As a matter of new policy, Nutrition Reviews will include an occasional biographic article on a distinguished nutritionist whose work has had exceptional public health impact. The first to be so honored is Hazel Stiebeling, who truly put Nutrition Science to work for better everyday living. The Editors

Hazel Katherine Stiebeling (1896–1989)
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Introduction

Dr. Hazel Katherine Stiebeling (Figure 1) retired in 1963 after 33 years as a research scientist and administrator for the Bureau of Human Nutrition and Home Economics and the Agricultural Research Service in the United States Department of Agriculture (USDA). She had a distinguished career in the science and practice of nutrition. Her personal qualities, education, originality, research accomplishments, and leadership enabled her to make an imprint on food and nutrition science and human health that is unsurpassed. In 1959, she received The President’s Award for Distinguished Federal Civilian Service with the following citation.

The President’s Award for Distinguished Federal Civilian Service is given to Hazel K. Stiebeling With Profound Appreciation, Highest Esteem and Great Personal Satisfaction.

During her distinguished career she has made lasting contributions to the science of human nutrition. The translation of her vast scientific knowledge into practical dietary guides has improved the health of all Americans.

Through her leadership of international conferences on nutrition she has contributed to the well-being of people throughout the free world.

Dwight D. Eisenhower
January 20, 1959

She was the first woman to be so honored.

Early Life and Education

Hazel Stiebeling was born in Haskins, Ohio, on March 20, 1896, to Adam and Elizabeth Brand Stiebeling; the eldest daughter, she had two brothers and three sisters. She died on May 18, 1989, in Alexandria, Virginia. Her father had come to Ohio from Saasen, Germany. In Findley high school she became acquainted with USDA publications dealing with food and nutrition. She developed an interest in the scientific aspects of home economics and after high school, enrolled in a 2-year program at Skidmore School of Arts (now Skidmore College, Saratoga Springs, NY). She graduated from the program at Skidmore in 1915 and was hired to teach at Findlay High School even though she had only a two-year degree. After teaching for three years Stiebeling enrolled in Teacher’s College, Columbia University, in New York City. There, she became an assistant to Professor Mary Swartz Rose. Stiebeling completed her Bachelor of Science in home economics and biology in 1919 and her Master of Arts in nutrition in 1924. During this period she taught at Kansas State Teachers College for three years.

Columbia University

Stiebeling worked toward a doctoral degree in chemistry at the Graduate School, Columbia University. She continued as an assistant in nutrition with Professor Rose, then moved across 120th Street to become a research fellow with Henry C. Sherman from 1925 to 1930. At Columbia, she participated in research on basal (energy) metabolism of women, the value of different proteins in maintaining nitrogen balance in adults, the influence of vitamin D on the deposition of calcium in bone, the iron content of fruits and vegetables, and the chemical nature of constituents of the vitamin B complex. In 1928, after
15 years of intermittent work and study beyond high school, Stiebeling was awarded a Ph.D. in chemistry from Columbia University.

For her doctoral dissertation with Dr. Sherman, Stiebeling worked on methods for measuring the content of vitamins A and D in foods and tissues. There was no chemical assay for either vitamin so Stiebeling’s objective was to develop quantitative rat bioassays for both of them. This was a painstaking task to develop diets of known composition, especially in relation to calcium and vitamin A content. The significant results of these studies were published in 1929 and 1930 in two papers in the Journal of Biological Chemistry. Sherman and Stiebeling reported means and probable error for groups of 13 to 36 rats and used statistical methods to evaluate their results. Careful attention to quantitative details for both food composition and nutritional outcomes, and the use of statistical methods for evaluating outcomes, were characteristic of Stiebeling’s work and leadership throughout her scientific career.

United States Department of Agriculture

Dr. Sherman suggested that Stiebeling take the Civil Service examination for openings in a new research organization in Washington within the USDA Bureau of Home Economics. She followed his advice and was duly placed on the “eligible” list. In mid-May, 1930, she received a letter from Dr. Louise Stanley, Chief of the Bureau, offering her a position as a Senior Specialist at $4600; she was to assume the position of Head of the Section on Food Economics in the Food and Nutrition Division. This position was made possible by a new federal appropriation of $10,000 for a study of food purchasing habits of housewives.

Immediately following her appointment in 1930, Stiebeling initiated an extensive program of both basic and applied research to investigate the nutritive value of diets in the United States. Her program focused particularly on designing nutritionally adequate diets for families who did not have adequate incomes, examining...
relationships between the incidence of pellagra and the nature of the food supply, and investigating the nutrient content of foods; all of these studies appeared in USDA publications. Stiebeling’s program was continued and expanded throughout the Great Depression and World War II. It provided a wealth of basic knowledge about the nutritional value of the food supply and food consumption and nutritional status in the United States.

A notable accomplishment of the USDA food and nutrition program during the 1930s was the 1935–1936 nationwide consumer purchases study. This was an interagency project that provided the first comprehensive picture of food consumption and dietary intakes of families in the United States, funded by the Works Progress Administration. It indicated that one-third of the nation’s families had diets considered poor by nutrition standards. This was the source of the famous quotation by Franklin D. Roosevelt, “one third of our nation is ill-fed, ill-housed and ill-clothed.” These findings spurred efforts to enrich flour and bread with iron and three B vitamins, and stimulated more vigorous nutrition education and school lunch programs. Stiebeling’s contributions to this and other aspects of national policy are illustrated in her publications “A Dietary Goal for Agriculture”1 in 1937 and “Better Nutrition as a National Goal”2 in 1939. She and her colleagues evaluated the effects of policies and interventions and presented the results in a USDA Special Report on the effects of the Food Stamp Plan in 1940.

During this period Stiebeling authored 15 research reports on family food consumption, economics, and nutrient needs, which were published in USDA bulletins and research journals. Other publications appeared in the American Statistical Association Proceedings, the Monthly Labor Review, and the Journal of Home Economics. She also was author of three laboratory research papers on identification of nutrients and the nutrient composition of foods.

Stiebeling continued in the Senior Food Economist position until 1942 when she was appointed Assistant Chief of Bureau in the newly established Agricultural Research Administration. In 1943, the agency was renamed the Bureau of Human Nutrition and Home Economics with Food and Nutrition as one of five divisions. In 1945, Stiebeling became the Bureau Chief.

Among the valuable benefits of a high position in government service is the interaction with colleagues in various other government agencies. This is especially important in the area of food and nutrition. Stiebeling noted in her writings that she worked with professionals in several agencies, including the United States Public Health Service, the National Institute of Health, the Children’s Bureau, and the Department of Labor. She was enthusiastic about the diversity of expertise and the

Figure 1. Hazel K. Stiebeling. Photo courtesy ARS, USDA, National Agricultural Library.
Another challenge presented to high-level civil servants is working with Congress. Stiebeling wrote of an incident in 1934 in which some members of Congress were influenced to attach an amendment to the Agricultural Appropriations Bill prohibiting the use of any money so provided to pay the salary of any person advocating the lessened consumption of any wholesome food. She was not able to respond to that because of her position, but she noted that loud protests came immediately from Experiment Station Directors and from personnel and organizations in the field of nutrition across the country. The amendment was deleted from the bill and the Experiment Station Directors likely had their ears bent by Deans of Home Economics.

During the 1940s, a wartime national study of food consumption was conducted in cooperation with the Bureau of Labor Statistics. The diets of American families had improved since the 1930s survey, but intake of several nutrients was still below recommended allowances. In 1948, a national sample of urban families and a seasonal study of four cities provided information on postwar trends in food consumption.

Each time a national food consumption survey was conducted it required a special appropriation from Congress to the USDA. Stiebeling’s high professional and public standing allowed her to influence the budget makers in the USDA, the Administration, and Congress; a 1955 national and regional survey of household food consumption and dietary intakes was the result. The study was done in cooperation with the State Agricultural Experiment Stations and the Public Health Service. Results were used in public and private programs affecting food supply, distribution, and consumption, and in programs to improve food habits. The basic observations and associations were reported in 17 volumes and were used for many analytic studies published in special bulletins and journal articles.

In 1954 the ARA became the Agricultural Research Service (ARS); Stiebeling was the Director of Human Nutrition and Home Economics (HNHE) research responsible to the Deputy Administrator. HNHE had two branches with Dr. Callie Mae Coons Chief of the Human Nutrition Research Branch. Following a study and report of a 15-member home economics research advisory committee appointed by the Secretary of Agriculture in 1955, three branches were created. The branches became divisions in 1957 under the Institute of Home Economics, of which Stiebeling was Director. Her title at retirement was Deputy Administrator for Nutrition and Consumer Use Research, ARS, USDA. Under the leadership of Stiebeling and Coons, many advances were made in the research program. Food composition research led to improved analytic methods, extensions, and revisions of food composition tables, as well as the addition of many nutrients to the tables. Research to establish essentiality of fatty acids and requirements for infants was done under contract with the HNHE, as was research establishing quantitative amino acid requirements of women. Within the Human Nutrition Research Division laboratories (located in Beltsville, MD, since 1941), studies using animal models were conducted on lipids, carbohydrates, proteins, minerals, and vitamins.

**Development of Recommended Dietary Allowances**

The work that Stiebeling undertook with the USDA—designing nutritionally adequate diets for people with low incomes and those living in areas where pellagra was prevalent—stimulated her interest in dietary reference values. She sought a reliable dietary standard against which the diets of populations and diets being recommended by various USDA programs could be assessed for nutritional value. Stiebeling had worked on human nutrient needs in Sherman’s laboratory; in 1933 she devised a set of dietary allowances (her term) based largely on the values for human nutrient requirements as established by Sherman and his colleagues. Although standards for energy and protein consumption had already been proposed and “protective foods” had been recommended as sources of unidentified essential nutrients, this was the first set of dietary standards (allowances) to include quantitative values for several vitamins and minerals. It was also the first set of recommended intakes designed for maintenance of health rather than just for maintenance of work capacity.

Beginning in 1936 and for some time thereafter, Stiebeling represented the USDA at international conferences on food and nutrition, especially those of the League of Nations Health Commission. This brought her in touch with many international health authorities that were wrestling with problems similar to those she was dealing with at the USDA. The recommendations of one League of Nations meeting in which she participated included (1) improvement of diets for population groups at nutritional risk, (2) development of methods for improving nutritional surveillance, and (3) development of dietary standards for assessing the nutritional value of diets. The associations she made during these meetings likely enhanced her knowledge of international nutrition.
and health problems and food and nutrition policy and encouraged her pursuits at the USDA.

Stiebeling and her associates continued to accumulate information about the nutritive value of U.S. diets and about food consumption in the United States. She and Esther Phipard also re-examined the original set of dietary standards they were using and revised and expanded it. Besides including separate values for different age groups, they recommended that to establish allowances, average requirements should be increased by 50% to account for variability among requirements of individuals in the selected populations. Stiebeling and her colleagues devised and were using dietary allowances for several years before the NRC formed a Committee on Food and Nutrition. We know Stiebeling was a member of the FNB from its inception until 1951 and that she was a member of the small committee that prepared the initial proposal for a dietary allowance project for the FNB in 1940. As a member of the FNB, she must have reviewed the first two editions of the RDA bulletin. There can be little doubt but that she contributed importantly and substantially to the development of the RDA concept by the NRC and to the original RDA values, even though her contributions seem to have been neither recognized nor acknowledged.

After completing her term on the FNB, Stiebeling became the Liaison Representative of the USDA to the Board from 1952 until her retirement in 1963. During much of this time, one of us (Harper) attended many of the sessions at which the reports of the Liaison Representatives of various food and nutrition organizations were presented. Usually these were not stimulating sessions but the report by Hazel Stiebeling was always a highlight. It was presented clearly, concisely, and provided specific information about the USDA food and nutrition programs, progress that was being made, and problems that had been encountered.

International Nutrition Activities

In 1936, Stiebeling attended her first international professional meeting, the 4th International Conference of Agricultural Economists at St. Andrews University in Scotland. She presented a paper, “Nutrition in Agricultural Planning,” based on her research at USDA. Subsequently she was invited to represent the United States on the nutrition committee of the League of Nations and attended its meeting in Geneva in February of 1937. Earlier, in 1935, the League Assembly had appointed a Technical Commission on Nutrition to frame a report on the Physiological Bases of Nutrition. Mary Swartz Rose, Stiebeling’s mentor during her predoctoral work at Columbia, was a member of this Commission. In November of 1937, Stiebeling attended a meeting of the Commission in London. The other U.S. delegates were Rose, Henry Sebrell (Chief of NIH) and E.V. McCollum. During 1937 and 1938, Stiebeling served as a nutrition consultant to the League’s Health Section and, in that capacity, spent time in London, Belgrade, Budapest, Prague, and Basel.

In 1939, even as she continued her research and
leadership in USDA, Stiebeling participated in meetings and functions of the League of Nations in Buenos Aires. In 1943, she served as a member of the Technical Secretariat of the United Nations Conference on Food and Agriculture in Hot Springs, Virginia. In 1945, at the meeting of the United Nations Interim Commission on Food and Agriculture in Quebec, she was a member of the Technical Committee on Nutrition and Food Management. From 1946 to 1949 she served on the Standing Advisory Committee on Nutrition of the United Nations Food and Agriculture Organization. During the 1940s and 1950s, she served on delegations and committees that worked through the United Nations in many countries of Europe and South America. In the 1960s, she worked in Australia, Malaysia, Thailand, and India, as well as Europe. She remained a consultant to the Food and Agriculture Organization until 1969, well after her retirement from USDA.

Public Nutrition Guidance

From inception, the USDA had a mandate to provide food and nutrition information to the public. Hazel Stiebeling made extraordinary contributions to that tradition. Her first research on the economics of food availability resulted in publication of food plans in cooperation with the Extension Service and the American Red Cross. From 1931 to 1933, food plans were designed to provide an adequate diet at low cost, reflecting problems that families faced during the great drought in the South and in the depression of the early 1930s. Later, food plans were designed for individuals and family groups at four spending levels. Stiebeling was involved in the cooperative federal effort (Children’s Bureau, Office of Education and Public Health Service) to develop and publish a food guide in 1941, “Eat the right food to help you keep fit,” a forerunner of the Basic Seven. During World War II, educational materials were prepared to teach families to conserve food in wartime. Several booklets, charts, and leaflets were distributed. In 1944, “Principles of Nutrition and Nutritive Value of Foods” was published as a tribute to W.O. Atwater and in commemoration of his Farmers Bulletin issued in 1901. Under Stiebeling’s leadership, research was conducted that put home canning on a scientific level, enabling families to reduce spoilage and improve the flavor and nutritive value of their home-canned products. USDA laboratories adapted family food plans for use in institutions. In 1950, at the request of Congress, “Family Fare,” a booklet that combined nutrition, food management, and recipes was published; it was ranked annually as most or second most in demand of all USDA publications. The foods laboratories were leaders in developing sensory methods for measuring food quality. Materials were prepared for improving school lunches, including recipes and buying guides.

Beginning in 1952, the Bureau of Human Nutrition and Home Economics took leadership with the Department’s Interagency Committee on Nutrition Education in sponsoring national food and nutrition conferences for leaders in nutrition education. Proceedings of these conferences were made available as USDA publications. Contributions to development of food guides by Stiebeling and her colleagues Phipard and Louise Page are described in a review by Welsh et al. Clearly, Stiebeling could be only indirectly involved in all of these activities of the agency. Even so, it is well known that nothing was written for the public or for publication from the agency that “Miss Stiebeling” had not carefully reviewed and approved. Of even more importance, the funding for all these activities had to be obtained from Stiebeling’s efforts within the USDA and with the support of Congress.

Throughout her tenure at USDA, Stiebeling wrote articles for popular publications and participated in numerous interviews by journalists. In 1936, she provided research data and gave detailed suggestions for food purchase and preparation for Woman’s Home Companion. She was tireless in emphasizing the inadequacy of diets of many Americans as seen in an article “Is America Well Fed?,” which was published by the National Dairy Council in 1939. In another lengthy article in Woman’s Home Companion in 1939, in which she is cited as “the Companion’s nutritionist,” Stiebeling used data from the food consumption survey to instruct readers on food choices and cooking methods. Later in 1939 she was cited in Country Gentleman’s “Women in the News.” The article notes that Stiebeling “in her serene scientific way . . . can make calories quite companionable.” She was featured in the Washington Times-Herald in November 1943 and the Washington Sunday Star in May 1944, both of which cited her popular publications and contributions to international food and nutrition programs. In 1946 she presented a talk on the Food and Agriculture Organization to the Women’s National Democratic Club and was noted in the Washington Post as attending a White House Luncheon given by Mrs. Harry Truman. The Sunday Star (Washington) featured her after she spoke to the American Association for the Advancement of Science in 1946. The article emphasizes her report of changes in food consumption in the United States between 1942 and 1946 and mentioned Stiebel-
Reflections

ing’s statement that “a diet high in fat, it now appears, may increase the likelihood of cancer.” An article in American Magazine in 1955 was entitled “What’s Cookin’, Hazel?” She was never referred to as Hazel in the halls of USDA, and she must not have had an opportunity to edit the material, but would have been pleased at the observation that “Dr. Stiebeling’s object is to put science to work for better everyday living.”

Personal Life

Stiebeling was an integral member of her self-sufficient farming family, her community, and the Lutheran church where she grew up. She wrote of her enjoyment of learning in her school days. She clearly enjoyed her studies and the years of work she devoted to supporting her education. On leaving Columbia University for her first independent work, she wrote of the “uprooting of an interesting and comfortable life in New York City.”

In Washington, Stiebeling lived at the Westchester apartments on Cathedral Avenue. Her leisure activities included attending musical and theater performances and hiking through woods and hills. She did not have a lot of leisure time as she devoted her energy and skills to activities in the Luther Place Memorial Church on Washington Circle. In her work, church activities, and travel Stiebeling made many friends and remained close to her family in Ohio. She spent many vacations there, as well as in travels abroad. She retained friendships from her work in Rome and traveled to Italy and many other countries after her retirement. She enjoyed the friendship of Sir John Boyd Orr with whom she worked in Scotland and of Dame Isabella Leitch, both of whom had great influence in establishing the “human right to a nutritionally adequate diet.”

Acknowledgment

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13. Children’s Bureau, Office of Education, and PHS. Eat the right food to help keep you fit. 1941