Demo Project was born. The first classes were held with the wives of the farmers that were involved in growing the soybeans which had proven to grow well at the 5,860 ft. elevation. I taught them using the same utensils that they used themselves, such as a rock grinding stone and cooking on a wood fire; this way every woman who took the class would be able to use the same methods in her own home.

The class size averaged 6-8 neighborhood women along with about 15 children. I would teach the class in Spanish (which I learned informally after arriving in Guatemala), and Maria Sal, a local Indian mother of five who joined our team, would translate in Cakchiquel (a Mayan dialect). The children loved eating the soyfoods and news traveled fast; at the end of each class I would find myself surrounded by 20-30 children, all waiting eagerly for a sample. Interest among the women grew quickly as well. Word spread throughout the area and the requests for classes became overwhelming. I was soon teaching soy demo classes not only in Itzapa, but in many of the neighboring villages as well. By June 1979 approximately 200 women were taught.

The Soy Promoters Program: In one of Itzapa's neighboring villages, San Jose Poaquil, a Guatemalan agency named World Neighbors had set-up a cooperative that held classes in agriculture. While performing a class there, I met a Latino Guatemalan named Amado del Valle, who was the director of the program. (Note: In this context, "Latino," refers to one whose ancestry is largely Spanish rather than indigenous Mayan; for centuries there has been both conflict and intermarriage between these two groups). With his background in agriculture he was very interested in what the soybean had to offer for Guatemala's protein crisis. I realized I needed help spreading the word, so he offered 8 women from his cooperative to become teachers.

In August 1979, we wrote a proposal requesting funding from CIDA to provide the equipment, supplies and training for the cooperative promoters, who would in turn train others in the preparation of soyfoods. I donated my salary as a volunteer and UNICEF donated several thousand dollars towards the project, the total amount of which would then be matched by CIDA. Previously CIDA was able to contribute matching funds through Plenty USA. However at this time, to continue their funding, Plenty needed to obtain a Canadian NGO nonprofit status; we did this through our sister Farm in Canada and we received $11,000.00 for the program. There was good acceptance in Poaquil, especially in the low parts of the municipality. Each promoter had about five groups, some of them walked 15 miles and approximately four hours to get to their groups. We trained them at their cooperative and later went with them to their villages to observe one class. We left them with soybeans, supplies, and funding to continue teaching on their own, visiting them occasionally checking in on their books, and charts, which they kept on all classes. Continued. Address: Salt Lake City, Utah.

3448. Viavant, Suzi Jenkins. 2009. Re: Introducing soyfoods to the highlands of Guatemala. II. Continued. Letter to William Shurtleff at Soyinfo Center, Feb. 5. 6 p. 28 cm.
• ***Summary:*** Continued: In September 1979 the immediate food and housing crisis in the area had been solved, so we began to focus on long-term developments in agriculture

and nutrition. As we moved from that area of Guatemala we began to realize the town had grown accustomed to our medical assistance and were growing dependent upon our charity. It became apparent that we needed to develop a means to allow the indigenous community to help themselves. We moved our camp from Itzapa to Solola, where we had built a Mayan municipality building and several schools. Darryl and his wife Leslie returned to the Farm with their adopted baby named Irma, one of the recovered babies that had been abandoned. Since our project focus changed, as we moved to Solola most of the medical crew returned to the USA after adopting (and taking with them) most of the rest of the 7-10 children in our orphanage; most of these children grew up in the USA and never returned to Guatemala to stay.

The Soy Dairy Project: Although the soyfoods were very popular and classes were available, many women in Guatemala did not consistently have time to make their own soy products at home. To address this need, Plenty wrote another proposal to CIDA for $31,000.00 to build a soy dairy that would operate as a cottage industry. Building the dairy would enable us to produce soyfoods on a large scale, create job opportunities, and make soy products available for purchase to the people of Guatemala. Soy ice cream seemed to be a good product choice to focus on. Its production required less education and ice cream was very popular throughout Guatemala.

We decided to build the dairy in the community of San Bartolo, Solola, where we had moved our camp. We had established a good rapport with the community's reconstruction committee. We had already built a school and installed a water system for them which featured a water spigot in every home. The water system had improved the quality of life immensely in San Bartolo, as before they had to carry water for several miles to their homes. My knowledge of large scale soymilk production was limited so Plenty approached Laurie Praskin, the soyfoods expert who for years was in charge of producing soy milk and tofu on a large scale for The Farm community in Tennessee. Laurie accepted and I returned to the United States to help her purchase the equipment needed. We traveled across the country educating people about our cause. We were able to get some of the equipment donated and purchased the rest with the funding we had received–including two 50 gallon stainless steel pots that Laurie acquired from the Boy Scouts of America.

In the summer of 1979 we shipped the equipment to Guatemala along with seven tons of soybeans, and I returned to Guatemala with Laurie as my partner. Laurie's husband, Alan Praskin, was also an agriculture specialist who joined with Craig Bialick to continue doing more soybean variety trials at different altitudes. They did one trial with 16 different varieties in San Martin Jilotepecque, where they partnered with Amado del Valle, the director of the World Neighbors Cooperative where we trained the eight soy promoters. They also did a trial in the Solola area which at 7,200 ft. was the highest elevation ever tested at that time using INTSOY varieties.

On February 19, 1980 the facility was finished, and the Soy Dairy was inaugurated. Our long-term plan was to turn over full operation of the dairy to the people of San Bartolo so our first task was to choose and train a local to oversee the project. We chose Agustin Xoquic. He had been head of the reconstruction committee in San Bartolo at the time we had installed the water system, and we had developed a very strong bond with him and his family. We lived in the Mayan community, training Agustin and his wife Elena to oversee the dairy. The Soy Demo Promoter's project continued while also operating the soy factory project.

As of August 31, 1980, there had been 117 promoter classes and 1,013 men and women were taught how to make soymilk and tofu in their homes through the Soy Promoter program. Small women's groups had collectively grown their own plot of soybeans. This program was similarly implemented in San Martin Jilotepecque, Chimaltenango, with another World Neighbors Cooperative. Eight women were approved as soy promoters and taught 307 men and women. Over 100 people in San Martin planted soybeans that year. Between all the cooperatives, they harvested approximately 8,000 pounds of soybeans for their own needs and the remaining amount was sold to the *Fabrica de Soya* (Soy Dairy) in Solola.

In Solola, Laurie and I held cooking classes in the town, teaching Latino women, how to prepare fancier dishes such as lasagna, blended tofu dishes, fried and scrambled tofu. These ladies had electric blenders, ovens, and tofu, which was now available in the local market produced by the Fabrica de Soya in Solola. We also continued our classes with the Indigenous people in the surrounding villages of Solola.

We also began working with Berhorst Hospital in Chimaltenango, where we had often taken some of our patients. They were very enthusiastic about soy technology and asked us if we could get them enough soybeans to supply soymilk and tofu for their patient's daily consumption. They also asked us if we could get them an ice cream machine for making soy ice cream for sales to their patients. The current practice is for the patients to go to the local store and get junk food without much nutritional value. They wanted a high quality protein product such as soy ice cream, to be available for their patients. We began holding demonstrations at the hospital with 35 volunteer promoters from the surrounding villages of Chimaltenango.

After eight months of training the employees at the soy factory, the political climate in Guatemala became violent. People we worked with on our water projects were put on "hit lists," and since we did not want to jeopardize anyone's safety we were forced to prematurely leave the soy factory

project in the hands of people in San Bartolo.

On September 22, 1980 we returned to the U.S. Since Darryl Jordan returned earlier he had published an article about the soy project in a development newsletter titled *League for Food Education* (*L.I.F.E.*). We received responses from fifty different countries requesting advice on how to set up similar projects. We then published the *Plenty Agricultural Program: Guatemala* booklet (1980, 46 p.) and the *Plenty Integrated Soy Program, Guatemala* (1982, 48 p.) booklet to help educate the many people from whom we had received inquiries, along with those from other interested organizations.

After we left Guatemala, Amado Del Valle worked with Food for the Hungry in efforts to set up two more soy dairies in Zacapa, but the political violence from Guatemala's civil war made it too dangerous to complete. It had also become too dangerous for the Soy Factory in Solola to operate, so it closed as well.

On May 27, 1981, Amado left Guatemala and arrived at The Farm in Tennessee, to study large scale production of soyfoods; he later went on to the Canada Farm. In September of 1985, he returned to Guatemala with funding from Plenty Canada at which time he helped Agustin reopen the soy factory and become the Director for three years. It was reborn as Alimentos San Bartolo, community owned and managed, although Agustin and Elena were still in charge of production, and remain so to this day.

On March 7, 1991 the soy project land was officially turned over to the committee of San Bartolo. Chuck Haren and other members of Plenty periodically traveled to Guatemala to help with funding and equipment upgrades.

In June of 1995 with help from Plenty USA and funding from Food for the Hungry, I returned to Guatemala to do a marketing upgrade which I completed in three months. I wrote a Spanish-language booklet with local recipes titled *Recetas de Soya* (*Soyfoods Recipes*), had 1,000 copies printed, and used it at soyfoods classes, some of which were held at local restaurants.

In August of 2006, each household in San Bartolo was bought out for an amount of money equal to their share of the project. The project was restructured from a community owned business to an association named *Asociacion de Desarrollo Integral Belen* (*ADIBE*), but it is still directed by the committee of San Bartolo, which is elected every 4 years by the community. Address: Salt Lake City, Utah.

3449. Viavant, Suzi Jenkins. 2009. Re: Introducing soyfoods to the highlands of Guatemala. III. Continued. Letter to William Shurtleff at Soyinfo Center, Feb. 5. 6 p. 28 cm.
• ***Summary:*** Continued: In July of 2008 the members of ADIBE traveled to Guatemala City to compete and present all of their products at a National Rural Development contest; they were recognized as one of ten winners and were awarded 46,000 quetzals.

The project has become a model project worldwide. The soy dairy has operated as a self-sufficient business for twenty-nine years. It employs seven members of the Mayan community full-time and perhaps most importantly, continues to supplement the protein intake of the Mayan children.

As of August 21, 2008: The current items produced and sold weekly are: 40 gallons of soymilk, 110 pounds of tofu, 15 gallons of soy ice cream, 20 pounds of tempeh, and 20 pounds of soy flour.

In October of 2007, Amado del Valle developed several new products which the soy factory now produces; shampoo, face cream and hand soap (all made from tofu whey, which was previously discarded).

As it is becoming increasingly more popular to be "green," we, the people of this planet, should harness this global consciousness and set up more projects of this kind, which has proven to make the most of our world's resources and provide quality nutrition and education to people who would otherwise not have them. With more funding, education and organization of the planet's resources, there would be plenty of protein to go around, and malnutrition could be a thing of the past–this is my dream. My experience has taught me that small donations, desire, grass roots commitment and organization can change and save lives.

Note: This article is written from the memory of my experience setting up the Soy Demonstration Programs in Guatemala. However I would like to acknowledge that the success of the soy program involved many Plenty volunteers and Farm members, who have contributed or supported the project directly or indirectly over many years. I apologize if I missed mentioning anybody.

Even though I am no longer a member of Plenty, I have still consistently returned to Guatemala to check-up on the project and bring them supplies.

For more information please contact: Suzi at soysolutions@gmail.com or Plenty International, P.O. Box 394, Summertown, Tennessee 38483. Phone: (931) 964-4323. www.plenty.org. plenty@plenty.org. Address: Salt Lake City, Utah.

3450. Katz, Ellix Sandor. 2009. Re: Making tempeh, koji, and miso. Letter (e-mail) to friends, Feb. 6. 1 p.
• ***Summary:*** "I've been busy creating a new teaching kitchen at a friend's farm a few miles from my home. With a dedicated incubator (rather than one improvised in the oven I share with twenty people), I've made more tempeh in the past couple of months than in the 15 years before. I've been experimenting with different beans and grains, and we've been eating lots of tempeh. Yummmm! I've also scaled up my koji-making and miso-making. And I'm trying my hand dry-curing venison in the style of prosciutto. All very exciting.

"I'm pleased to announce that I will be hosting my first

workshops in the new space this upcoming spring. Four-day hands-on fermentation production. Details below. I will continue spreading fermentation fervor elsewhere, but in a much more limited way (only occasionally)." Address: Foundation for Fermentation Fervor, 247 Sanctuary Lane, Liberty, Tennessee 37095.

3451. Yoshihara, Akino. 2009. The temptations of tempeh. *Daily Yomiuri Online* (*Japan*). Feb. 19. www.yomiuri.co.jp / dy/features/culture /20090219TDY16002.htm.
• ***Summary:*** Tempeh was introduced to Japan about 30 years ago, but it has not become widely popular since there are now few tempeh manufacturers in Japan. Yet tempeh is made in Shiroishicho in Saga prefecture, Tokyo, Nagano prefecture and Okayama prefecture (located in southwestern Japan, just north of Shikoku Island). In Okayama prefecture about 20 firms make tempeh and 2nd generation tempeh products such as ramen noodles with tempeh or miso with tempeh. Moreover, many tempeh-related events have been organized, including cooking classes.

In 1987 the Japanese Society of Tempe was organized. Today it is headed by Masaharu Horii, professor in the Graduate School of Human Life Sciences, Notre Dame Seishin University, Okayama. The society promotes tempeh "to both the food industry and individual consumers through an annual conference featuring expert lectures and a cooking workshop."

"The society is trying to popularize consumption of tempeh as part of people's daily diet. We plan to publish a book containing useful information for consumers, such as the health benefits and a buyer's guide."

In Indonesia, long popular among the working classes, tempeh has recently become popular among the upper classes because of its many health benefits.

Note: Masaharu Horii, born in March 1939 and a researcher in the field of eating habits and food science, can be contacted at: Notre Dame Seishin University, Graduate School of Human Life Sciences, 2-16-9 Ifukucho, Okayama-shi, Okayama 700-8516 Japan. Fax: +81-86-252-5042. Address: Staff writer, Japan.

3452. Yoshihara, Akino. 2009. A life's dream sprouted from soybeans. *Daily Yomiuri Online* (*Japan*). Feb. 19. www. yomiuri.co.jp /dy/features/culture /20090219TDY16001.htm.
• ***Summary:*** Rustono, a man born in Indonesia, lives with his Japanese wife, Tsuruko Kazumoto and two daughters in a house adjacent to their tempeh shop in Otsu, Japan. Otsu, the capital of Shiga prefecture, is located at the southwest end of Lake Biwa in Central Japan, just east of Kyoto.

The two met in 1995, when Tsuruko took a trip to Indonesia, at a hotel in Yogyakarta where Rustono worked. "After maintaining a long-distance relationship, Rustono came to Japan in October 1997, and the couple married and started living in Uji, Kyoto Prefecture." Rustono, who was interested in food and Japanese culture, first worked at a confectionery shop in Uji, where he carefully observed the Japanese quality control and inspection techniques. He later worked at a food factory, where he chopped vegetables for two years. It was at about this time that Rustono got the idea of making tempeh in Japan.

Using a recipe his mother got from a neighbor, Rustono and his wife made 40 packages of tempeh a day. After about four months, however, they ran into difficulties. The quality of the tempeh bean to decrease [probably due to a decrease in the quality of the starter culture].

So Rustono returned to Indonesia for several months; there he visited about 60 tempeh makers, and vastly increased his knowledge of how to make tempeh.

Returning to Japan with renewed commitment, he also decided to change his sales strategy by focus on Indonesians throughout Japan, starting with his Indonesian friends. Before long, "his tempeh's reputation [and sales] began to grow among foreigners and Japanese by word of mouth."

In 2000 the couple moved their family and business from Uji to Otsu, where they lived in a house belonging to Tsuruko's father. They chose Otsu, in part, because of its clear water. By themselves, they built a tempeh shop during a snowy winter, "carrying sand from the bottom of the river to mix with concrete." They dug a well to reach the clear water. Good water is important in making good tempeh. They also created a new brand: Rusto's Tempeh.

They now make large batches of tempeh about 2-3 times a month, then freeze it. They ship their tempeh to about 300 locations from one end of Japan to the other.

The business is growing. Recently the couple purchased property just a few minutes walk from their home on which to build a new house and larger tempeh shop. Address: Staff writer, Japan.

3453. Welters, Sjon. 2009. Re: Tempeh makers in The Netherlands. New variety of tempeh mold that sporulates with white spores. Letter (e-mail) to William Shurtleff at Soyinfo Center, March 23–in reply to specific questions. 1 p.
• ***Summary:*** Shurtleff e-mailed Sjon to ask about companies that presently make tempeh in The Netherlands. "Good timing. I had just asked Bernard Faber, a Dutch friend of mine whom you might remember from the early Manna years, to check on the tempeh situation in The Netherlands a few weeks ago. He actually managed to talk to the owner of The Soybean Company (http://tempehproducts.com / pagina/home_tempeh_ soy_products_uk_ holland/ index. html) and got him to talk back! (Something pretty unusual for Indonesians). You might know this company or recognize them from years back because you talk about them in your writings. Could this be the original Van Dapperen?

"Anyway, he makes 20,000 x 400 gm pieces of tempeh per week, shelf life 2 weeks, does not distribute it (everything is picked up from the plant) and he says shipped

to Russia (frozen product) also. Does it all with 3 or 4 part-timers, where he used to do it with 15 full timers, because he invested 100,000 Euro in new equipment of which more than 30,000 Euro was in a packaging machine. Makes it in perforated bags wrapped in shrink wrap (no vacuum packing), but used to do it in perforated Rubbermaid-type containers.

"Long shelf life is attributable to the fact that he uses the common white spores, unlike the black spores common in the USA. This starter takes much longer to incubate and is steadier and less quick to spoil. U.S. starter kicks in quick (after 12 hours) and ripens fast, but spoils fast, too. Hence the vacuum packing. No need with the white starter that the Dutch Indonesians use. I have not been able to figure out yet which particular strain they use, but I know that it is available for home use from http://www.tempeh.info /starter/ tempeh-starter.php. I bought it and tried it here and it is slower." I'm not sure how public this information is/should be. You know how close-mouthed the Indonesians can be.

"There are more tempeh makers in The Netherlands, but I need to do more prodding there to get to the bottom of it. I don't know if Seth will be able to get into any Dutch tempeh maker's facility. Hope he does. He can contact Bernard Faber; maybe together they can pull it off. Bernard is also a writer for *Biofood Magazine* and a long-time friend who's been in the natural food movement since the mid-1970s and still is." Address: Founder and owner, Rhapsody, 28 Main St., Montpelier, Vermont 05062. Phone: 802-229-6112.

3454. Soy Bean Company. 2009. SBC–Tempeh, soy, soyproducts (Website printout). tempehproducts.com/ pagina/home_tempeh_ soy_products_uk_holland/ index. html. Printed March 31. [Eng]
• ***Summary:*** Contents: Home, soybeans, tempeh, recipes, contact. On the homepage of the SBC is a brief definition of tempeh. Color photos show: (1) Outside front of the company. (2) Two views of the inside of the company.

Soybeans: Introduction (click link for Q+A Are there special concerns related to soy foods? Provided by the George Mateljan Foundation), a health-promoting meat replacer, stay lean with soy, soy lowers blood pressure and cholesterol in men, beneficial effects on cholesterol levels and platelets.

Tempeh: Same as home page. Recipes: For Tijuana tempeh, Tempeh teriyaki, Tangy tempeh with portobello mushrooms.

E-mail in Dutch: croci@htnet.nl. E-mail in English: soybeancompany@htnet.nl.

Note: This is a minimalist website, with no company history and very little interesting information. Yet *History of Tempeh,* by Shurtleff & Aoyagi (1985, p. 29) states that this was Europe's third earliest commercial tempeh company, founded in 1969. In Jan. 1972 the thriving company moved to Kerkrade from Rotterdam. In June 1980 the company bought a $1,000,000 modern factory in Kerkrade and expanded production greatly. By mid-1982 it was the largest tempeh company in the world, making 6,000 to 8,000 lb of tempeh a week. Address: Tunnelstraat 107, 6468 EJ Kerkrade (Limburg), Netherlands. Phone: 045 567 0583 or 0584.

3455. Shurtleff, William; Aoyagi, Akiko. 2009. The vegetarian meat: Made from fermented soya, tempeh is one of the most popular meat alternatives in the market. *Times Food Processing Journal* (*Mumbai, India*). Feb/March. p. 29-33.
• ***Summary:*** Excerpted from *The Book of Tempeh,* with emphasis on the history of tempeh.

Note: "Times" refers to *The Times of India,* which is India's largest selling English-language newspaper. TFPJ is part of the *Economic Times,* the financial newspaper by the same group. It is published both in print and online. Address: Founders, Soyinfo Center, P.O. Box 234, Lafayette, California 94549.

3456. **Product Name:** Marinated Tempeh [Lemon Pepper, Coconut Curry, Sesame Garlic].
Manufacturer's Name: Turtle Island Foods, Inc.
Manufacturer's Address: P.O. Box 176, 601 Industrial Ave., Hood River, OR 97031. Phone: 1-888-TOFURKY (863-8759).
Date of Introduction: 2009. March.
Ingredients: Lemon Pepper: Organic soybeans, water, shoyu soy sauce (water, non-GMO soybeans, wheat, salt, culture), garlic, organic evaporated cane juice, lemon juice concentrate, organic apple cider vinegar, salt, black pepper, culture (Rhizopus oligosporus). Contains: Soybeans, wheat. Certified organic by Oregon Tilth.
Wt/Vol., Packaging, Price: 7 oz. paperboard box.
How Stored: Refrigerated or frozen.
New Product–Documentation: Labels (boxes; see next page) sent by Lisa Conway of Turtle Island. 2009. Jan. 9. This is a very attractive and well-designed box / label. 5.5 by 4.25 by 1 inch deep. Full color. Front panel of Lemon Pepper shows tempeh slices and veggies in a sub sandwich. Text: "Family owned and independent since 1980. Gluten free. Strips. Made with organic soybeans. Keep refrigerated or frozen." Rear panel: Nutrition facts. Ingredients. Preparation instructions. Marinated tempeh strips cooking contest. "Proud supporter of The Humane Society (with HS logo). Box is 100% recycled paperboard. Low VOC inks."

Letter (e-mail) from Seth Tibbott. 2009 March 23. "... presented the new [Marinated] Tempeh Strips to rave reviews at Expo West [Anaheim, California] earlier this month [March 5-8] and came away with two awards for best new product at the show. One award came with $30,000.00 of sales data... We shipped the first shipment of Tempeh Strips on March 13, 2009 so already in Whole Foods stores in the

northeast. Should hit full swing this summer."

3457. Centraalbureau vor Schimmelcultures. 2009. CBS Fungal Biodiversity Centre (Website printout–part). www.cbs.knaw.nl. Printed April 6.
• ***Summary:*** This culture collection organization is similar to the National Center for Agricultural Research Utilization (NCAUR) in Peoria, Illinois. Contents: Home (incl. current news, biodiversity). About CBS. Research. Collections. Databases (18). Publications. Service. Links.

When we searched the 1st database, the "Filamentous fungi database," it was very slow to load and to search. It "contains data on more than 38,000 strains in the CBS collection," we got interesting results searching for: (1) Tempeh–14 hits = records found. In each record, tempeh appears in the field "Substrate." The "Taxon name" (scientific name) of *Rhizopus oligosporus* has been changed to *Rhizopus microsporus var. oligosporus* (Saito) Schipper & Stalpers. In some records the name of the collector and date collected are given. Country and locality (where collected): Indonesia.

Other organisms used to make tempeh are: *Rhizopus oryzae Went & Prinsen Geerligs. Rhizopus stolonifer var. stolonifer. Cladosporium oxysporum Berkeley & M.A. Curtis. Rhizopus azygosporus G.F. Yuan & S.C. Jong.* One culture typically costs "150 Euro (65.0 Euro for Academies, Universities, Education)."

(2) *Rhizopus oligosporus:* 5 hits.

(3) Miso: 3 hits. One substrate was soy sauce and another was koji starter culture. The fungi were: *Aspergillus oryzae var. oryzae. Aspergillus sojae Sakaguchi & K. Yamada ex Murakami.*

(4) Soy sauce: 13 hits. In addition to the two molds used to make miso, there was also: *Aspergillus oryzae var. effusus* (*Tiraboschi*) *Y. Ohara.*

(5) Chinese cheese: No hits.

(6) Fermented tofu: No hits.

(7) Sufu: 9 hits. The molds used are: *Mucor racemosus f. racemosus. Mucor indicus Lendner. Mucor hiemalis Wehmer. Actinomucor elegans* (*Eidam*) *C.R. Benjamin & Hesseltine. Mucor circinelloides f. circinelloides. Rhizopus microsporus var. microsporus Tieghem.*

(8) Douchi or doushi or doushih or dowsee or dowsi or toushih or tou-shih or fermented black beans or preserved black beans: No hits.

(9) Aspergillus: 1,213 hits.

(10) Soybeans: 1 hit. Substrate: Soybeans. Taxon name: *Aspergillus wentii Wehmer.* Country and locality: Indonesia, Java.

(11) Soybean: 18 hits. Substrate is usually "soil from soybean field." Molds are Penicillium and Aspergillus species.

(12) Koji: 36 hits. Molds: *Aspergillus oryzae var. oryzae. Aspergillus oryzae var. brunneus Murakami. Aspergillus tamarii Kita. Rhizopus microsporus var. tuberosus R.Y. Zheng & G.Q. Chen* (koji from China). Address: Utrecht, Netherlands. Phone: +31 (0)30 212-2600.

3458. Lam, Alex. 2009. Update on The Soy Shop, Atlanta, Georgia (Interview). *SoyaScan Notes.* April 14.
• ***Summary:*** His father, Kich Lam bought The Soy Shop (which started in July 1979) from Steve and Sarah Yurman in April 1985; he bought it mostly for the equipment. But before he bought the company, he had been making tofu in the basement of his home in Decatur, near Atlanta.

The Yurmans left the keys to the shop with their employees; one reason the Yurmans sold their company was because of employee theft. The employees came in in the middle of the night and made tofu, then delivered it the next morning. But the quality was not very good. After the Lams bought the company, Alex's mom scared the employees away and the Lams began to make better quality tofu. But in the mid-1980s, there were not many Asians in the southeastern USA–so it was pretty tough times. And there was competition from Calco and Jimmy Wang, both of whom were better capitalized and were ahead of the Lams. But the Lams worked harder and harder, then eventually took the whole market from them. Alex's father passed away in the year 2000. Up that time, his father had been the tofu maker and Alex had handled the business side of things–billing, logistics, etc. In Jan. 2008 the company moved from Decatur to Atlanta. The company has had great growth for the past 10 years. Today, Alex thinks, The Soy Shop is the biggest tofu manufacturer in the southeastern USA (Florida, Georgia, North Carolina, South Carolina, Tennessee, and Alabama).

Today the company makes only two products: firm and soft tofu. Ten years ago he used to make tempeh, soysage, and soymilk. But tofu, the company's bread and butter, grew so fast that he had to discontinue the other soyfood products.

Now growth has begun to slow, because of the economic downturn and new competition. This has been his company's slowest year in the last ten years. In Oct. 2006 House Foods opened a brand new tofu factory in Somerset, New Jersey. They are now flooding the market with low-cost tofu. Alex is slowly seeing the products come into his market. Address: 5289 McCall Dr., Atlanta, GA 30367. Phone: 770-458-7808.

3459. Tibbott, Seth. 2009. Recent trip to The Netherlands to study tempeh. Tempeh in the USA (Interview). *SoyaScan Notes.* April 24. Conducted by William Shurtleff of Soyinfo Center.
• ***Summary:*** In April Seth traveled to The Netherlands to study tempeh. By good fortune he met Angelo Croci (an Italian), who owns The Soybean Company in Kerkrade. Angelo speaks Italian and Dutch but very little English. Second in command there is Keyes Van Puten. Seth's driver translated from Dutch to English. Angelo took Seth through

his tempeh plant. Seth thinks he did this because he would like to visit Seth's plant in Oregon. Seth also showed Angelo his new Tempeh 2.0, regular and marinated. Seth thinks that Angelo is making about 15,000 lb/week of tempeh–about the same as Seth is–but of only soy tempeh, no other styles or second generation products. One 400 gm cake sells for 2 euros and has an 18-day refrigerated shelf life.

Lots of tempeh is sold at Indonesian and Surinamese restaurants throughout Amsterdam, which Seth found to be one of world's truly great cities. A week before Seth was there, Sinta Santoso, founder and co-owner of Primasoy (Victoria, Australia), had visited Angelo's company.

The plant is of medium size and has no large machines. Angelo soaks his soybeans for 2 days [perhaps to acidify the soak water] rather than the typical one and incubates his tempeh for 3 days–relatively long. The most interesting thing is the tempeh culture, which does not produce black spores. Seth believes that this is a variety of *Rhizopus oryzae* rather than *Rhizopus oligosporus.* Seth brought some of this tempeh home and it still had not sporulated white.

But even though the tempeh does stay white, it requires a two-day incubation process and the resulting tempeh is not as flavorful as Seth's current product. So Turtle Island still buys its tempeh starter from the Tempeh Lab on The Farm (Summertown, Tennessee).

As far as Seth knows, no patents have been issued to this starter or the process for making from it. Seth thinks that a company selling tempeh starter on the Web as "Shining White Tempeh Starter" (http://tempehonline. com/products. htm) may be selling this same starter.

Note: According to Ike Van Gessel, this tempeh company used to be owned by Robert Van Dappern. Its name was Tempé Produkten B.V. Robert sold it to Mr. J. Singh. a Sikh, who bought the Belgian tofu business in 1986 and the Netherlands tempeh business in 1990. The address is unchanged.

Seth saw products from three tempeh makers in Europe: (1) The Soybean Company in Kerkrade, Netherlands. (2) FZ Organic Food (Yakso brand) in Wolvega, Netherlands. (3) De Hobbit in Maldegem, Belgium. He sent all 3 labels to Shurtleff at Soyinfo Center.

While in the Netherlands Seth met Bernard Faber, on introduction from Sjon Welters; they had a beer together. Bernard has a macrobiotic background, used to be involved in food, and is now a journalist.

In the United States sales of tempeh have recently been increasing–unexpectedly. Seth buys market statistics from SPINS (Natural) and others, for tempeh, Tofurky, and related products; he thinks that Lightlife is now the largest tempeh manufacturer in the USA. Seth thinks that tempeh has saved Lightlife and Conagra; their products made with soy protein isolates and other modern soy proteins are not doing very well. Seth demoed his tempeh 2.0 at several Natural Products trade shows, and it was even blogged about on the web before Seth officially launched it. Shortly afterward Lightlife introduced very similar products. In fact, Lightlife may be the biggest tempeh maker in the world.

Frankly, Seth is glad that Lightlife is taking part of this new market because he doubts that he could meet the demand alone. Even the supermarkets are looking at his marinated tempeh strips. Either a Turtle Island or a Lightlife line of these products may well show up in Safeway before long. Seth already has his in Raley's and other similar chains. Its not easy for him to expand tempeh production because of the incubator. Seth is also starting to use more tempeh starter culture than is available. He continues to grow out the spores on rice, but does keep it going generation after generation. He is looking for an industrial culture lab to make the basic starter culture for him. Address: President and Founder, Turtle Island Foods, Inc., P.O. Box 176, Hood River, Oregon 97031. Phone: (503) 386-7766.

3460. Chang, Chen-Tien; Hsu, Cheng-Kuang; et al. 2009. Effect of fermentation time on the antioxidant activities of tempeh prepared from fermented soybean using *Rhizopus oligosporus. International J. of Food Science and Technology* 44(4):799-806. April. [32 ref]
• ***Summary:*** The researchers concluded that tempeh fermented with *R. oligosporus* for 10 days showed the highest antioxidant activities compared with the other extracts. Address: 1, 3-6. Dep. of Food and Nutrition, Providence Univ., No. 200 Chungchi Rd., Shalu, Taichung 433, Taiwan; 2. Department of Health and Nutrition Biotechnology, Asia University, No. 500, Lioufeng Road, Wufeng Shiang, Taichung 433, Taiwan.

3461. **Product Name:** [Yakso Tempeh].
Foreign Name: Yakso Tempeh.
Manufacturer's Name: FZ Organic Food.
Manufacturer's Address: Oppers 58 8471, ZM Wolvega, Holland.
Date of Introduction: 2009. April.
Ingredients: Soybeans*, water, rhizopus culture. * = Organically grown
Wt/Vol., Packaging, Price: 300 gm. Retails for 2.29 euros in a natural food store (April 2009).
How Stored: Refrigerated.
New Product–Documentation: Label sent by Seth Tibbott of Turtle Island after trip to Netherlands to study tempeh 2009. April 22. Red, black, brown and white against a bamboo-brown colored background with horizontal stripes. Vers produkt = New product.

3462. **Product Name:** Cool Beans: Handmade Tempeh [Soy Tempeh, Soy & Yellow Split Pea Tempeh, Soy & Black Bean Tempeh, Soy & Pinto Bean Tempeh, Soy & Garbanzo Bean Tempeh].
Manufacturer's Name: Viable Cultures.

Manufacturer's Address: P.O. Box 6051, Asheville, NC 28816. Phone: (828) 768-7931.
Date of Introduction: 2009. May.
Ingredients: Soybeans, culture.
Wt/Vol., Packaging, Price: 8 oz or 16 oz in plastic bag. Retails for $5.49 (8 oz single bagged) or $8.50 to $9.49 (16 oz double bagged)–including NC sales tax (7.75%).
How Stored: Refrigerated.
New Product–Documentation: Talk with Brian Moe, founder of Viable Cultures. 2009. July 7–I returned his call about Professional Edition of *The Book of Tempeh.* He makes two types of tempeh: soybean tempeh and specialty tempeh (soy and split pea, with nutty flavor).

Letter (e-mail) from Brian Moe. 2009. Dec. 9. He makes three fermented foods in Asheville: tempeh (5 kinds), raw krauts, and kombucha. The most recent, exciting, development for the business is that the tempeh is now being made with locally-grown soybeans (the beans are grown in Old Fort, North Carolina, about 30 miles east of Asheville). He sells his tempeh locally, at farmers' markets, to food stores, and to restaurants. His five basic types of tempeh (which all use the same self-adhesive label except for different ingredients) are: (1) Basic soy tempeh was first sold commercially in May 2009 in the two basic sizes in which he sells all his tempehs. (2) Soy & split pea tempeh (launched July 2009; made with yellow split peas). (3) Soy & black bean tempeh (launched July 2009). (4) Soy & pinto bean tempeh (launched July 2009). (5) Soy & garbanzo bean tempeh (launched Aug. 2009). His four "specialty" tempehs are one dollar per package more expensive than his soy tempeh.

Brian first learned to make tempeh in a workshop within a food conference, that was put on by the Sequatchie Valley Institute, near Chattanooga, Tennessee in 2001. Brian knows Sandor Katz of Liberty, Tennessee, and actually attended one of his fermentation workshops, years ago. "He is a great fellow and has done much to popularize the merits and how-to's of fermented foods." For more information: www.viablecultures.com.

3463. Haygunde, Chandan. 2009. Police HQ new home for Israeli businessman. *Indian Express.com.* June 20. http://www.indianexpress.com/ news/police -hq-new-home- for-israeli-businessman /478873/. [11 ref]
• ***Summary:*** "Pune: The Pune police commissionerate has been the residential address of Israeli businessman Hillel Shapira for the past two weeks. Not that he is new to Pune and couldn't find any another place to stay–he has been residing in the city for many years and runs his own business here.

"Things began to go wrong on June 3 when Shapira, partner and managing director of Dakini Health Foods Private Ltd., Mundhwa, was detained at the commissionerate. The fortnight-long detention followed an order from Deputy Commissioner of Police (special branch) Ravindra Sengaonkar. What's making it difficult for Shapira is that he has been held for activities allegedly detrimental to national security.

"The order said: 'The above named foreigner (Shapira) should not move out of the FRO (foreigners' registration office) premises from 03/06/2009 till his departure to Israel, as there is every likelihood that he may go underground and/or indulge in undesirable activities detrimental to the national security.'" Address: TNN.

3464. Reinfeld, Mark; Murray, Jennifer. 2009. The 30-minute vegan: Over 175 quick, delicious, and healthy recipes for everyday cooking. New York, NY: Perseus Books Group (print). xx + 348 p. Foreword by Deborah Madison. Illust. Index. 21 cm. [25 ref]
• ***Summary:*** Published as both a printed, bound book and as an e-book. The index contains 31 entries for tofu, 19 for tempeh, 15 for soy milk, 5 for miso, 4 for seitan, 3 for edamame, and 1 for meat substitutes.

Includes recipes for: Tempeh bacon (p. 57). Tofu scramble (p. 62). Seitan curry bowl (p. 119). BBQ tempeh sandwich (p. 123). Sea vegetable salad with edamame and wasabi (p. 142). Tofu garden vegetable salad (p. 148). Tuna-free tempeh salad (p. 149). Tofu satay (p. 193). Tofu saag (p. 209). Asian shiitake tofu (p. 223). Macadamia nut-crusted tofu (p. 224). Chipotle chile-rubbed southwest tempeh (p. 226). Tempeh vegetable enchiladas (p. 237).

Facing page 3 is a photo of Mark and Jennifer. Address: 1. Founding Chef, Blossoming Lotus Restaurant; 2. Co-author (with Reinfeld) of *The Complete Idiot's Guide to Eating Raw.* Both: Kaua'i, Hawaii.

3465. Febrina, Anissa S. 2009. The making of a staple food. *Jakarta Post* (*The*) (*Indonesia*). July 27. www.thejakartapost.com /news/2009/07/27/ the-making-a- staple-food.htm
• ***Summary:*** Production of tempeh has long been the domain of cottage or home industries. At one kampung (village; or neighborhood, or district in a city) in Tegal Parang, South Jakarta, you can see how tempeh is made at home. About 90% of the 300-plus inhabitants of Tegal Parang ("city of soy") make tempeh and/or tofu for a living. For more than 30 years, Muhammad Bintoro, age 56, has been living in this kampung and making tempeh. His tempeh shop is in his kitchen plus living room inside his home of 20 square meters that he has called home for the past 15 years.

Each day Muhammad buys 40 kg of soybeans, which his son washes and soaks overnight. The next morning Muhammad pours the softened soybeans into a machine that he built himself. He used to tread the soaked beans underfoot to remove the hulls, but now he simply runs them through this machine. The process for making tempeh is then described. Tempeh that is started on Thursday will be ready to sell on Sunday.

A color photo shows soaked soybeans being poured (with their soak water) into a square wooden box atop a soybean dehuller. Address: Staff writer, Japan.

3466. Deshpande, Swati. 2009. HC [High Court] seeks reasons for denial of visa to Israeli. *Times of India* (*Mumbai*). Sept. 11. http://articles.timesofindia. indiatimes.com/ 2009-09-11/ mumbai/28081154_1_ visa-extension- israeli-businessman- ram-jethmalani. [11 ref]
• ***Summary:*** "Mumbai: An Israeli businessman, denied a visa extension three years after he sought one, got a reprieve of sorts on Thursday when the Bombay high court directed the authorities not to put him in custody and sought reasons for the denial from the ministry of home affairs.

"A bench, headed by Justice Bilal Nazki, after hearing Israeli national Hillel Shapira's counsel Ram Jethmalani, said he should not be confined to Pune or Mumbai. Jethmalani expressed outrage over the government's actions in denying the 50-year-old 'legitimate resident' a visa extension without giving him any reason or hearing him.

"He said even a foreigner was entitled to protection under the right to life and equality under the Constitution but here was a case where the authorities were taking away the 'livelihood' of a man they 'had invited and allowed to set up business in 1996.'" Address: TNN.

3467. Misra, Anshika. 2009. Jethmalani dons new robe, becomes Shapira's saviour. *DNA* (*Daily News & Analysis*). Sept. 11. http://www.dnaindia.com/ mumbai/ report_jethmalani -dons-new-robe -becomes-shapira-s-saviour_1289226. [11 ref]
• ***Summary:*** "Senior lawyer Ram Jethmalani has officially stopped accepting new cases. But on his 86th birthday on Thursday, the feisty lawyer took up the case of a 50-year-old Israeli national who had been legally running a health food business in Pune for the past 13 years and has been served a deportation notice by the government.

"Hillel Shapira's business visa expired in June 2006 before which he had sought a visa extension in May 2006. The government did not act on the application for over two years and in April 2009, the Pune Foreigners' Registration Office (FRO) asked Shapira to leave India, stating that the government had rejected his visa extension application.

"Shapira moved the Bombay high court challenging his deportation. Despite representations to the government, he was put under detention in Pune in June. On September 8, he was arrested and taken to the Mumbai airport for deportation. Only on the HC's intervention, the deportation was put on hold. Hearing the government's 'disgraceful behaviour', Jethmalani decided to take up Shapira's case for free.

"'Everything that has happened in this case is without the authority of law,' Jethmalani argued. He pointed out that during Shapira's detention in Pune, he was kept in inhuman conditions without access even to a toilet. 'He [Shapira] had to pay for every act of sh**. They imposed a tax on his bowels. Bribery and corruption are the rule now,' he stated.

"Condemning the government's 'arbitrary act' of deporting a foreigner without giving him a hearing or a reasoned order, Jethmalani said such behaviour sends out a wrong signal, as we are inviting foreigners to invest in India.

"Additional Solicitor General DJ Khambatta said the home ministry had considered Shapira's case and decided not to extend his visa. He added that for three years, Shapira is in India without a valid visa. 'I can assure the court that we [Centre] will refund any charges made by him [Shapira] if proved,' Khambatta said, referring to Jethmalani's allegation of 'bowel tax'. The matter will be heard on September 24." Address: TNN.

3468. Thomas, Shibu. 2009. Foreigner can't claim right to a visa: HC [High Court]. *Times of India* (*Mumbai*). Nov. 22. http://articles.timesofindia. indiatimes.com/ 2009-11-22/ india/ 28078357_1_business-visa-hillel -shapira-extension. [11 ref]
• ***Summary:*** "Mumbai: In a landmark judgment, Bombay HC has ruled that a foreign national has no fundamental right to a visa to stay in India.

"Dismissing an application filed by Israeli businessman Hillel Shapira seeking extension of his business visa, a division bench of Justices B H Marlapalle and R Y Ganoo on Saturday upheld the order of the Union government to deport him.

"'No foreigner, whose request for a visa or its renewal has been rejected, has a right to be heard,' said the judges, adding, 'Once Shapira's application for extension of business visa has been rejected, the inevitable result is that he has to leave this country and he does not have any vested right for extension of his visa.'" Address: TNN.

3469. Chico. 2009. Re: Testing different tempeh starters. Letter (e-mail) to William Shurtleff at Soyinfo Center, Dec. 3. 2 p.
• ***Summary:*** In September 2009 I got hold of some samples of different commercial tempeh starters.

One sample was given by the Belgian company that holds the website tempeh.info. It consists of a Rhizopus oryzae (rather than oligosporus) culture. This starter is being sold as not developing black spots during "regular" incubation time (i.e. up to 48h). Another sample was obtained from GEM Cultures in the USA.

A fellow member of the yahoo discussion group on tempeh provided me with a sample of the famous Indonesian Raprima starter that is produced by The Indonesian Institute of Sciences (LIPI–Lembaga Ilmu Pengetahuan Indonesia). Actually, he provided 2 samples: one was pure Raprima out of the bag and the other, he had cut with rice flour. Of course Raprima is already originally cut with some extender, so this person only further extended it, as he claimed that Raprima

was already too strong.

Finally, the fourth sample was sold by the friendly person that runs the blog Kedai Perantauan (Overseas Store) http://kedaiperantau.blogspot.com/. He did not provide any details on the origin of starter, but he assured it was not Raprima.

The conditions of the trial do not, by any means, comply to any rigorous scientific experiment. The information I'm providing is to be taken at best with a pinch of salt. On top of that, the different starter providers all specify different procedures to making tempeh (temperature and incubation time differ greatly), and most important of all, specify different quantities of starter. I did my best to adjust accordingly, and since all the batches were incubated for the same time, results might not be fair and not a standard "apples with apples" comparison.

The previously cracked and dehulled and rehydrated organic soyabeans were cooked for approximately 1hour. They were split into 5 different pots and inoculated with the different starters. They were incubated on a custom-built, dedicated cabinet incubator using a thermostat.

After approximately 24h at 32ºC, the tempeh that created the most mycelium was definitely the one from GEM Cultures. But, it was the only one that created a lot of black spots. As we all probably know, black spots are the result of the mould having reached maturity and having reproduced sexually. There is a downside to this. I personally don't find eating the result of fungal sexual activity "yucky," but some people that do not know what this is, think that this tempeh is gone off and that the black spots are the presence of mould. Of course they are right, to some extent, but those people think that those moulds are external to tempeh and that they are pathogenic, and ignore the fact that tempeh in itself is a mould! Anyway, some commercial sellers avoid producing tempeh with black spots and this is the reason why Tempeh.info sell their special starter with a slower metabolism never creating black spots. And it didn't, in our experiment. This starter also created a rich, dense mycelium. The tempeh incubated with Raprima also didn't create black spots. The starter provided by Kedai Perantau only created very little black spots. The starter from Kedai Perantau and from Raprima created a not so dense, compact mycelium but this was, I suspect, due to the not enough starter being used. I noticed very little difference between the batches using custom-extended Raprima starter and out-of-the-bag Raprima. The further extended one produced slightly more mycelium than the other.

Having said this, let's move to the organoleptic results.

There was a "panel" of 4 people that tasted tempeh slices marinated with garlic and tamari, toasted on a skillet with olive oil. Because we wanted to be able to identify the different tempeh batches we cooked them all one after another, so this ended up being another variable that might have affected the results. But anyway. We all seemed to agree that the best tempeh was the one inoculated with the Raprima starter. This tempeh had a more dense flavour, much richer and with different, subtle, tones. Compared to it, the tempeh made with the GEM Cultures starter seemed more bitter, and with a poorer flavour. It was nonetheless quite good, but definitely not as good as the Raprima. The tempeh made with the Belgium tempeh.info starter tasted a bit of "chicken" but that might have been due to the fact that some slices were slightly overtoasted, mimicking a roasted chicken skin. (For the record, I haven't eaten any meat of fish for over 12 years, but others had the same impression too.) Apart from the chicken flavour, this tempeh was pretty bland, which on the good side means it was less bitter than the one from GEM Cultures. On the end of the spectrum we all seemed to agree that the tempeh made with starter provided by Kedai Perantau was the less interesting one.

It would be great to find out the exact details of each starter: strains of Rhizopus spp, extender dilution, if pure or mixed cultures, etc. Unfortunately this information is very hard to obtain.

Best Wishes, Chico. Address: Lisbon, Portugal.

3470. Astuti, Susi. 2009. Hidangan special tahu tempe [Special tofu and tempeh dishes]. Depok, Indonesia: Kriya Pustaka. iii + 72 p. [Ind]*
• ***Summary:*** Contains many tofu and tempeh recipes.

3471. Blatner, Dawn Jackson. 2009. The flexitarian diet–The mostly vegetarian way to lose weight, be healthier, prevent disease, and add years to your life. New York, NY: McGraw-Hill. xvii + 285 p. 24 cm. [116* ref]
• ***Summary:*** The author says she tries not to use the word "tofu"–even though she likes and recommends it. Instead she uses a longer term she coined–"veggie white meat." Tofu contains the taste "umami" also found in meat.

Soy is mentioned throughout this book, including (see index): Edamame, tofu, tempeh, vegetarian meats, vegetarian white meat. For definitions and a 'tofu tutorial" see p. 24-29.

The author, Dawn Jackson Blatner, RD, LDN, is a registered and licensed dietitian and a national spokesperson for the American Dietetic Association. She is the online nutritionist for Lifetime Television's MyLifetime.com; writes a food and nutrition blog for USA Today; teaches cooking classes; and appears regularly in print and television outlets such as CNN and RED magazine. Address: RD, LDN.

3472. Brackman, Agnes de Keijzer; Brackman, Cathay. 2009. The complete Indonesian cookbook. Singapore: Marshall Cavendish Cuisine. 184 p. Illust. (color). 24 cm. *

3473. Bryant, Terry. 2009. Vegan soul kitchen: fresh, healthy, and creative African-American cuisine. Cambridge, Massachusetts: Da Capo Press. xxvii + 223 p. + 8 unnumbered pages of plates. Illust. (some color). Index. 24

cm. [25 ref]
• ***Summary:*** A unique and pioneering book with 150 recipes! Terry is an African-American man with many distinctions and awards. Accompanying each recipe is the name of a musical soundtrack the author likes and would like to share. Each also has headnotes.

Soy-related: Cajun Creole-spiced tempeh pieces with creamy grits (p. 10-11). Open-faced BBQ tempeh sandwich with carrot cayenne coleslaw (p. 12-13, incl. a brief introduction to tempeh). Pan-fried coconut tempeh cubes with creamy celeriac sauce (p. 50). Spice mafé tempeh (p. 95-96). Tempeh, shiitake mushroom and cornmeal dumpling stew (p. 97-98).

One chapter (p. 139-53) is titled: "Protein routine: beans, tofu, tempeh, seitan." Red beans and brown rice with red wine-simmered seitan. Rosemary toasted tofu cubes. Blackened tofu slabs with succotash salsa (with a brief introduction to tofu. "Think of tofu as a blank canvas on which you can creatively arrange colors to make a beautiful work of art"). Tempeh-stuffed bell peppers. Good green tempeh packet. Whole-grain mustard and cornmeal crusted seitan. Smothered seitan medallions in mixed mushroom gravy.

On the front cover is a photo of the author cooking. For one page about the author, see p. 217 or www.bryant-terry.com. Address: Eco-chef, food justice activist, and author, Oakland, California.

3474. Esselstyn, Rip. 2009. The Engine 2 diet: the Texas firefighter's 28-day save-your-life plan that lowers cholesterol and burns away the pounds. New York, NY: Wellness Central. xiii + 273 p. Foreword by T. Colin Campbell, PhD. Illust. Index. 24 cm.
• ***Summary:*** A very interesting, readable, and innovative book that advocates a sound, healthy diet that can last a lifetime. "Rip managed to convert a firehouse full of committed firefighters to a plant-based diet. Rip (born in 1963) is the eldest son of Caldwell B. Esselstyn, Jr., M.D., who has become famous for his ground-breaking book *How to Prevent and Reverse Heart Disease.* This book is both similar and different. It is similar in that the basic whole foods, plant-based diets advocated by father and son are 98% the same (and please focus on practicing that 98% and not squabbling about the 2%). It is different in that Rip is from a younger generation, is not a physician but an athlete and firefighter, and is trying to help people who want help in lowering their high cholesterol levels and their weight. He is not primarily trying to help people who have had at least one heart attack, are a death's door, and are (generally) willing to do almost anything to save their lives.

In Chapter 2, "My story," we read that while in school, Rip was an outstanding athlete. He set many high school swimming records (he still holds a national record in the 200 meter medley relay); he was a top player in his high school tennis team and co-captain of the water polo team.

At the University of Texas at Austin, he was a three-time All American swimmer and an Olympic trials qualifier in the 100- and 200-meter backstroke and freestyle events. In 1986 he graduated from the University of Texas and within six months he was competing as a professional triathlete–which required a 1-mile swim, a 24.9 mile bike ride, and a 6.2 mile run. In the Hawaii Ironman Triathlon he competed against six-time Ironman Champion Dave Scott, who was powered by a plant-based diet–Rip lost. So in 1987, because of the influence of his father and of Dave Scott, Rip changed to a healthy, whole foods, plant-based diet. In 1997 he decided to become a fire fighter in Austin, Texas. He continued to compete and won many events and set many records. For example, in May 2008 he set the National Record at the U.S. Masters Swimming Championship in the 200 yard backstroke (1:56:55). Rip is married to Jill Kolasinski, and they have a son, Kole.

Rip's commitment to a healthy plant-based diet has resulted in many people asking him to help them with their diets. So in 2007, he devised the six-week Engine 2 Pilot Study in which 62 people agreed to eat a plant-strong diet; he put them through a gauntlet of tests before and after study to quantify the results–which were spectacular. Then in May 2008 he initiated a similar 4-week (28 day) study in which 15 people participated, 13 Engine 2 firefighters and two civilians. Again careful before and after records were kept. The average participant saw his total cholesterol drop 62 points (from 197 to 135), his average LDL (bad) cholesterol fall 50 points (from 125 to 74), and his weight drop 14 pounds (from 203 to 189). And all this in only 4 weeks! This book is based on the latter plan.

Rip makes much more use of soyfoods in his plant-based diet than does his father. The index contains 16 entries for tofu, 4 for tempeh, 4 for seitan, 2 for milk substitutes ("soy, rice, almond, and oat milk, for example"), 1 each tofu sour cream (p. 239), soy milk, soy yogurt (Silk or WholeSoy).

Soy related recipes include: Migas especiales (with 1 lb firm tofu, p. 154). Breakfast tacos (with "½ tube vegetarian breakfast sausage {we like Gimme Lean})," or use scrambled tofu (p. 155). E2 omelet (with "12 ounces Silken Lite Firm Tofu," p. 156). Lemon cornmeal pancakes (with "2 cups soy milk" and "½ cup soy yogurt, p. 157). Tofu steaks and mushrooms with mashed potatoes and green peas (with "1 pound extra-firm tofu," p. 180).

Linguine and creamy alfredo sauce (with "1 package Silken Lite firm tofu" and "2 cups unsweetened soy milk," p. 195). Lynn's meatloaf (with "10 ounces firm tofu," p. 204). Vegetable stir-fry with brown rice (with "1 pound seitan" and "two tablespoons low-sodium tamari," p. 208). Tempeh-mushroom stir-fry and soba noodles (with "1 package tempeh," and "3 tablespoons low-sodium tamari," p. 209). Red vegetable curry and brown rice (with "1 pound extra-

firm tofu," p. 210).

Pad Thai (with "1 pound broiled tofu cubes {see p. 210}," p. 211). The great wooden bowl salad (with "1 pound extra-firm tofu," p. 214-15). Tofu vegetable spread (with "½ pound extra-firm tofu," p. 238). E2 sour cream (with "1 package Silken Lite firm tofu," p. 239). Asian marinade (with "3 tablespoons soy sauce, p. 241). Island marinade (with "4 tablespoons soy sauce," p. 241). Add tofu and allow to marinate refrigerated for 30 minutes to 4 hours (p. 241). Rip's favorite snacks include "4. Soy yogurt: I'm particularly fond of the Westsoy... cherry" (p. 243). E2 Basics chocolate pudding (with "1 package Silken Lite tofu," p. 245). Fruit bowl with soy drizzle (with "4-6 ounce container of soy yogurt," p. 249). Fruit mousse (with "1 package extra-firm Silken Lite tofu," p. 255). Maple sour cream dream (with "1 vanilla soy yogurt," p. 256).

Many recipes call for "Bragg Liquid Aminos" which are simply HVP (hydrolyzed vegetable protein) made by a quick and unnatural / artificial process; soybeans, wheat, and/or corn are immersed in hydrochloric acid until, after 1-3 days, the acid has broken down the protein into its constituent amino acids. Fermentation (as of soy sauce) can do the same thing naturally in 4-6 months. HVP is a source of flavor without salt, but that flavor is generally considered to not nearly as good as the flavor of soy sauce.

Rip has an exercise component to his "Engine 2" 28 day plan.

And Rip gives people a choice as they start the 28 day plan; one can be a Fire Cadet or a Firefighter (p. 22). The "Fire Cadet option is for those who prefer a more gradual approach." In week 1 Cadets must stop eating dairy products and processed / refined foods (such as refined sugar, white flour, etc.). In week 2 Cadets must stop eating meat, poultry, fish and eggs. In week 3 Cadets must do without added or extracted oils–even vegetable oils such as olive oil. In week 4 Cadets and Firefighters eat the total E2 diet, a healthy, whole-foods, plant-based diet. A Firefighter (the plan Rip recommends) requires that a give up all of these unhealthy foods from the start of the program. "Americans consume a staggering 50 percent of their calories from refined and processed foods."

Cholesterol-lowering drugs (such as statins: Rip, who is not a physician, does not use them).

Salt and sodium: Rip advocates a low-sodium diet.

Support groups after the 4-week program: Optional. People who wish to can create or find one themselves (p. 92).

Meditation and relaxation to reduce stress: Not part of the program.

Sugar and sweets. Avoid refined sugars, high fructose corn syrups, and things such as sodas, candy to which they are added. Instead choose natural sugars such as those in whole naturally-sweet fruits (p. 114-15, 134). In desserts, Rip often calls for up to 3-4 tablespoons maple syrup or agave nectar, yet a recipe for Brownies (p. 247) calls for "½ cup light brown sugar, packed" and "½ cup raw sugar." And a recipe for "Oatmeal raisin cookies" (p. 253) calls for even more refined sugar. Rip admits he has a sweet tooth. Some of his desserts violate the basic principles of the Engine 2 diet; they contain large amounts of refined sugars–unlike the recipes (developed by his mother) in his father's book. Moreover, his mother strongly suggests that desserts be saved for special occasions.

This is a sound, healthy diet and anyone who stays on it for 28 days will see dramatic improvements in their overall health and weight.

The Engine 2 diet is a good, practical diet for the rest of your life. But go easy on the desserts and try to avoid the ones with refined sugar. Address: Austin, Texas.

3475. Hunt, Nirala. 2009. Tempeh: Food for the future. Fremantle, Western Australia: Vivid Publishing. 47 p. Illust. Index. 21 cm. *

3476. Moskowitz, Isa Chandra. 2009. Vegan brunch: homestyle recipes worth waking up for–from asparagus omelets to pumpkin pancakes. Cambridge, Massachusetts: Da Capo Life Long. xiv + 240 p. Illust. (color photos). Index. 23 x 18 cm.

• ***Summary:*** What a great writer! Another fine book; her middle name, Chandra, is Indian, and her last name, Moskowitz is Russian Jewish. "Dedicated to vegan hash slingers everywhere. Scrambled tofu saves lives!"

The index contains 30 entries for tofu, 8 for tempeh, 5 for seitan, and 1 each for miso and soy. Address: Brooklyn, New York.

3477. Ronnen, Tal. 2009. The conscious cook: delicious meatless recipes that will change the way you eat. New York, NY: William Morrow, an imprint of HarperCollins Publishers. 239 p. Illust. (Color). Index. 26 x 20 cm.

• ***Summary:*** A full-color vegan cookbook. The index contains 21 entries for tofu (including tofu ricotta, p. 82-83), 15 for Gardein, 11 for tempeh, 5 for soy milk, 3 for seitan, 2 each for miso and for soy cheese, and 1 each for soy creamer and soy yogurt. Includes interviews with: Yves Potvin, maker of Gardein (p. 157-59). Seth Tibbott, founder and president of Turtle Island Foods (p. 192-93). Address: Vegan chef, lives in Los Angeles and Vancouver, BC.

3478. Silverstone, Alicia. 2009. The kind diet: a simple guide to feeling great, losing weight, and saving the planet. Emmaus, Pennsylvania: Rodale Press. Distributed to the trade by Macmillan. xi + 308 p. Foreword by Neal Barnard. Illust. (color photos by Victoria Pearson). Index. 24 cm. [17 + 71 endnotes*]

• ***Summary:*** On the cover: "New York Times Bestseller." A powerful, very popular book about a plant-based (vegan) lifestyle and diet, which calls for only "real food," with some

nice macrobiotic flavor–A whole grain dish should be at the center of every meal, use of seasonal foods organically grown, azuki beans, daikon, kuzu, kabocha, miso, mochi, nori, sea vegetables, seitan, shoyu, no white or cane sugar (a "crazy making" food), tamari, umeboshi, etc.

By a well known actress who first became widely known for the film *Clueless,* a 1995 American comedy film loosely based on Jane Austen's 1815 novel, Emma.

She dedicates the book to Sampson, a stray dog she picked up on the streets of Los Angeles, to all animals who suffer needlessly, and to all "who do their best to tread lightly on the earth."

The index contains 16 entries for tofu, 14 for miso, 11 for seitan, 4 for soybeans (whole dry), 3 for soy milk, 2 each for edamame and tempeh, 1 each for butter substitute (soy-based margarine, p. 142-43), cheesecake–tofu, cheese–vegan (p. 143), shoyu (p. 142), sour cream–soy (p. 143), soy candles (p. 134), and tamari (p. 142).

Some good quotations from a fine writer: "And what about your health?... What if I told you that, by eating a plant-based diet, you will strengthen your immune system, beautify your skin, increase your energy, and reduce your risk (significantly) of cancer, heart disease, diabetes, arthritis, osteoporosis, allergies, asthma, and almost every other disease? What if I said that I feel myself getting younger, more powerful, and more beautiful as I age simply because of *what I eat?...* If you want to lose weight, you've come to the right place (p. 1).

"Eating a plant-based diet is the most ecologically friendly thing you can do... Every time you purchase organic plant-based food, you are protecting the quality of the soil and participating in a more equitable distribution of resources. Conversely, every time you buy a mass-produced steak–packaged in Styrofoam and plastic–you are feeding a huge, unsustainable, toxic death machine. This may sound harsh, but its the truth! There's a whole world of consequences behind every decision we make" (p. 131).

A large color photo on the cover shows lovely Alicia Silverstone, seated, with a bowl of food in one hand. The book contains many fine color photos on glossy paper. Address: Actress, activist, and committed conservationist, Los Angeles, California.

3479. Walters, Terry. 2009. Clean food: a seasonal guide to eating close to the source, with more than 200 recipes for a healthy and sustainable you. New York, NY: Sterling. 290 p. Illust. (Color). Index. 24 cm.

• ***Summary:*** This vegan cookbook, with a strong macrobiotic flavor and 223 recipes (arranged by season), shows you how to eat seasonal, unprocessed, and locally-grown foods that are good for people and the environment.

On pages 17-18 is a section titled "Soy" in which the author describes her belief that "there is so much information about whether soy is healthy or not." We have rarely seen a short section on soy containing so many clearly false or misleading statements as this one–too many to list. Clearly she gets her information about the nutritional value of soy from the Web rather than from scientific journals. Nevertheless she recommends and uses miso, tempeh, tamari / shoyu, and tofu.

The glossary of foods likewise contains many errors. For example: Aduki beans: Misspelled. Fermented black beans: She fails to mention that these are soybeans. Gomasio: Misspelled. Tempeh: "Made from pressed and fermented soybeans." Tofu: "Made from soybean curd."

The index contains 23 recipes for tofu, 9 each for miso, and tempeh, 3 for shoyu, and 4 for tamari. Address: Connecticut.

3480. Brown, Allan; Brown, Susan. 2010. Re: Update on Noble Bean at McDonalds Corners, Ontario, Canada. Several new photos. Letter (e-mail) to William Shurtleff at Soyinfo Center, Feb. 25. 1 p.

• ***Summary:*** "Thirty years and counting and selling all [the tempeh] that we make. A couple of hot vegan restaurants in Toronto (Urban Herbivore / Fressen [at two different locations in Toronto]) and in Montreal (Aux Vivres and The Green Panther; Google this one and you'll see a tempeh person with carrot stick arms) make the most delicious food with our product that folks go buy it retail after eating at their restaurant. Life is good, we are healthy..."

Each of these color digital photos is accompanied by a caption or explanation. They are: (1) Allan and Susan Brown, founders of Noble Bean. Photo taken on mother's day, 10 May 2009 at the home of Allan and Susan's son in Ottawa, Ontario.

(2) A blue Noble Bean promo sign created for the Toronto Vegetarian Association city directory to veggie food 2010. Can also see it at: http://veg.ca/pdf/torontovegdirectory-10.pdf.

(3) Three photos show how Noble Bean uses solar energy to heat the water for cooking soybeans to make

tempeh. Allan writes: These photos were taken on 2 June 2010. Cost of the evacuated tube solar hot water system: $19,000. Federal (Canadian) and Provincial (Ontario) governments each pitched in 25% and we (Noble Bean) paid the remaining 50% of the cost. It was part of a grant for small businesses. Water in the solar panels is heated to 85-90 degrees Celsius by solar radiation in sunny weather. Very little propane is needed to bring this water up to boiling (100 degrees C) for cooking soybeans. The 3 boxes you see on the close-up inside are heat dissipaters to expel extra heat during long stretches of sunshine. Insulated storage tanks manufactured in Budapest have heat exchangers inside that transfer the heat from the glycol in the panels to the cold water. Essentially a pump runs that glycol from the panels through the storage tanks and heats the water. We save about one-third of our propane costs with this system. The "payback period" (time required for the return on an investment to "repay" the sum of the original investment) is about 10 years. Address: Founders, Noble Bean, R.R. #1, McDonalds Corners, ON K0G 1M0 Canada. Phone: 613-278-2305.

3481. Culture Codec. 2010. Pune health-food company Dakini Foods forced to leave (Web article). http://www.culturecodec.com/post/440492747/dakini-foods-pune-closed. March 11. Posted.
• ***Summary:*** "It is a sad day here in Pune, as I have received word from our favorite health-food producers in town that they have been forced to leave for bogus visa reasons.

"Dakini Foods produced the best natural food products we could find in town–including all natural and fresh peanut butter, tofu, tempeh, and rice cakes. Ah, what a sad, sad day.

"What is more, it seems that corruption and abuse of power were the rule in the government's under-handed dealings with Hillel Shapira, the proprietor of Dakini Foods, even to the extent of imprisoning him and making him pay bribes to use the bathroom.

"We clearly live in uncertain times when the emerging leaders of the 'free' world act indiscriminately with impunity.

"We wish Hillel and the others the best, and hope they find prosperity in their next ventures. Good bye, Dakini!"

Note: Three links are given to newspaper articles; two of these are to the *Times of India.* Address: Pune, India.

3482. Haron, H.; Shahar, S.; O'Brien, K.O.; Ismail, A.; Kamaruddin, N.; Rahman, S.A. 2010. Absorption of calcium from milk and tempeh consumed by postmenopausal Malay women using the dual stable isotope technique. *International J. of Food Sciences and Nutrition* 61(2):125-37. March. *
• ***Summary:*** Absorption of calcium from tempeh did not differ significantly from milk. However, due to differences in the calcium content of tempeh, four servings of this product would be needed to get the same amount of absorbed calcium as that obtained from a 4-ounce glass of milk. Tempeh may provide a readily available source of calcium for this population of women at risk for low bone mass. Address: Dep. of Nutrition & Dietetics, Faculty of Allied Health Sciences, Universiti Kebangsaan Malaysia, 50300

Kuala Lumpur, Malaysia.

3483. **Product Name:** Marinated Tempeh [Smoky Maple Bacon].
Manufacturer's Name: Turtle Island Foods, Inc.
Manufacturer's Address: P.O. Box 176, 601 Industrial Ave., Hood River, OR 97031. Phone: 1-888-TOFURKY (863-8759).
Date of Introduction: 2010. March.
Ingredients: Organic soybeans, water, shoyu soy sauce (water, non-GMO soybeans, wheat, salt, culture), molasses, maple syrup, natural smoke flavor, autolyzed yeast extract, salt, potato maltodextrin, gum arabic, organic apple cider vinegar, starter culture (Rhizopus oligosporus). Contains: Soy, wheat. Certified organic by Oregon Tilth.
Wt/Vol., Packaging, Price: 7 oz. paperboard box.
How Stored: Refrigerated or frozen.
New Product–Documentation: Label (box; see p. 870) sent by Seth Tibbott of Turtle Island. 2010. Dec. 15.

3484. **Product Name:** Cool Beans: Handmade Tempeh [Soy & Blackeyed Pea Tempeh].
Manufacturer's Name: Viable Cultures.
Manufacturer's Address: P.O. Box 6051, Asheville, NC 28816. Phone: (828) 768-7931.
Date of Introduction: 2010. March.
Ingredients: Soybeans, culture.
Wt/Vol., Packaging, Price: 8 oz or 16 oz in plastic bag. Retails for $5.49 (8 oz single bagged) or $8.50 to $9.49 (16 oz double bagged)–including NC sales tax (7.75%).
How Stored: Refrigerated.
New Product–Documentation: Letter (e-mail) from Brian Moe. 2010. June 17. This tempeh was first made and sold in March 2010.

3485. *SoyaScan Notes.* 2010. The Jakarta Post: The best source of current English-language information on soybeans and soyfoods in Indonesia (Overview). May 16. Compiled by William Shurtleff of Soyfoods Center.
• ***Summary:*** Indonesia is the largest producer and user of soybeans in Southeast Asia. *The Jakarta Post* has digital archives of its daily issues going back to 1999. A search for soybeans or soybean gets hundreds of hits, as do searches for tempe, tempeh, tahu, tofu, kecap, soy sauce, kecap manis, etc.

The Jakarta Post, an English-language daily, is Indonesia's largest English-circulation, with an average circulation of about 50,000 copies. Launched on 25 April 1983, its head office is in Jakarta. The Jakarta Post is a small but influential newspaper oriented towards local English-speaking expatriates and the diplomatic community. In many ways, it acts as an unofficial mouthpiece of the Indonesian government into the international community. Go to: www.thejakartapost.com.

3486. **Product Name:** Tempeh, and Italian Tempeh Sausage.
Manufacturer's Name: Hearty Vegan (The).
Manufacturer's Address: Bastrop, Texas.
Date of Introduction: 2010. September.
New Product–Documentation: Talk with Beth Taylor, co-founder–with her daughter, Becky. This company is run by Beth and Becky. Visit to website www.heartyvegan.com. In the mid-1980s, Beth became a vegetarian and a vegan. Hearty Vegan traces its origins back to 1995 when Beth was hired as a personal chef to a woman who was very busy and who wanted healthy vegan food for her husband. "She was worried about her husband's high cholesterol, blood pressure, and weight." The Hearty Vegan started making and selling tempeh a year ago. They are now planning to move to Austin, Texas.

E-mail from Beth Taylor. 2011. Sept. 30. "I have been making and selling tempeh since 2003. Now we make and sell tempeh and italian tempeh sausage at Wheatsville Coop in Austin, Texas."
*

3487. Chappell, Mary Margaret. ed. 2010. Vegetarian Times everything vegan. Hoboken, New Jersey: John Wiley & Sons 352 p. Foreword by Neal Bernard, M.D. Illust. (full-page color photos). Index. 24 cm.
• ***Summary:*** Recipes from *Vegetarian Times* magazine. Chapter 7 (p. 131-64) is titled "Tofu, tempeh, and seitan." The index to the book contains 36 entries for tofu (divided into different types such as extra firm, firm, flavored and processed, silken; plus lots of basic information), 17 for seitan, 15 for tempeh, 7 for miso, 5 for soy crumbles and textured soy protein, 4 for meat alternatives, 4 for edamame, 2 for smoothies, and 1 for soymilk–although many recipes call for soymilk.

This book frequently includes alcoholic beverages with recipes and in photos.

3488. Finlayson, Judith. 2010. The vegetarian slow cooker: over 200 delicious recipes. Toronto, Ontario, Canada: Robert Rose Inc. 304 p. Illust. (color). Index. 27 cm.
• ***Summary:*** A "slow cooker" is an electric (100 watt) kitchen appliance. One chapter (p. 187-239) is titled "Beans, lentils, tempeh and tofu." The index contains 11 entries for tofu, 5 for miso, and 4 for tempeh. Recipes are prominently marked as "Vegan friendly" when appropriate. Address: Food writer, journalist and author.

3489. Hackett, Jolinda; Bull, Lorena Novak. 2010. The everything vegan cookbook: 300 recipes for any occasion! Avon, Massachusetts: Adams Media. x + 294 p. Index. 24 x 21 cm.
• ***Summary:*** The book begins: "Dear Reader: When I

decided to give up eggs and dairy, I asked every vegan I knew for their advice. One sentiment always stood out: 'Learn to cook.'"

Chapter 11, titled "Tofu" (p. 219-42) contains 26 tofu recipes of great variety and creativity. Chapter 12, "Seitan, TVP, and tempeh" (p. 243-65) contains 23 recipes, including homemade seitan.

Other soy related recipes: Vegan mayonnaise (with "1 12-ounce block silken tofu," p. 23). Vegan "pigs" in a blanket (with vegan hot dogs, p. 24). Vegan tzatziki (with soy yogurt, p. 30). Chili masala tofu scramble (p. 38). Quick tofu breakfast burrito (p. 42). Strawberry protein smoothie (with silken tofu, p. 43). Granola breakfast parfait (with soy yogurt, p. 46). Baked "sausage" and mushroom frittata (with vegetarian sausage or "beef" crumbles, p. 53). Creamy miso sesame dressing (p. 61). Tempeh dill "chicken" salad (p. 64). Edamame salad (p. 73). Winter seitan stew (p. 88). Saucy Chinese vegetables with seitan or tempeh (p. 105). Barley pilaf with edamame and roasted red peppers (p. 185). Cheesy macaroni and "hamburger" casserole (with veggie burgers, p. 210). TVP taco "meat" (taco filling, p. 250). Homemade baked seitan (p. 251).

Many other recipes call for soy milk or soy cream. Jolinda Hackett has been a vegetarian for nearly 20 years and a "plant-based vegan" for nearly ten. Address: 1. Santa Barbara, California; 2. RD [Registered Dietitian], Riverside, California.

3490. O'Donnel, Kim. 2010. The meat lover's meatless cookbook: vegetarian recipes carnivores will devour. Cambridge, Massachusetts: DaCapo Life Long. xii + 237 p. + [8] unnumbered pages of plates. Illust. (some color). Index. 24 cm. *
• ***Summary:*** Mentions tempeh.

3491. Quinlivan, Rachel. 2010. Cooking light: Way to cook vegetarian. Birmingham, Alabama: Oxmoor House. 424 p. Illust. (color). 24 cm.
• ***Summary:*** An excellent, gorgeous vegetarian cookbook, printed entirely on semi-gloss paper with many color photos.

One very creative chapter (p. 206-43) is titled "Tofu & tempeh." The contents (not including recipes): Tofu (description). Tofu varieties: Silken tofu, water-packed tofu, flavored tofu. Tempeh. Tempeh varieties (with a good color photo of each): Wild rice, soy, flax, garden vegetable, multigrain, original. How to press tofu. How to bread and pan-fry tofu. How to fry in a healthier way. How to saute tofu. How to marinate tofu. How to broil tofu. How to prepare lemongrass. How to peel and grate gingerroot.

The index contains 18 entries for tofu, 9 for tempeh, 2 for edamame, 2 for soy and 1 each for soy sauce (low-sodium tamari), black bean garlic sauce (such as Lee Kum Kee) and seitan. Address: R.D., editor.

3492. Reinfeld, Mark; Murray, Jennifer. 2010. The 30 minute vegan's taste of the East: 150 Asian-inspired recipes–from soba noodles to summer rolls. Cambridge, Massachusetts: Da Capo Press. xix + 266 p. Plus 16 unnumbered pages of color plates. Illust. (color photos). Index. 24 x 18 cm. [28 ref]
• ***Summary:*** The index contains 22 entries for tofu, 8 each for tempeh and for seitan, 3 for miso, 2 for edamame, and 1 each for tamari and for soy sauce (Noodles with sweet soybean sauce, pad siew).

Includes a good glossary with entries for miso, nama shoyu, seitan, shoyu, soy milk, soy sauce, tamari, tempeh, tofu Address: 1. Founding chef, Blossoming Lotus Restaurant, and author; 2. Author and teacher. Both: Kaua'i, Hawaii.

3493. Tamang, Jyoti Prakash. 2010. Himalayan fermented foods: Microbiology, nutrition, and ethnic values. Boca Raton, Florida: CRC Press. xix + 295 p. See p. 65-78. 230-31, 233. Illust. 25 cm. [584 ref]
• ***Summary:*** This is a very interesting, original, well researched and well written book. It is also the best source of detailed, well documented information on kinema and its close relatives seen to date.

The word Sanskrit word Himalayas means literally "abode of the snows." This region is the home of over 65 million people. Those in the eastern Himalayas are of Mongolian ethnicity and ancestry.

Chapter 3, titled "Fermented legumes," includes a section titled "3.1 Important fermented soybean foods" which states (p. 65): "Some of the common ethnic nonsalted sticky fermented soybean foods of the eastern Himalayas are *kinema* (Nepal, Darjeeling hills, Sikkim, and South Bhutan), *hawaijar* (Manipur), *tungrymbai* (Meghalaya; food of the Khasi and Garo peoples), *bekang* (Mizoram; food of the Mizo people), *aakhone* (also called *axone,* Nagaland; food of the Sema Naga), and *peruyyan* (Arunachal Pradesh). Manipur, Meghalaya, Mizoram, Nagaland, and Arunachal Pradesh are small states in northeastern India.

All of these foods are similar to *kinema.*

For all these six foods is given: The name of the food, a close-up photo of the food, indigenous knowledge of preparation, a flow chart showing the indigenous method of making the food, culinary practices (how the food is prepared / cooked and eaten), economy (its role in the local economy), microorganisms (dominant and secondary).

Section 3.3 is "Microbiology" (of fermented legumes): Kinema (microorganisms, source of inoculation in kinema production optimization of fermentation period, in situ fermentation of kinema, selection of starter culture, monoculture fermentation of kinema, development of pulverized starter for kinema production, phylogenetic similarity of *Bacillus* strains from Asian fermented soybeans), other fermented soybean foods of north east India.

Section 3.4 is "Nutritive value" (table 3.1 compares the nutritional composition of raw soybean and kinema). And section 3.5 is "Conclusion."

The long and very interesting section (9.1.1) on the "Antiquity of kinema" (p. 230-34) states that it is a food of the Kirat ethnic group (to which the Limboo belong) of eastern Nepal. The origin of the word "kinema" can be traced back to the word *kinaba* of the Limboo language (*ki* = fermented; *namba* = flavor). It is not clear whether *kinema* appeared first, then was disseminated and diversified, or vice versa. The Limboo believe that their discovery and domestication of the soybean (which they named *chembi*) in mentioned in one of their oral myths, as explained.

Kinema is made by fermenting whole soybeans, without inoculation, with strains of *Bacillus subtilis* bacteria. It is alkaline in nature / pH, has a sticky, stringy texture and a strong flavor.

Natto is believed to have been introduced to Japan from China during the Nara period around 710-714 AD (Ito et al. 1996; Kiuchi 2001). Kinema might have originated in east Nepal around 600 B.C. to 100 A.D. during the Kirat dynasty.

Products closely resembling kinema are popular foods in many non-Brahmin communities in the eastern Himalayas. "The Lepcha [the aboriginal inhabitants of today's Sikkim] call it *satlyangser;* the Tibetans and Bhutia [of Bhutan and Sikkim] call it *bari;* the Khasi [of Meghalaya] call it *tungrymbai;* the Meitei [of Manipur] call it *hawaijar;* the Mizo [of Mizoram] call it *bekang;* the Sema Naga [of Nagaland] call it *aakhone;* and the Apatani [of Arunachal Pradesh] call it *peruyyan."*

Soybean products closely resembling kinema outside of the Himalaya region are *natto* of Japan, *chungkokjang* of Korea, and *thua-nao* of Thailand [From Google Books Preview].

Dr. Sasuke Nakao (1972) coined the term "natto triangle," but Tamang proposes that the hypothetical triangle be renamed "Kinema–Natto–Thua-nao triangle" (or KNT triangle). An illustration / map (Fig. 9.1) shows this triangle with Japan, Nepal-India-Bhutan, and Thailand at its three angles; it also includes chungkokjang (Korea), pepok (Myanmar), sieng (Thailand), and *douche* [*douchi*] from south China. These mildly alkaline, sticky fermented foods are popular among the peoples of Mongolian origin. This may be due to their typical flavor called *umami* (Kawamura and Kara 1987). This flavor is developed during the hydrolysis of soy protein (by protease enzymes) into amino acids during fermentation. Have people of Mongolian origin evolved or developed particular senses which inclines them to enjoy the umami flavor? In the eastern Himalayas green vegetable soybeans are also boiled and eaten.

Section 10.3, "Commercialization through ethnic food tourism," suggests that just as tourists visit the vineyards of France, tempeh shops in Indonesia, and artisans or factories that make shoyu or sake in Japan, there are potential tourist sites for experiencing how traditional foods are made in the Himalayan villages. For kinema, try visiting Aho village in Sikkim.

About the author (p. xix): A good biography and portrait photo are given. In the "Acknowledgments" (p. xvii) he writes: "I am thankful to my wife Dr. Namrata Thapa for constant support and technical assistance in the preparation of this book. Over the past 16 years the team of brilliant Ph.D. students that I have recruited from the Food Microbiology Laboratory, Sikkim Government College, Gangtok, has been the real driving force in researching and identifying the scientific mechanisms of ethnic Himalayan fermented foods." He then lists their names. Address: Food Microbiology Lab., Sikkim Government College, Gangtok, Sikkim 737 102, India.

3494. Tamang, Jyoti Prakash; Kailasapathy, Kasipathy. eds. 2010. Fermented foods and beverages of the world. Boca Raton, Florida: CRC Press / Taylor & Francis. xii + 448 p. Illust. 25 cm. Series: Food science and technology. *

• ***Summary:*** Chapter 1. "Dietary culture and antiquity of fermented foods and beverages," by J.P. Tamang and D. Samuel (p. 1-40). Chapter 2. "Diversity of fermented foods," by J.P. Tamang (p. 41-84).

Chapter 6. "Fermented legumes: soybean and non-soybean products," by Toshirou Nagai and J.P. Tamang (p. 191-224).

Chapter 15. "Health aspects of fermented foods," by M. Farhad, K. Kailasapathy, and J.P. Tamang (p. 391-414).

3495. Ron, Wells. 2011. A brief history of Footprint Foods, dba Green Cuisine (Interview). *SoyaScan Notes.* Jan. 3. Conducted by William Shurtleff of Soyinfo Center.

• ***Summary:*** "We are Footprint Foods. We purchased the manufacturing part of Green Cuisine brand from Andy Cunningham in May 2008. We are in our third year now as owners of Footprint Foods. Andy still owns Green Cuisine." In June 2008 Rony reintroduced two brands of tofu and 5 brands of tempeh (fresh and frozen).

His product line is: 95% and above organic ingredients. Certification by PACD. Tofu (medium and extra firm), Tempeh, frozen (soybean, herb 7 grain) and fresh Tempeh (Indonesian, Original burger, BBQ burger, Marinated, Smoked, Simply Soybean), Mochi (brown rice, raisin cinnamon, sesame), Wheat Cutlets (plain, Ginger and Garlic), and Amasake (Plain, Hazelnut, Almond, Banana Mango).

Ran has five distributors in Canada, but none in the USA. The big chains in Canada are squeezing him and he doubts he will be in business in one year. Ron's e-mail: ron.footprintfoods@shaw.ca. Address: 712 Discovery St., Victoria, BC, V8T 1H2, Canada. Phone: 250 381 8638.

3496. Schmidt, Henry. 2011. Re: History of Henry's Tempeh

in Canada. Letter (e-mail) to William Shurtleff at Soyinfo Center, Jan. 12. 2 p.
• ***Summary:*** Henry Schmidt was born in 1948 in Winnipeg, Manitoba, Canada. His parents were farmers. He attended high school in Gretna, Manitoba, and graduated from the University of Manitoba, with a B.A. in sociology and psychology. In 1975 he left Manitoba and moved to Ontario, to pursue graduate studies in sociology at the University of Waterloo.

"1998–Daughter (Katrina) introduces me to tempeh via the statement of "I have an idea" and "The Book of Tempeh." Research led me to conclude: (1) That tempeh is a good food–good for the eater and good for the planet. (2) Consumption of tempeh is / will be a growing market. (3) There are a limited number of tempeh producers in Canada and there is opportunity for another one.

"Helped daughter, Katrina, establish a tempeh production facility on Saltspring Island (British Columbia), called Saltspring Tempeh. Note: Henry didn't live on Saltspring Island; his daughter did. After helping her to start her business, he returned home to Ontario. Tempeh production ceased on Saltspring in 2004.

2000–The company I was working with/for (senior housing development and management) was sold and I needed to find new employment. Having been in different business ventures with partners I had a desire to start a business all on my own. The tempeh business seemed to fit the bill. So about 8 years ago I moved to Ontario, from British Columbia, Canada, in order to gain access to a larger market, and to bypass the expensive process of transporting tempeh from an island (Saltspring) onto the mainland.

2000 Oct.–I sold my first tempeh to a retail outlet on Scott St. in Kitchener, Ontario, Canada. Started with one variety of tempeh (SoyKasha) and one year later introduced the second, SoyOnly. Using a unique production process we are able to produce tempeh that is mild in flavour, attractive in appearance and fresh to the consumer (i.e., not frozen). For several years I "flogged"–promoted (cold calling) and delivered–the product to health food stores.

2003–Started working with a health food distributor in Toronto area.

2004–Introduced a tempeh burger, discontinued after one year; decided to stick to our knitting and do what we do best–make excellent tempeh–and leave the value-added products for others to do.

2005–Had a website developed (traded tempeh for its development) website www.tempeh.ca

March–Introduced 3 more varieties of tempeh: SoyBasil, SoyCurry and SoyRedPepper (see next page).

Starting working with a second health food distributor, expanded coverage to include areas east to the coast and west to the prairies.

2010–Growth has been steady and organic; primary promotion is word-of-mouth from satisfied consumers and via demos at health food stores and trade shows

Currently our tempeh is sold primarily in health food stores though some main stream grocery stores (Toronto area) also carry our product.

Henry's favorite is SoyKasha Tempeh (the buckwheat gives it a nutty flavor) but the SoyOnly is the best-seller. Address: Henry's Tempeh Inc., 237 Arnold St., Kitchener, ON N2H 6E8. Phone: 519-748-8677.

3497. Tibbott, Seth. 2011. Update on tempeh, Tofurky and Turtle Island (Interview). *SoyaScan Notes.* Jan. 19. Conducted by William Shurtleff of Soyinfo Center.
• ***Summary:*** Tempeh sales constituted about 10.7% of Turtle Island's total sales last year; the remaining 89.3% was Tofurky products. "The various types of Tofurky have steadily become our dominant products by far. Yet sales of all our tempeh products increased 39.8% during calendar year 2010. The increase was in two areas: In March 2009 we launched tempeh strips [Marinated Tempeh] in 3 flavors (Lemon Pepper, Coconut Curry, and Sesame Garlic), and packaged each in a nice box. In June 2010 we added a fourth flavor–Smoky Maple Bacon." The 39.8% sales increase figure refers to sales of these tempeh strips (4 SKUs, in a 12-pack to the natural food market and a 6-pack to the mass market) and sales of cake tempeh and tempeh strips to the mass market. Last year, Seth sold 27,000 cases of tempeh strips and 29,000 cases of tempeh cakes (of various types) in the natural foods market. Seth has been selling tempeh in cakes for about 30 years, but in strips for less than 2 years. So the strips (which weigh 7 oz per individual package) have caught on very rapidly and are almost at the level of the cakes (which weigh 8 oz per individual). In short, natural foods customers like flavored, heat-and-serve, 2nd generation tempeh products. But here's the kicker; sales of the strips are growing fastest in the mass market (supermarkets), where Seth sells about 10 times as many cases of strips as he does cakes. And its just getting started. In places like North Carolina and South Carolina they just can't get enough of these 6-pack cases of marinated strips.

Turtle Island was already in mass supermarkets in the southeastern United States, but by mid-2011 the tempeh products were added as line extensions in those accounts – especially in Florida, North Carolina, South Carolina, and Georgia, in that order. The Sesame Garlic and the Smoky Maple flavors are the best sellers in the line.

There are a growing number of voices in America talking about the health and flavor benefits of fermented foods.

Seth's tempeh sales (all cakes) (all types) were $472,000 in calendar year 2002, rising to $1.3 million in 2009. So sales of tempeh cakes are way up compared with 10 years ago.

The biggest tempeh maker in the USA by far is Lightlife Foods (in Massachusetts); they make about 10 times as much tempeh (Fakin' Bacon and cake tempeh) as Turtle Island. No.

2 is Turtle Island, followed by Hain ("Where good brands go to die"), which now makes Westsoy Tempeh, which was originally made by Steve Demos of White Wave.

In the SPINS data there is no category for tempeh alone; rather the category is "Tempeh and Seitan." That category was $6.1 million in 2006, increasing to $6.5 million in 2009–but those numbers are inaccurate because Whole Foods recently stopped selling its data to SPINS.

How long will Seth continue to be in charge of his business? Good question. His stepson, Jaime Athos, who is extremely bright, has a PhD in neurobiology from the University of Washington (Seattle), is a vegetarian, and has good business sense, is "chomping at the bit" to take over the business from Seth. Seth wants to continue working there, but perhaps in an emeritus position and as chairman of the board. Seth's 60th birthday is coming up on April 20, 2011, so he has to start thinking about succession and what else he wants to do. He is considering starting a foundation.

Yet his basic financial situation is "rags to better rags; it's not rags to riches." Seth does not have a big attraction to money. "It's never been about money for me. In 1980 when I was first starting Turtle Island on my 2,500 bucks, I had never taken a class in business, but there were these free classes from the SBA [Small Business Administration] on how to start and run a business. So I figured, well, its free and I don't have any money, so I'd better go there and learn about business. So I go the first class and this guy stands up there and his first question to this room-full of entrepreneurs is: 'How many of you people are out there to save the world?' And my hand shot up. I looked around and no one else's hand was up. And I go, 'Oh god. Its a rhetorical question. I just flunked my first business exam.' And then he goes, 'How many of you are out there to make money?' Every hand shot up. The place went wild. I was embarrassed–but... I see myself as the cosmic goof–the least likely person to succeed in business. Anyone with a good work ethic, little luck, a good product–so long has she doesn't take herself too seriously–can succeed in business.

"When I was younger, I was always this humorous guy. But when I started a business making tempeh I suddenly transformed into this serious guy. The conventional wisdom was–you don't want to make this funny; just play it straight. You don't wanna to upset the middle class with a joke. And I lost tons of money. It was only when I came out with this wacky Tofurky product, that people thought was a joke, did I start making money. Humor started creeping into the way Turtle Island presented itself at that time. The subject lent itself naturally to humor. "I could feel I was letting my true self come through in the business."

There has been a shakeup at Lightlife Foods. Top management has been asked to leave Turner Falls and move to Conagra Headquarters in Omaha, Nebraska. At least one top manager has quit.

In June 2010 Turtle Island launched a new product which has, so far, been extremely successful–Tofurky Pizza (vegan), in 3 SKUs. The cheese they use is the remarkable new tapioca-based Daiya Vegan Cheese, made by Daiya Foods, a relatively small start-up company in Vancouver, Canada (www.daiyafoods.com) that was founded in mid-2007 by Andre Kroecher and Greg Blake. They have taken the cheese-alternative category by storm. You can find shredded pieces of Daiya at any Whole Foods Market in the non-dairy cheese section.

Seth asks:

"Have you heard the joke about the fire in the vegetarian cheese factory? Everything melted except the cheese!" This non-dairy cheese really melts and stretches, is gooey and tastes great. Amy's owns the natural foods pizza category but Seth's 3 vegan pizzas are moving up fast on the charts. They started to be sold commercially in June 2010.

Sales of the three Tofurky products (Roast & Gravy, Feast, and Roast) reached 353,250 units in calendar year 2010. Sales have increased every year since Turtle Island started making the product in about 1995. The number sold has increased every year as follows (numbers prior to 2002 were rounded off to the nearest thousand): 1995–500. 1996–1,500. 1997–18,000. 1998–45,000. 2000–84,000. 2002–118,000. 2004–152,070. 2006–201,108 (one millionth Tofurky roast sold!). 2008–308,436. 2009–339,996 (two millionth Tofurky roast sold!). 2010–353,250. Total: 2,360,734.

Tofurky Feast (3.5 lbs): First sold in November 1995. Gone through several incarnations of size and product offerings. Current pack holds: two pound Tofurky Stuffed Roast, 14 oz Savory Tofurky Gravy, 11 oz Amy's Vegan Chocolate Cake, one set of Tofurky Jurky Wishstixs, Happy Tofurky Day card, coupons for Tofurky products. Sold Frozen, mainly in Natural Foods stores like Whole Foods, Berkley Bowl, etc.

The Tofurky Roast has always had tofu in it; the first two years it was all tofu, no wheat gluten. In 1997 wheat gluten was added to give more turkey-like texture and to aid in freeze/thaw process. Tempeh Drumettes were part of the original Tofurky Feast but were replaced with Cranberry Apple Potato Dumplings in 2003, which were in turn replaced with Amy's Vegan Chocolate Cake in 2010.

Tofurky Roast (26 oz): First sold in October 2002. Only the Tofurky Stuffed Roast. Sold Frozen, mainly in Natural Foods market.

Tofurky Roast and Gravy (2.5 lbs): First sold in October 2005. Includes one 26 oz Tofurky Stuffed Roast and 14 oz of Savory Tofurky Gravy. Sold Refrigerated in Mass Market accounts like Trader Joes, Publix, Safeway, etc. Address: President and Founder, Turtle Island Foods, Inc., P.O. Box 176, Hood River, Oregon 97031. Phone: (503) 386-7766.

3498. Shurtleff, William. 2011. Results of searches for the word "tempeh" in books or magazines on Google Books

published worldwide in any language from 1975 to 2011 (Overview). *SoyaScan Notes.* March 22.
• ***Summary:*** This is a search in the "Google Books" database for the word "tempeh" anywhere in books or magazines published worldwide in any language after Jan. 1, 1975.

(1) The word "tempeh" anywhere in the document plus the word "vegetarian" or "vegetarians" in the title of the document: 3,301 hits (results).

(2) The word "tempeh" anywhere in the document plus the word "vegan" or "vegans" in the title of the document: 2,053 hits (results).

(3) The word "tempeh" in the title of the document: 971 hits.

(4) The word "tempeh" anywhere in the document and the word "soy" in the title of the document: 846 hits (results). (5) The word "tempeh" anywhere in the document and the word "soybean" or "soybeans" in the title of the document: 39 hits (results). (6) The word "tempeh" anywhere in the document and the word "soyfood" or "soyfoods" in the title of the document: 17 hits (results).

(7) The words "tempeh" and "tofu" in the document: 22,000 hits.

(8) The words "tempeh" and "miso" in the document: 9,760 hits.

(9) The words "tempeh" and "seitan" in the document: 3,590 hits.

(10) The word "tempeh" in the document every five years: 1970-1974 = 567 hits. 1975-1979 = 999 hits. 1980-1984 = 1,760 hits. 1985-1989 = 2,670 hits. 1990-1994 = 2,740 hits. 1995-1999 = 5,390 hits. 2000-2004 = 8,520 hits. 2005-2009 = 10,700 hits. Address: Soyinfo Center, P.O. Box 234, Lafayette, California 94549.

3499. Tibbott, Seth. 2011. Re: Capitalization of Turtle Island Foods Letter (e-mail) to William Shurtleff at Soyinfo Center, April 22. 1 p.
• ***Summary:*** "Initial capitalization was $2,500 of my own money.

"My brother Robert Tibbott invested $19,000 in May 1990 when we incorporated into Turtle Island Foods, Inc. He also loaned me $100,000 in 1992 to finance the move from Husum to Hood River; the loan was paid back in 1999. We had several other small loans from the bank and Robert but these were short term loans (for soybeans, etc.) and were paid back.

"My mother gave me $5,000 in 1991 because she saw how hard I was working. I told her I would give her stock amounting to 13% of the company which later helped to pay her medical bills as she aged and needed more care." Address: Turtle Island Foods, Inc., P.O. Box 176, 601 Industrial Ave., Hood River, Oregon 97031. Phone: 541-386-6925 OF.

3500. *SoyaScan Notes.* 2011. Updated USDA database on the isoflavone levels in foods, commercial ingredients, soybeans and soyfoods (Overview). June 24. Conducted by William Shurtleff of Soyfoods Center. [1 ref]
• ***Summary:*** The link is now http://www.ars. usda.gov/ SP2UserFiles/ Place/12354500/ Data/isoflav/ Isoflav_ R2.pdf. "Legumes and legume products" starts on p. 16. Start by going to page 24, which is where the soy section begins. Then you can do a PDF search for fermented soyfoods such as: Tempeh, miso, soy sauce, natto, or Sufu (fermented tofu)–and you will see that they are NOT lower in total (or specific isoflavones) than nonfermented soyfoods such as: Tofu, soymilk soybeans (immature), soybeans (mature), etc.

3501. Jones, Paul. 2011. Re: Early history of Paul's work with tofu. Letter (e-mail) to William Shurtleff at Soyinfo Center, June 6. 1 p.
• ***Summary:*** Q1. On what date did you make your first commercial tofu?

Ans: It must have been 1977/78–I was already in production when we came to 'Soyfoods Comes West' in 1979. Peter Bradford might remember for it was he who gave us the Chinese stone grinder to make the 'Go.'

Q2. Was the address at that time you started commercial production: 155 Archway Rd., Highgate, London, N6 4NA, England? Ans: Yes.

Q3. Do you remember the date when you left that address and moved to St. Albans, Hertfordshire, England? Ans: 1980/81? We moved to the old brewery, Wheathampstead House, Wheathampstead, Herts.

Note: Current website: www.soyfoods.co.uk. Paul Jones now works with Peter 'Tempeh' Efemey. On the website is a nice video (6:50 minutes) of Paul making tofu on BBC Two "Chinese Food Made Easy" for Ching-He Huang, who uses that fresh tofu to make a Chinese dish. In his baking, Paul is pleased to use flours milled by Miller Nigel Moon, who helps fly the flag for sustainability and the local food economy by restoring Whissendine Windmill to its original power source. The final pair of sails were fitted on 7th September, 2006 with major funding from English Heritage. The grain is locally grown and organic. Address: Founder, Soyfoods Ltd., 66 Snow Hill, Melton Mowbray, Leics., LE13 1PD. Phone: 01664 560572.

3502. Shurtleff, William. 2011. Comparison of the macrobiotic diet and Dr. Caldwell Esselstyn's whole foods, plant-based diet (Editorial). *SoyaScan Notes.* July 2.
• ***Summary:*** Meat: The macrobiotic diet allows consumption of fish, shellfish, and other seafoods, whereas the Esselstyn diet (which is designed to prevent and reverse coronary artery disease / heart disease) allows no animal products. Dairy: Both diets prohibit consumption of dairy products.

Refined carbohydrates, such as white sugar, white rice, white flour, white: Both diets prohibit it except that the Esselstyn diet uses white sugar in a small percentage

of desserts. For example, in the book *Prevent and Reverse Heart Disease* (2007), the recipe for Birthday Cake (p. 276) calls for "1 cup (or less) sugar. Chocolate Red Devil Cake (p. 278) calls for "1 cup sugar." Luscious Lemon Cake (p. 280) calls for "3/4 cup (or less) brown sugar plus granulated sugar sprinkled over the cake.

Salt: The salt content of the macrobiotic diet (like the traditional Japanese diet) is high, provided by such condiments as miso, soy sauce (tamari), and gomashio, whereas the Esselstyn diet aims to use as little salt as possible–since many of patients have cardiovascular disease and hypertension. "If you *still* miss salt, try adding a little Bragg Liquid Aminos" (a salt alternative) or small amounts of "South River Sweet White Miso or low-sodium tamari. Try to limit sodium consumption to 2,000 mg a day." A table shows the amount of sodium in salt and four condiments (p. 122).

Soyfoods: The macrobiotic diet uses soyfoods abundantly; in addition to miso and tamari, it likes tempeh, natto, and small amounts of tofu. The Esselstyn diet advises: "Eat soy products cautiously. Many are highly processed and high in fat" (p. 121).

Fruits: The macrobiotic diet uses fruits sparingly, since most are classified as very "yin." However apples (the most yang fruit) are used quite freely. The Esselstyn encourages the use of all fresh, whole fruits except avocadoes (which are high in fat).

Grain vs. vegetables. The macrobiotic diet is based on the basic idea of a primary food (such as brown rice or other whole grains) and secondary foods (such as vegetables). The Esselstyn diet encourages the use of all fresh, whole vegetables. One might say that the center of the Esselstyn diet is fresh fruits and vegetables.

The macrobiotic diet strongly discourages consumption of foods which are members of the nightshade family–potatoes, tomatoes, and eggplants. The Esselstyn diet encourages the consumption of whole (unpeeled) potatoes and tomatoes.

The macrobiotic diet resembles a Japanese diet, whereas the Esselstyn diet resembles an American diet.

Use of local, seasonal foods: The macrobiotic diet emphasizes this somewhat more than the Esselstyn diet.

Use of added oil: The Esselstyn diet strongly discourages this, whereas the macrobiotic diet focuses more on the quality of the oil, but while still advising moderation in quantity, includes recipes for deep-fried foods (such as tempura).

The name of the macrobiotic diet is a short, whereas the name of the "whole-foods, plant based diet" is descriptive but too long, and in need of a shorter name. Address: Founder and owner, Soyfoods Center, Lafayette, California. Phone: 925-283-2991.

3503. Kageura, Makiko. 2011. Re: Color photos of Mr. Rustono, of tempeh made by Rustono and Japanese-style recipes made from it by Makiko. Letter (e-mail) to William Shurtleff at Soyinfo Center, July 25. 1 p. Typed, with signature. [Eng]

• ***Summary:*** The tempeh was made by Rustono, who was born in Indonesia and who has a tempeh shop in Otsu, Shiga prefecture near his home. He is now building (by himself) a much larger tempeh shop–actually a factory. He has 4,000 to 5,000 customers now for his tempeh. The dishes were created by Makiko. Photos show: (1) A package of fresh tempeh, made by Rustono, in a perforated plastic bag. (2) Slices of this tempeh on a cutting board in the kitchen of Makiko's apartment building, 'Takasegawa House, in Kyoto,

Japan. (3) Tempeh sushi, with a bead of mayonnaise on top! (4) Rustono at his tempeh factory in Otsu holding a large piece of fresh tempeh he made. (5) Rustono with a friend. (6) Rustono laughing. (7) Rustono in his tempeh factory. (8) Rustono with a co-worker. (9) Slices of tempeh freshly fried by Makiko. (10) A tempeh curry dish made by Makiko. (11) Keripik tempeh [tempeh chips] dish made by Makiko. (12) Japanese-style tempeh recipe made by Makiko. (13-14) Rustono at his new tempeh factory in Otsu. Address: 608

Honyakushi, Nara City 630, Japan.

3504. Kageura, Makiko. 2011. Re: Color photos of Mr. Rustono at his tempeh factory in Japan. Letter (e-mail) to William Shurtleff at Soyinfo Center, July 25. 1 p. Typed, with signature. [Eng]
• ***Summary:*** Four photos (see next 3 pages). The tempeh was made by Rustono, who was born in Indonesia and who has a tempeh shop in Otsu, Shiga prefecture near his home. Address: 608 Honyakushi, Nara City 630, Japan.

3505. Astuti, Mary. 2011. Re: Yayasan Tempe Indonesia (Indonesian Tempe Foundation). Researching a book on black soybeans. Letter (e-mail) to William Shurtleff at Soyinfo Center, May 31. [Eng]
• ***Summary:*** "Yayasan Tempe Indonesia (Indonesian Tempe Foundation) was established at Jakarta on April 11, 1995 and the book of 'Bunga Rampai Tempe' [Anthology of Indonesian tempeh]. was published in 1996 in Indonesian.

Indonesian Tempe Foundation was supported by Indonesia's Ministry of Food. I am sorry to tell you that the Indonesian Tempe Foundation is no longer active because (1) there is no support from the government and (2) Dr. Sapuan, the head of this foundation, has retired.

"Through the support of the American Soybean Association (ASA) there is Forum Tempe Indonesia (Indonesian Tempe Forum). I have been involved in Yayasan Tempe Indonesia and Tempe Forum Indonesia.

"I am in the process of researching and writing a book about black soybeans, including the black soybean products such as sweet soysauce, tempe, tofu and crackers. I hope it will be finished by the end of this year." Address: Indonesia.

3506. Kageura, Makiko. 2011. Re: Teaching high school students how to make tempeh in Japan. Letter (e-mail) to William Shurtleff at Soyinfo Center, July 27. 1 p. [Eng]
• ***Summary:*** Makiko, who lived in Canada for a year and studied the tempeh market there, has now returned to Japan and taken an interest in tempeh in Japan. She was invited by a friend to visit Ehime Prefecture Ozu Agricultural Senior High School (*Ehime Kenritsu Ohzu Nogyo Kotôgakkô*), a public agricultural high school on the island of Shikoku, where she met Mr. Yamada, the biology teacher. She imagined that he had a personal interest in tempeh but she did not know when or where he had developed that interest. She has just returned home from the one-day trip.

To her surprise, Mr. Yamada told her that teaching students how to make tempeh in the classroom is part of the biology curriculum–and has been for at least 10 years. The process is described as a lesson plan in the textbook and each student is required to make his or her own tempeh!

Mr. Yamada got soybeans from the local public market in Ohzu and he sometimes uses soybeans grown at the school. He ordered tempeh starter culture via the Internet. They made the tempeh at room temperature at the laboratory. In winter, he told me to use the experimental incubator installed in the school to keep the normal temperature. Even in September they can make it at room temperature; its often good over a bit 30ºC (and at least 25ºC). They also made okara tempeh.

The students then cooked and ate their fresh tempeh, in the form of tempeh cookies, tempeh yokan, and tempeh donuts.

What a great way to learn about microbiology, molds, fermentation, fermented foods, and tempeh.

This shows that anyone can make tempeh at home. The only requirements are several cups of soybeans, some tempeh starter culture, and a warm place or incubator.

Makiko adds: "One interesting thing is that everyone can make tempeh at home and tempeh sushi seems to be good for everyone. My mum loves my tempeh sandwiches too!" Address: 27-1 Kamikarakawa, Iyo-city, Ehime 799-3134, Japan.

3507. Jamieson, Alexandra. 2011. Vegan cooking for dummies. Hoboken, New Jersey: Wiley Publishing, Inc. xx + 364 p. Illust. (some color). Index. 24 cm.
• ***Summary:*** A fun, well written, and very informative book. Contains more than 160 healthy vegan recipes. The index contains 22 entries for tofu, 14 for tempeh, 11 for soy foods, 5 for seitan, 3 for edamame, 2 each for milk replacements (soy milk), miso, soy sauce, soy yogurt, and 1 for TVP (textured vegetable protein).

Also mentions macrobiotics, mochi, raw foods diet, sea vegetables, sesame oil, sesame seeds, etc. Address: Professionally trained vegan chef and board certified holistic health counselor (CHHC), and member American Association of Drugless Practitioners (AADP), New York City.

3508. Spots.
• ***Summary:*** (a) Fresh thick tempeh at a market in Indonesia wrapped in banana leaves (b) Freshly sliced thick tempeh. (Source: Wiki at Tempeh).

3509. *SoyaScan Notes.* 2011. Soyfoods scientific research wish list (Overview). Compiled by William Shurtleff of Soyinfo Center.
• ***Summary:*** 1. How to get vitamin B-12 into tempeh, ideally by inoculation with an organism. 2. What degree of grinding of whole soybeans gives the maximum extraction of soluble protein? Of soluble fat? Of both combined. How does this relate to the type of filtration system? 3. How does flatulence in vegetarians compare with that of non-vegetarians, on average. 4. Research on the ability of tofu to lower blood cholesterol in humans (parallel to that done by Sirtori and Carroll on isolated soy proteins).

3510. *SoyaScan Notes.* 2011. Early tempeh manufacturers in Europe, listed chronologically by country (Overview). Compiled by William Shurtleff of Soyinfo Center.
• ***Summary:*** Netherlands: ENTI 1946 April, Firma E.S. Lembekker 1959 Jan., Handelsonderneming van Dappern 1969, Firma Ergepe 1981 Jan., Jakso/Yakso 1982 Jan., Haagse Tempe Fabriek 1982, Consuma B.V. 1983, Heuschen B.V. 1986.

France: Traditions du Grain 1982 March, Athanor 1985 Oct., Les Sept Marches 1985 April.

UK: Paul's Tofu & Tempeh 1981 Jan., One World Natural Foods 1982.

Switzerland: Soy Joy 1982 April.

Belgium: De Hobbit 1982 May, Lima Foods 1986.

Austria: Natuerliche Lebensmittel, Paul Stuart Zacharowicz 1983 Sept., Sojvita Produktions 1984 June.

West Germany: Pro Natura 1985.

Spain: Zuaitzo 1986.

Italy: La Finestra sul Cielo 1987 fall.

3511. *SoyaScan Notes.* 2011. Chronology of Soyfoods Center: The work of William Shurtleff and Akiko Aoyagi. Compiled by William Shurtleff of Soyinfo Center.
• ***Summary:*** 1. Introducing soyfoods to the West: Popular books (1972 Oct.–1979 July).

The Book of Tofu:

1972 Oct. 22–First visit to San-gen-ya tofu shop in Tokyo. Mr. Toshio Arai begins to teach William Shurtleff the traditional art of making tofu.

1972 Dec. 22–Meet Nahum Stiskin of Autumn Press. Start to write tofu booklet.

1973 Jan. 13–Sign contract for *Book of Tofu* with Autumn Press.

1973 March 2–Visit Sasa-no-yuki tofu restaurant in Tokyo.

1975 Dec. 12–*The Book of Tofu** published by Autumn Press.

* = Book illustrated by Akiko Aoyagi.

1978 Dec. 22–*The Book of Tofu** published by Ballantine Books in a mass-market pocketbook edition that retails for $2.95.

The Book of Miso

1974 Feb/March–Study miso and shoyu in Japan on trip with Bob Gerner, head of Westbrae Natural Foods.

1974 May 7–Start to write *The Book of Miso,* table of contents.

1975 April–Autumn Press accepts idea of publishing *The Book of Miso.* Contract signed Aug. 18.

1976 Sept. 23–*The Book of Miso** published by Autumn Press.

1976 Sept. 29–1977 Feb. 3–Tofu & Miso America Tour. We do 70 public programs, many TV and radio interviews, drive our van 15,000 miles in 17 weeks.

The Book of Tempeh

1977 May–To Indonesia for one month of tempeh research.

1978 Feb. 27–Sign contract with Harper & Row.

1979 July 14–*The Book of Tempeh** published by Harper & Row.

2. Working to build a soyfoods industry in the Western world (1977 April–present)

1977 April 5–Establish Takai Tofu and Soymilk Equipment Co.

1977 Aug. 16–First Takai catalog of tofu and soymilk equipment published.

1977 Aug. 16–*Miso Production** published by Soyfoods Center–the first book we self-published.

1978 July 28-30–The Soycrafters' Association of North America is founded in Ann Arbor, Michigan. William Shurtleff helps to organize the inaugural meeting, is a founding member, and a member of the first board of directors.

1978–Soyfoods Center starts to develop a mailing list (typed so as to fit on pressure sensitive labels) of all people who have purchased books or contacted us.

1979 July 15–*Tofu and Soymilk Production** published by Soyfoods Center.

1979 July–The first issue of *Soycraft* magazine is published by Richard Leviton, director of Soycrafters' Association in Massachusetts. Each mailing is based on the use of Soyfood Center's mailing list–free of charge.

1980 March 10–*Tempeh Production** published by Soyfoods Center.

1980 Sept.-Dec.–Our mailing list of about 5,000 names and addresses, divided into 70 coded categories, is computerized by Parallel Procedures in San Francisco. This was done primarily to help Richard Leviton of *Soycraft* magazine.

1981 Dec.–There are now 10,900 names on our computerized Soyfoods mailing list, rising to 13,800 names by May 1982.

3. Documenting the history of soybeans and soyfoods (1980 Oct.–present)

1980 Sept. 10–Start to build what we hope will become a large library at Soyfoods Center with regular trips to the University of California at Berkeley library system.

1980 Oct. 22–Start writing *History of Soybeans and Soyfoods.*

1984 June 1–History book manuscript is now completely in our word processor: 2,500+ pages, 70+ chapters.

1984 June 21–Soyfood Center's annual summer intern program begins. Irene Yen, a Stanford student starting her senior year, is our first summer intern.

1984 July 17–*History of Tempeh published*–our first history book.

4. Studying the burgeoning soyfoods industry and market (1982 Sept.–1985 Feb.)

1982 May 16–*Soyfoods Directory and Databook* (1st edition) published. Renamed *Soyfoods Industry and Market: Directory and Databook* on 26 Feb. 1983. 3rd edition.

1982 Sept. 10–*Soyfoods Labels, Posters, and Other Graphics* published.

1984 Feb. 25–*Soymilk Industry and Market* published.

1985 Feb. 22–*Tofutti and Other Soy Ice Creams* published.

1990 May 8–*Tofu Industry and Market in Europe* published.

1990 July 17–*Soymilk Industry and Market in Europe* published.

1994 Jan.–*Soyfoods Industry and Market: Bibliography and Sourcebook* published.

5. Foreign language editions of our books are published (1980 -)

1980 July–*Das Miso Buch** (hardcover and paperback) published by Ahorn Verlag (Wolfgang and Gabriella Furth-Kuby) in Germany.

1981 Aug.–*Das Tofu Buch** (hardcover) published by Ahorn Verlag in Germany.

1988 Nov.–*Das Tempeh Buch** (hardcover) published by Ahorn Verlag in Germany–6 years after the project started.

1988 Nov.–New German pocketbook editions of *Das Tofu Buch* and *Das Miso Buch* (paperback) published by Goldmann Verlag.

6. Developing a computerized information center (1980 Dec.–present).

1980 Dec. 12–Mailing lists of Soyfoods Center and Soyfoods magazine merged and computerized by Parallel Procedures in San Francisco. 5,500 names in 50 categories.

1983 Sept. 28–Install first computer at Soyfoods Center, IBM-PC with 20 MB hard disk and word processing software to use for writing our book on *History of Soybeans and Soyfoods*.

1985 May 9–Install Revelation database manager software for developing a computerized bibliographic database on soya.

1985 July 31–Finish keying all 6,677 file cards (3x5 inch) into our computerized database. Our library is now computerized.

1985 Aug. 30–Our computerized database, containing 9,500 bibliographic records, is now available for use by the public.

1986 Sept. 1-16–The first of many trips to do library research at the USDA National Agricultural Library, Library of Congress, and National Library of Medicine–America's three national libraries, all located in and about Washington, DC.

1987 July 6–Start entering Commercial Soy Products into our database.

1987 Oct. 11–*Bibliography of Soymilk, from 1578 to 1987: With 1,584 References* published–our first bibliography.

1987 Oct. 19–Coin the name SoyaScan, start using it to refer to our computerized database, and apply for a registered trademark, which we are issued on 19 July 1988.

1993 Feb.–Install a Novell 5-user network to link our various computers.

1995 Feb. 11–We enter the 50,000th record into our SoyaScan database.

1997 Nov. 24–We enter the 55,000th record into our SoyaScan database.

7. Current status of computerized information–2000 January 1

SoyaScan database now contains 59,440 records from 1100 B.C. to the present, including 48,318 published documents, 12,683 commercial soy products, 4,628 original interviews and overviews, and 41,584 unpublished archival documents.

More than 75% of all SoyaScan records have a summary/abstract averaging 143 words in length.

More than 26,000 records (44% of the total) are for documents published before 1970.

Thirty five major books in the series Bibliographies and Sourcebooks on Soya, produced from the SoyaScan database, are now available, published by Soyfoods Center.

Soyfoods Center Library owns about 54,000 documents, almost all of which have a record in the SoyaScan database.

SoyaScan Directory now contains the name, address, and phone number of 17,300 people and organizations worldwide actively involved with soyfoods and soybeans. Each entry is coded to show the type of activity, e.g. 2A = Tofu manufacturers.

8. Collecting and Publishing Information on Vegetarianism and Other Non-Soy Food Products that can Replace Animal Products.

1984 Oct. 31–Create our first vegetarian keyword (subject heading) VegeAnim = Vegetarian Diets and Animal Rights.

1988 Feb. 21–*Amazake and Amazake Frozen Desserts: Industry and Market in North America* published. Updated bibliographic supplement published in March 1995.

1992 Oct.–Start actively collecting information specifically on vegetarianism and veganism, and entering it into our new VegeScan database.

1992 March 4–*Bibliography of Vegetarianism: 1,755 References from A.D. 1170 to 1992, Extensively Annotated* published (360 p. large format, preliminary edition).

1992 June 12–*Sourcebook on Wheat Gluten Foods and Seitan* published. Expanded edition published in Jan. 1994.

2000 Jan. 1–VegeScan database now contains 5,500 bibliographic records on vegetarianism and veganism from 238 B.C. to the present.

Best selling books from Soyfoods Center (English-language editions only, as of Jan. 2000).

The Book of Tofu–557,000 copies sold.

The Book of Miso–115,900 copies sold.

The Book of Tempeh–47,950 copies sold.
Tofu & Soymilk Production–5,020 copies sold.
Other–9,200 copies sold.
Total–775,070 copies sold. Address: Lafayette, California. Phone: 925-283-2991.

3512. *SoyaScan Notes.* 2011. When soy-related terms first appear in the *Reader's Guide to Periodical Literature* (Overview). Compiled by William Shurtleff of Soyinfo Center.
• ***Summary:*** The Reader's Guide to Periodical Literature began publication in 1894. Soybeans first appear as a subject heading in the April 1949–March 1952 issue. Information on soybeans and soyfoods is found under the following subject headings: Central Soya Company. Coffee substitutes. Cookery–soybeans. Cookery–vegetables. Diesel fuels (from 1979-1980). Food substitutes. Lecithin. Soybeans (divided into: Cost, cultivation, diseases and pests, drying, export-import trade, harvesting, hybrids, marketing, prices, seed, seeding (planting), yield; with See also: cookery–vegetables). Multipurpose Food (from 1949). Plant proteins. Root tubercles. Soybean industry. Soybean products (with See also: okara, tempeh, tofu). Tempeh (from 1976-1977). Tofu (from 1977-1978). Tofutti/Tofutti Brands Inc. (from 1984-1985). Vegetarianism.

3513. *SoyaScan Questions.*2011. Questions about the history of tempeh in Japan. Further research needed. Compiled by William Shurtleff of Soyinfo Center.
• ***Summary:*** 1. When was *Taiwan Sotokufu Chuo Kenkuyujo* founded? 2. When did NAKAZAWA Ryoji start to work at the Taiwan lab? What did he finally leave for Japan? 3. In what year did NAKANO Masahiro start to work at the Taiwan lab? 4. In Nakazawa's Hakko Bunken-shu (11 volumes, 1950-65), is there any reference to tempeh under *Penicillium?* There is NOT any reference under *Rhizopus.* 5. Was any research on using defatted soybean meal (dashi daizu) to make tempeh done in Japan after World War II (Nakano does not remember any).

6. Did Ohta or Karauchi write a very early article on tempeh in about Showa 7 or 8? (1932-33)? Ohta mentioned this. 7. Get a citation for Ohta's article on tempeh in *Nihon Jozo Kyokai Zasshi* from about 1980-81. 8. Try to get the early article (1947-48) from Nosan Seizo, written by Ohta or Nakano. 9. What were the causes that the Natto Association started to take a serious interest in tempeh in about 1981-82? When did this interest start?

11. What is the substrate used for growing tempeh spores at NFRI? Rice? Bread? Potatoes? Potato starch? 12. Is there a tie between Kalki's research on lactic acid and production of B-12 in tempeh? 13. When did the Natto Gyokai News publish its first article on tempeh? I'd like to get any other important articles it has published, as about the June 1983 trip to Indonesia. 14. Who is Mr. Kikuchi, at natto meeting, in charge of making tempeh spores?

15. How many pages does Nakazawa have on *Rhizopus?*? Does she mention tempeh at *Penicillium*? 16. Who wrote the early article on tempeh at Kyushu University that interested Torigoe? 17. Did Ohta or Karauchi write an early article on tempeh in about Showa 7 or 8 (1932-33)? Ohta mentioned this. 18. Try to get the article (about 1947-48) from Nosan Seizo, written by Ohta Teruo or Nakano Masahiro. 19. When did the Natto Gyokai News (or any natto newspaper) publish its first article on tempeh. I'd like to get copies of all early and recent important articles it has published. 20. Who made the early tempeh starter in Japan? 22. When did Takashin start to make tempeh? How many kilograms do they now make per week?

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A plus after eng (eng+) means that SOYFOODS CENTER has done a partial or complete translation into English of that document.
An asterisk in a listing of number of references [23* ref] means that most of these references are not about soybeans or soyfoods.

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