

Interview: Stephen S. Chang

Stephen S. Chang, a past president of AOCS and recipient of the Lipid Chemistry and Alton E. Bailey awards, has retired from Rutgers University after 28 years as a researcher and educator. When he retired earlier this year, Dr. Chang was given the Rutgers University Medal, one of the highest honors Rutgers bestows. At that time, he was cited for his national and international achievements in research, teaching and industrial consultation in the fields of food, flavor and lipid chemistry, as well as his work as former chairman of Rutgers' Food Science Department. To mark this milestone, JAOCS conducted the following interview with Dr. Chang.



Q. Over a decade ago, you wrote the following for the back cover of a brochure for Rutgers University's Food Science Department: "Freedom from hunger is a basic human right; a hearty meal is one of the enduring pleasures of human life; and the selection of nutritious and safe foods is the foundation of good health." How well do you think the world is doing at meeting that basic right—freedom from hunger? Are we failing to grow enough food or the right kinds of foods? Are we failing to grow food cheaply enough to supply everyone?

Chang: God created man and woman. They must eat in order to survive. Therefore, I said the basic human right is freedom from hunger. It is no use to talk about other kinds of freedom if a person has already starved to death. Unfortunately, it is difficult to communicate this to people who always have plenty to eat and who have never seen with their own eyes the miserable tragedy of starvation.

It is noble for us to ask every country to give its people human rights. However, in order to accomplish this, we must help all the people in the world to have an abundance of safe and nutritious foods of good eating quality, in the form they like, and at a price they can afford. Significant progress has been made in this regard. However, there are still countless numbers of people in the world suffering from hunger. The supply of food to the people is a truly complex problem. It involves many difficulties from the technology of utilizing the land and sea to produce foods more efficiently, to the preservation of the food produced, to the transportation and distribution

of the food products to the people. Furthermore, this system is often adversely disrupted by political and military influences.

As the population of the world continues to explode, we must use our knowledge to help the developing countries produce and preserve more foods. At the same time, we must develop new technologies to more efficiently produce foods at an affordable price to all the people.

Q. Is food technology taking the steps necessary to provide safe food to everyone?

Chang: The food and allied industries, as well as government agencies, are putting forth a tremendous effort and have made considerable progress to ensure the safety of food. Their success is clearly indicated by the fact that more and more consumers are carefully reading the labels of food products. Unfortunately, our environment is becoming more and more contaminated, which causes new and more toxic materials to seep into our foods. Another difficult question is, "How safe is 'safe?'" With the development of state-of-the-art analytical methods and instrumentation, toxic contaminants in amounts which could not be detected years ago, now, can be easily analyzed. Therefore, a reasonable criteria for a tolerable amount of contaminants, which might have adverse effects to human health, must be established.

Q. What do you think the role of the developed world should be? Should we produce and process food for sale in developing nations? Should we give away food as an aid, or do food-deficient nations rely

too much on donations and fail to develop economic incentives to improve their own domestic agricultural production?

Chang: The use of food as foreign aid from developed countries is important and humane, but it is not a solution. As you mentioned, it only continues or even increases the food-deficient nations to depend upon donations. Furthermore, the political and military influence in those countries often makes the distribution of the foreign aid to the mouths of the really hungry people difficult. My personal opinion is that the developed countries should teach and help the food-deficient nations to improve the efficiency of their agricultural production and to develop their food industry. It could be of mutual benefit if the food industry in those nations could be developed in the form of joint ventures with developed countries.

The transfer of high technology and lectures or international conferences in sophisticated, basic research are important to the less developed countries for the future. However, what they want now is the practical know-how in the fundamentals of how to increase agricultural production and how to make preservable food products. The U.S.-China Education Foundation Ltd.'s effort to assist the Sichuan Province of China in establishing a vocational agricultural college in Heihutan as a joint enterprise with Qionglai County—

whose climate is extremely suitable for agricultural production—is an example of one of the most effective ways for developed countries to help people to be free from hunger.

Q. What do you think should be the role of professional societies such as the American Oil Chemists' Society in making sure the basic right of freedom from hunger is enjoyed by the whole world?

Chang: Edible oils and fats are two of the most important ingredients in the cooking and manufacturing of foods. They are usually the first item to be rationed in a food-deficient country. Therefore, there are numerous ways for a professional society, such as the American Oil Chemists' Society, to help the whole world to enjoy freedom from hunger. However, all these types of international programs require funding.

Q. Are there specific programs you believe AOCS should set up in this area? If so, how could these best be undertaken?

Chang: I believe AOCS could and should do the following, as examples:

- Organize edible oil-producing companies and food-producing companies to set up a program to allow visitors from developing countries to see their manufacturing facilities and to learn their technology of processing, quality control and management. Certainly, these companies will not show the visitors any technology of a proprietary nature. They could show fundamental technology and machinery which are generally known in the developing countries.

- Allocate one of the Honored Student Awards to a person from a developing country.

- Donate journal copies and some books, particularly *AOCS Official Methods and Recommended Practices*, to developing countries. There are a number of new books sent to AOCS for review. If the society has no further use for these books, they could be donated to the libraries of developing countries.

There are certainly other mean-

ingful things which do not cost much funding from AOCS, if we use our imaginations and if we do have the desire to help the world hunger problem.

Since there is no category for agriculture and foods in the Nobel Prize, Norman E. Borlaug received his Nobel Laureate under the category of "Peace," even though his accomplishments are in the field of solving world hunger. Dr. Borlaug said he negotiated with the Nobel Prize Committee repeatedly and was convinced that there would be no Nobel Prize for accomplishments in agriculture and foods in the future. General Foods Corp. had the vision to sponsor the "General Foods World Food Prize." The prize is awarded each year to a person who has made significant contributions to help the less developed countries produce more foods. The award is presented each year at a highly dignified ceremony, with a cash prize of \$200,000. The winner of the first General Foods World Food Prize was Mankompu Swaminathan for his contribution to rice production. Is it imaginable that a similar award could be given in edible fats and oils?

Q. You have worked in Taiwan and in Mainland China. What are the food problems there? How are they being approached?

Chang: Both China and Taiwan no longer have problems of hunger. During my recent discussion with the Honorable Dr. Ho Kang, Minister of Agriculture of China, he proudly pointed out that no one in China suffers from hunger today. What is needed is to make the people eat better. By that he meant to supply more meat, eggs and milk to the people's diet. I was invited by the Ministry of Agriculture to assist in establishing food science departments in some of the agricultural colleges. The president of Rutgers University and the Central China Agricultural College have signed a formal agreement to have the food science department of each institution become sister departments.

Taiwan is even more advanced in its food supply. The problem Taiwan faces today is not one of food deficiency, but rather, one of food

surplus. The biggest problem in agriculture in Taiwan is how to deal with the large surplus of rice produced. I served as the convener and chairman of the Advisory Committee to the Taiwan Food Industry for 10 years. This committee is financially supported by the Council of Agriculture of Taiwan and is made up of food scientists and technologists in the U.S. who are of Chinese heritage.

The research institutes in Taiwan, particularly the Food Industry Research and Development Institute and the food science departments in different universities, are not far apart from those in the U.S. Nevertheless, Taiwan essentially depends upon imported soybeans to manufacture oil for edible purposes. I recommended to them to build a complete pilot plant for edible oil processing at the Food Industry Research and Development Institute, and they did. An unbiased American distinguished professor visited the pilot plant and told me that not many companies in the U.S. had as good an edible oil pilot plant as the one in Taiwan. I also recommended that they use the large amount of rice bran as a domestic source of edible oil. Now, rice oil is commercially produced in Taiwan and sold on the market.

Q. What do you think of modern China, compared to the China you left in 1947?

Chang: There is no comparison between China today and China of 1947. At the time I left China, I could see many people who had starved and frozen to death on the streets of Beijing in the winter. Now, there is no such concern. Their concern has become how to buy Kentucky Fried Chicken and McDonald's hamburgers.

Q. If China can meet its food needs, can the knowledge learned there be applied to solving the food problems of other parts of the world, such as Africa and Southeast Asia?

Chang: Of course, the experience we learned from solving the food problems in China and Taiwan can be applied to facilitate the solving of similar problems in other food-deficient nations. However, China

is now a world power and is no longer exploited by other countries. Taiwan, on the other hand, has had a stabilized government and a rapidly-growing economy for many years. Other developing countries may not have such good fortune.

Q. Looking back on your career, what do you think have been your major contributions?

Chang: I do not think I have made any major contributions myself. I can only mention a few which I think did make an impact on the food and allied industries and food science.

First, I believe I recognized earlier than many others that food science is an applied science. When we conduct the most sophisticated basic research with state-of-the-art instruments, we must have a clearly defined final, practical goal. That is what I call "targeted basic research." For example, my associates and I spent years to develop a complete set of methodologies for the isolation, fractionation and identification of flavor compounds in foods, particularly in oils. Our methodologies are followed by many other researchers in many other countries, but we used the knowledge we obtained on the basic study of the flavor of soybean oil, on the color of commercial fatty acids and on the thermal oxidative decomposition of frying fat, to develop a new process for the manufacture of "super-pure" oils. A patent has been issued for this process and the patent was used by a company in Europe to build an ultra-modern oil processing plant to produce an oil-in-water emulsion for intravenous feeding. This product is sold worldwide and benefits the health care of numerous persons.

I believe that I foresaw the consumer trend to prefer natural ingredients in manufactured foods as early as the 1970s. We did all the sophisticated basic research with IR, NMR and mass spectrometry, together with gas and high performance liquid chromatography, on the antioxidant properties of rosemary and sage, but we never forgot that we also had to produce a natural antioxidant which could be manufactured economically and be used in food products. Therefore,

we were issued a patent for a process to produce a rosemary antioxidant. This patent is being leased to Kalsec Inc. of Kalamazoo, Michigan. That company has combined it with its own technology to produce an oleoresin that provides consistent levels of flavor, aroma and antioxidant activity. This antioxi-

dant, I understand, is being marketed quite successfully today.

Thirdly, I foresaw the importance of biotechnology to flavor chemistry and initiated a research project in 1978. Our basic studies on the generation of food aromas by enzymatic reactions and by fermentation have resulted in a pat-

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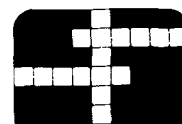
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Q. What part of your work/career has been most gratifying and satisfying?

Chang: I have to admit that I have been extremely fortunate to have chosen a most gratifying and satisfying career. I supervised the research and studies of 21 master's degree students, 28 doctoral degree students and 30 postdoctoral fellows. We became very close, good friends. Some of them still send me flowers on my birthday and at Christmas, even though they have graduated many years ago. To see them grow from young students to leaders of the food and allied industries makes me extremely proud and happy.

During my tenure of nine years as the chairman of the Food Science Department of Rutgers University, the department developed a world-class reputation and has been repeatedly ranked as one of the top five by external peer-review panels. In addition, the track record of the Food Science Department convinced the Science and Technology Commission of New Jersey to establish a Center for Advanced Food Technology at Rutgers University. I am anxious to see that the cooperation of the two will make Rutgers the number one leader in the field.

Last, but not least, is the gratification I obtained from my association with the American Oil Chemists' Society. The society is most dear to my heart. It gave me a large number of close and good friends. On top of that, the society gave me the honor of being elected

its president in 1970, an event which I will never forget in my lifetime.

Q. What "words of wisdom" would you offer to those now embarking on a career in fats and oils?

Chang: I always tell my students that a career in fats and oils is not a glamorous one. It never had the glory of a Nobel Laureate, being an astronaut or a surgeon. On the other hand, as long as there are people in the world, they will have to eat and edible oils are a necessary ingredient of most food products. Therefore, there always will be good positions for oil chemists in the food and allied industries. As long as the oil chemist has the basic scientific knowledge, as well as practical experience in processing and development, perhaps, with a little added luck, he or she will create a career with a distinguished reputation and a lucrative income.

Q. Teaching and research have been important aspects of your career. What areas of food research do you believe need further attention for the good of the world? Do you have suggestions on how knowledge gained can be shared with those in less developed countries?

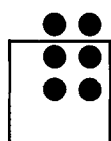
Chang: In my position as the chairman of the Food Science Department, there were many areas of food research which, in my opinion, needed further attention for the good of the world. In one aspect, there is the eating quality in flavors, colors and textures. In another aspect, there are the major components of foods: lipids, carbohydrates and proteins, plus other additives and ingredients. On top of those, there are quality assur-

ance, including sensory evaluation, packaging, nutrition and safety, all of which are of equal importance and, in combination, they supply the basic knowledge for processing development.

In my position as a past president of AOCS, I believe edible oils and fats are of particular importance. They are one of the three major components of foods, but they are most susceptible to deterioration. Furthermore, they are also more abused than the two other components, often by being treated under high temperatures in the presence of oxygen and moisture, such as in common cooking practices and deep-fat frying.

I believe most of the problems of the shelf-life of food products originate from the deterioration of fats and oils in those products. Moreover, the relationship of fats and oils to health and diseases has become more and more evident. Therefore, further understanding of the chemistry and physics of lipids and their application, not only to foods, but also to pharmaceuticals, cosmetics and soaps and detergents, are of extreme importance.

Once a scientist or technologist possesses the basic sciences in depth, and a thorough experience in plant processing operations, he or she will develop a distinguished reputation which will bring numerous invitations from less developed countries to come as an honored guest to help them. If the person is internationally minded and will not hesitate to sacrifice time and energy, his or her knowledge will greatly help the whole world to enjoy the basic human right of freedom from hunger.



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Update: Net worth of AOCS (1987)

The following report was prepared by AOCS Treasurer Robert M. Burton.

My report as AOCS treasurer, presented at the 1988 annual meeting in Phoenix and published in the July 1988 issue of JAOCS (page 1044) indicated that the society was well and solvent. Although the data presented showed that AOCS operations resulted in a deficit, the nonoperational activities produced sufficient income to provide a net positive balance. In the following, I will present a look at the net worth of AOCS; the operational status of AOCS will be discussed in a later update.

Figure 1 presents data comparing the net worth of the society for the years 1981 to 1987. Values are reported in millions of dollars. The bar to the left of each grouping for the indicated year represents the actual dollar value of our net worth, i.e., the difference between the income and expense for that year plus the accumulated fund balance. Following a brief drop in actual dollars in 1982, compared with 1981, the dollar value of AOCS has increased yearly. The fund balance in 1981 was 671,986 actual dollars and in 1987, had increased to 1,245,390.

However, note must be taken of the values indicated by the bar to the right of each year grouping. This value is reported in constant 1967 dollars. Thus, the 1967 constant dollar net worth of AOCS in 1981 was 228,956; this increased to 338,882 in 1987. The society, on this basis, is not keeping pace with inflation. From 1981 to 1987, the actual dollar increase was 85%, which should be compared with the constant 1967 dollar increase of 48%.

The center bar (Figure 1) may be of more immediate interest, as it reflects the past seven years for AOCS. The values represented by the bars are in 1981 constant dollars. Thus, for 1981, the actual and 1981 constant dollars have the same value. The 1981 constant dol-

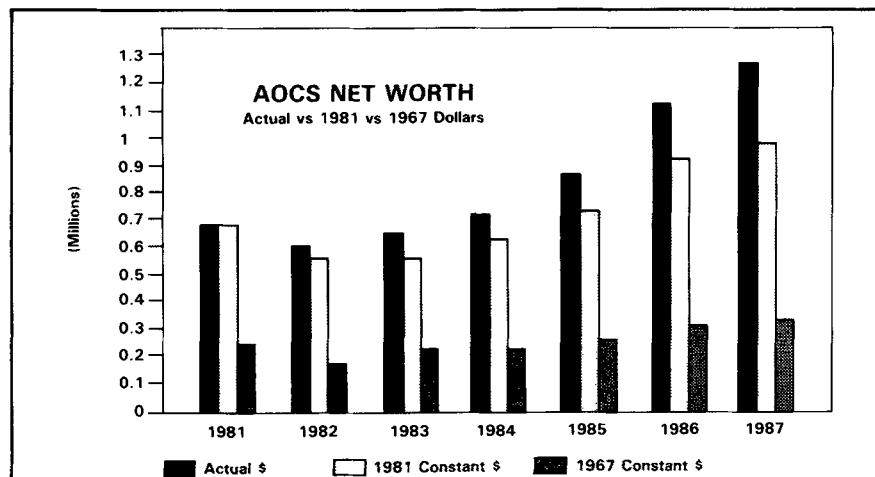


FIG. 1.

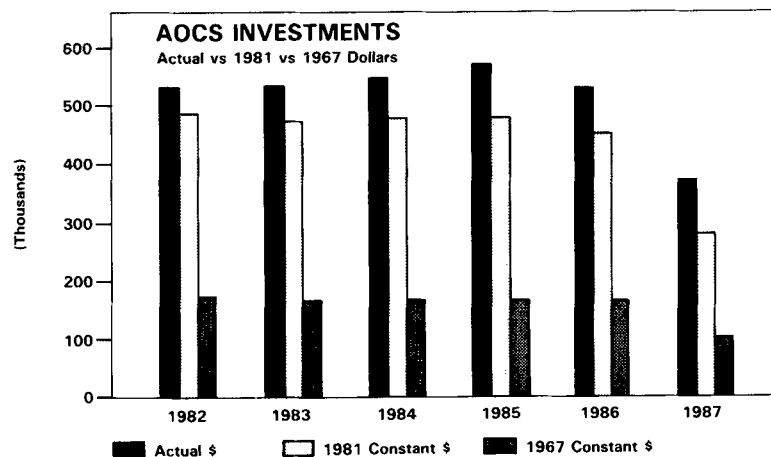


FIG. 2.

lar value for the net worth of AOCS in 1987 was 994,619, compared with the actual dollar value of 1,245,390.

Figure 2 presents data representing the value of the AOCS reserve fund (our investments) for the past six years, reported at cost. In actual dollars, the investments of the society have been relatively constant from 1982 to 1986, ranging from 520,406 (1982) to 561,053 (1985). The lower value of our reserve fund reported in 1987 reflects a withdrawal from the fund of 176,725 actual dollars (at cost) used for the purchase and construction of the new AOCS headquarters

building. These values reported at cost of the investments will be reported at market values in the future as adjustments are made in the accounting system.

It is the goal of the society to develop and maintain a reserve fund equal to one year's operating expenses. Because these costs change from year to year, having been \$1,897,149 in 1986 and \$2,197,056 in 1987, the reserve fund is far short of the goal. Plans are being developed to improve our reserve fund by returning funds withdrawn for the building program and by increasing our yearly contributions.

Budget, membership among business

Projected budget deficits for 1988 and proposals concerning the budget for 1989 were primary considerations as the AOCS Governing Board met in Champaign, Illinois, in early September.

Agreeing that managing and coordinating committees should have room to make program decisions, the board said that program "bottom lines" for 1989 should follow dollar objectives recommended by the AOCS Budget Committee. Coordinating committees were given until Oct. 15 to outline how they planned to achieve budget objectives for 1989, set by the AOCS Budget Committee.

As part of budget deliberations, the board adopted measures to reduce 1989 personnel cost projections by approximately \$115,000. The board also reached a consen-

sus that the society should develop an accounting system that more clearly assigns costs to specific programs.

Membership proposal

An adhoc committee chaired by Roy Carr recommended that AOCS membership requirements be changed to eliminate educational and experience qualifications. Currently, persons wishing to become active members must have at least five years of scientific training or its equivalent in terms of experience. Under the proposed change to the AOCS Articles of Incorporation and By-laws, membership in AOCS would be open to anyone with a professional interest in the science and technology of fats, oils and related substances.

The proposal also would divide

society membership into six—not seven—categories: members (previously called "active members"), honorary members, student members, corporate members, retired members and emeritus members; the individual associate member category would be eliminated. The proposed amendment would change the emeritus member requirement to 35 years, rather than 30 years.

Following a review by legal counsel, the proposal must go before the membership before being adopted. It will be included on the mail ballot sent to members early next year for the upcoming election.

Other proposed amendments

A second proposed amendment, to go before membership vote in 1989, would change the term of office for

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the AOCS treasurer from one year to two years, with a limit of two consecutive terms.

A third amendment would require an annual certified audit of AOCS finances. Such audits already are conducted, but a formal by-law would ensure that the practice continue. A fourth amendment proposal—approved by the board in Phoenix in May—spells out the authority of the AOCS Governing Board and the AOCS Foundation concerning indemnification.

Other business

In other business, the board:

- stipulated that annual meeting budgets be submitted through the Education Activities Coordinating Committee (EACC) to the AOCS Budget Committee and that annual meeting general chairpersons automatically become members of the EACC until the specific meeting is completed.

- said it will require AOCS sections to seek advance approval for any projects which might create financial obligations to the society. It also voted to require sections to submit their annual budgets for board approval.

- approved AOCS membership for 270 applicants, contingent on their payment of dues.

- appointed B. German of the University of California at Davis to serve as AOCS liaison to the Institute of Food Technologists.

- granted emeritus membership status to Arnold Gavin and Edward McMullin.

- was told by AOCS Executive Director James Lyon that attorneys for AOCS will appeal a State of Illinois decision that AOCS pay property taxes on the AOCS headquarters building and property.

- was told by the ad hoc committee on consultants that it will retain Lawrence-Leiter to continue with an organizational management study and a member survey, but other consulting projects are "on hold" due to budgetary considerations.

The Governing Board will hold its next business meeting at the O'Hare Marriott, Chicago, Feb. 9-10, 1989.

Section seminar

The AOCS Southwest Section will hold its annual Product Development Seminar Feb. 15, 1989, at the Buena Park Hotel, Buena Park, California.

Speakers from Stepan Co., International Biosynthetics, Dial, PQ, Rohm and Haas, FMC and Lonza will cover surfactants and detergent topics. Speakers and topics include: Joseph Drozd, surfactants; Michael Crossin, detergent enzymes; Darrell Muck, zeolites; and Al Adamson, perfuming and consumer products. Preservatives, phosphate builders and quaternary ammonium compounds are among the other seminar topics.

For further information, contact Scott Griffin, U.S. Borax Research Corp., Anaheim, CA, telephone 714-490-6000, or Ernie Felton, Stepan Co., Anaheim, CA, telephone 714-776-9870.

Canadian Section

The Canadian Section of AOCS held its 1988 annual meeting in Ottawa Oct. 5-6, 1988, at the Central Experimental Farm, Agriculture Canada.

E.A. Emken of the U.S. Department of Agriculture's Northern Regional Research Center, Peoria, Illinois, was the guest speaker. Emken discussed the interconversions of isomeric omega-3 and omega-6 fatty acids and their significance in human nutrition. The Agriculture Canada Research Branch Seminar Committee sponsored this invited talk.

Twenty papers, presented in four technical sessions, discussed such topics as the physiological and nutritional aspects of fatty acids, phospholipids, lipidosis, canola oil, chlorophyll content, crystallization, oil extraction and lipid composition of beef. Two graduate students—Mary Ellen Harper of the University of Ottawa and S.P. Adu-Peasah of the University of

Toronto—were given awards based on the originality, technical content, effective use of visual aids and delivery of their technical presentations at the meeting.

The predinner social was jointly sponsored by Engelhard Corp. and Pembina Mountain Clays Inc. Madhu R. Sahasrabudhe of Agriculture Canada was general chairman for the meeting. Organizing the technical program were John Kramer of Agriculture Canada and A.C. Chan of the University of Ottawa.

The section agreed to hold its 1989 annual meeting in Halifax, Nova Scotia, in October 1989.

Following the section meeting, the Canadian Expert Committee on Fats, Oils and Other Lipids met, chaired by Sahasrabudhe. The committee expressed concern about eroding government funds for research and emphasized the need for continued research on the role of monoenoic and polyunsaturated fatty acids in human health and nutrition.

Section officers

The AOCS Mid-South Section has elected Juan Kindelan and Harland Reames as its 1988-89 president and vice president, respectively. Both work for Beatrice/Hunt-Wesson in Memphis, Tennessee.

Section treasurer is Carole Peet of Cargill Inc. Walter Farr of Kraft Food Ingredients Corp is section secretary. Kim Hann of Cargill Inc., Bill Wiggins of Humko Chemical Corp., Mickey Lay of Bunge Corp. and Louis Sweet, retired from Humko Chemical Corp., have been elected to serve on the section's council.

The section has voted to include Illinois and Kentucky in its region. The section now encompasses Alabama, Arkansas, Mississippi, Missouri, Tennessee, Illinois and Kentucky. The group will meet the second Tuesday of each quarter, with meetings scheduled Jan. 10, 1989; April 11, 1989; and July 11, 1989.

Obituaries

OGDEN C. JOHNSON



Ogden C. Johnson, 59, retired senior vice president of Hershey Foods Corp., died Oct. 1, 1988, while on vacation at Myrtle Beach, South Carolina. He

had been a member of AOCS since 1953.

Dr. Johnson joined Hershey Foods in 1974 as corporate vice president of scientific affairs and became vice president of science and technology in 1978 and executive vice president in 1981. He served as acting president of Cory Food Services during 1980 and 1981. He was named senior vice president and was elected to the corporation's board of directors in 1984. He retired from Hershey Foods on Jan. 1, 1988.

Prior to joining Hershey Foods, he was director of the U.S. Food and Drug Administration's Office of Nutrition and Consumer Sciences. He previously served as chief of the domestic unit of the Health Services and Mental Health Administration's Nutrition Programs, U.S. Department of Health, Education and Welfare; assistant secretary for the American Medical Association's Counsel on Food and Nutrition; and senior research chemist with A.E. Staley Manufacturing Co.

He received his B.S., M.S. and Ph.D. in food science from the University of Illinois. He and his wife resided at the family farm in Palmyra, Pennsylvania.

He is survived by his wife, Lucille Mary Johnson; four children, Jonathan Johnson of Hershey, Pennsylvania, Timothy Johnson of Grantville, Pennsylvania, Suzanne Johnson of Laurel, Maryland, and Debra Nelson of Silver Spring, Maryland; and two grandchildren.

WILLIAM R. NES

AOCS has been informed of the March 24, 1988, death of AOCS member William R. Nes, 61, after a bout with cancer. Dr. Nes was the W.L. Obold Professor in Biological Sciences at Drexel University and the director of the Institute for Population Studies.

His scientific career, which spanned four decades, included numerous awards and the publication of over 125 articles and books. His most acclaimed work, *Biochemistry of Steroids and Other Isopen-tenoids*, was cited in *Science* as a "landmark study." He laid down the blueprint for many of the important stereo-chemical principles involved in biochemical pathways, enzymological mechanisms and functions of steroids now known to operate throughout nature.

Dr. Nes received his doctorate in organic chemistry from the University of Virginia in 1950, then joined the Nobel-prize winning

team, headed by Dr. Edward Kendall at the Mayo Clinic, that developed cortisone. He did postgraduate work at Princeton University, the University of Heidelberg and the University of Wales. He served as a staff member of the National Institute of Arthritis and Metabolic Diseases before becoming the director of the Steroid Training Program at the Worcester Foundation for Experimental Biology. He joined the Drexel staff in 1967. He became a member of AOCS in 1974 and served as a reviewer for *Lipids*.

He is survived by his wife, Estelle Shirley Nes; a daughter, Shirley Anne Warshaw; a son, AOCS member William David Nes, with whom he collaborated on numerous research projects; and five grandchildren. The Department of Bioscience and Biotechnology at Drexel University, Philadelphia, Pennsylvania, is establishing an endowed scholarship in his memory.

ALFRED S. DAVIDSOHN



Alfred S. Davidsohn, 76, of Locarno, Switzerland, died Oct. 8, 1988. He had been a member of AOCS since 1947.

Dr. Davidsohn received his degrees in chemistry from Berlin University in the early 1930s. From 1933 to 1935, he was an instructor in the school and laboratory of his father in Berlin. In 1934, he helped establish a cosmetic factory in Switzerland, then went to work with Shemen Ltd. in Haifa, Israel. He was coauthor of the book, *Synthetic Detergents*, and a number of other books on soaps and oleochemicals processing. In 1960, at the Third International Conference on Surfactants, he and Mario Ballestra were the first to report a new sulphonation process with SO_3 -convertergas. Since that time, he had served as a research consultant with the Ballestra Group.

Dr. Davidsohn held several patents and also was a member of the British and American chemical societies.

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