George E. Gull

The Division of Nutritional Sciences at Cornell University
A History and Personal Reflections

Malden C. Nesheim

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The Division of Nutritional Sciences at Cornell University
A History and Personal Reflections

The academic study of nutrition has had a checkered history in the past 100 years as the science developed. Programs that once flourished in some universities have disappeared while others have prospered and new ones have begun. Cornell University has had a strong program in the nutritional sciences since its very early days. I write this to leave a record of some of the events and people important in Cornell's nutrition history. Some individuals with fellowships and buildings named for them are quite unknown to the beneficiaries of their legacy and I hope this short history will remind today's students and faculty of those who came before them.

I came to Cornell as a graduate student to study animal nutrition in the fall of 1956. I had received BS and MS degrees at the University of Illinois and had spent a two-year tour in the United States Air Force. Professor Milton Scott in the Poultry Science department was my advisor and I finished my PhD in 1959 after carrying out some of the first studies defining selenium as an essential nutrient. As I was finishing my degree, Professor J. H. Bruckner, Head of the Poultry Science Department asked me to stay on as a faculty member. It seemed to me an offer too good to pass up, so I joined the faculty as an Assistant Professor of Animal Nutrition in 1959 and have been at Cornell more than 50 years. I have been closely associated with the evolution of the Cornell program over that period. Given that perspective, I have attempted to chronicle the history of developments at Cornell that have led to the modern organization of nutritional science on campus. (I will leave more recent history to colleagues who will have a perspective like mine in later years.) In doing so I have drawn on some personal observations and impressions as well as other published material and papers in the Cornell Archives.

I have organized this narrative with a brief history of how programs in nutrition were developed in the College of Agriculture, with origins in animal nutrition and in Home Economics where human nutrition was the emphasis. A recurrent theme in Cornell's nutrition history has been attempts to unite the various nutrition programs on campus.

1. College of Agriculture and Life Sciences

The study of agriculture was part of Cornell University from its founding. The bill designating Cornell University as the land grant institution of New York State was signed on April 27, 1865. The Morrill act, providing for grants of land to the states to support instruction in agriculture and the mechanical arts had been passed in 1862.

The University, to be situated on Ezra Cornell's farm in Ithaca, New York, was the culmination of efforts of Cornell and Andrew Dickson White, a fellow NY State legislator. Cornell was a business man, whose fortune was made in the establishment of Western Union Telegraph Company, and White was a scholar, who had taught history at the University of Michigan before becoming a NY State legislator. They shared a vision of a new type of university, non sectarian, that would contribute to the needs of society in the development of science and technology.

The early years of Cornell's agricultural education are described in detail by Gould Colman's book, *Education and Agriculture – A History of the New York State College of Agriculture at Cornell University*.[1] Agriculture struggled to find its place in Cornell's early years. It was not until 1888 that agriculture was made a college at Cornell and in 1904, it became the New York State College of Agriculture at Cornell.

[1] Colman G. Education and agriculture: a history of the New York State College of Agriculture at Cornell University. Ithaca (NY): Cornell University; 1963. http://ecommons.library.cornell.edu/handle/1813/10733

Animal Husbandry

A farm was part of Cornell's agricultural instruction from the beginning and the raising of animals was a major component. Early reports of the Cornell Agricultural Experiment Station describe feeding studies with cattle, and a bulletin on "Feeding Pigs" was published in 1895. A Department of Animal Husbandry was organized in 1903 under the leadership of Professor Hiram Wing. Professor Wing's name endures on campus as Wing Hall, the original Animal Husbandry building built in 1913. It was in this department that the early roots of Cornell's nutrition program began. A history of the Animal Husbandry department[2] published by its long time former head, Kenneth Turk, provides a description of the early developments.

Wing Hall

Elmer Savage

Elmer Savage

One of Professor Wing's students, Elmer S. Savage (for whom Savage Hall is named) received his PhD in 1911, becoming the second PhD awarded in animal husbandry at Cornell. Savage was appointed an instructor in Animal Husbandry in 1906, an Assistant Professor in 1910, and Professor in 1913. He was a leader in work on dairy production until his death in 1943.[3] Savage carried out research on feeding of dairy cattle and he was a strong proponent of open formula feeds, labeled to show the amount of each ingredient on the feed tag, as well the minimum amount of protein and fat and the maximum quantity of crude fiber. The open formulas were intended to insure that farmers purchasing commercial feeds could be confident of their quality. Commercial mixed feeds in the United States for farm animals had a bad reputation at that time as they were often adulterated with poor quality or non-nutritive ingredients. Savage championed the formation of farmer's cooperatives that would produce feeds of known composition.

The Grange League Federation

The movement for open formula feeds eventually led to the formation of the cooperative, the Grange Exchange, in 1918, and later to the Grange League Federation (GLF) in 1920.[4] This was a cooperative formed by the Dairyman's League, the Grange, and the Farm Bureau. A hallmark of the early GLF was its open formula feed policy with the exact composition of the feed displayed on the tag. The involvement of Cornell faculty in the formation of the Cooperative was extraordinary, as Professor Wing served as President of the Grange Exchange for a period of time. Professor Savage formulated a dairy feed termed "Milk Maker," which was a highly successful product sold by the cooperative for many years. Wing and Savage clearly viewed the development of the Cooperative as a response to a social need at the time to serve New York farmers.

Another major figure in the GLF was Howard E. Babcock, Ithaca native, county agricultural agent, and Cornell professor who was General Manager of the GLF from 1922 to 1937. Babcock was a Cornell alum who became

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[2] Turk K. Animal husbandry at Cornell University: a history and record of development from 1868 to 1963. Ithaca (NY): Cornell University College of Agriculture and Life Sciences; 1987. http://ecommons.library.cornell.edu/handle/1813/1519

[3] Warner RG. Elmer Seth Savage 1884-1943: a brief biography. J Animal Science. 1994;72:1-3. [See page 35.]

[4] Millman TE with Sage FE. The GLF Story 1920-1964. Ithaca (NY): Wilcox Press; 1964.

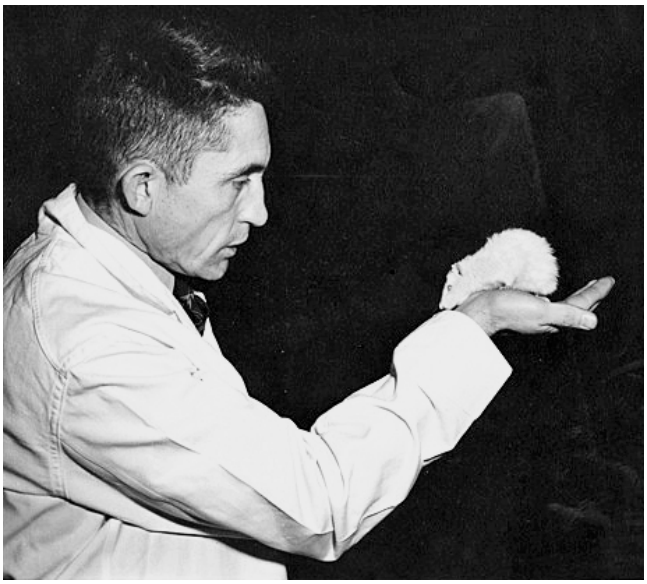
Chairman of the Cornell University Board of Trustees and was instrumental in future nutrition developments at Cornell. He was known as an exceptional salesman who used his abilities to advance the needs of New York farmers through the GLF, and to serve Cornell University.

When I joined the Cornell faculty in 1959, there was still a strong link between the GLF and Cornell animal nutritionists who advised on feed formulation and received research support grants from the cooperative even though the feed formulas had become closed by that time. The GLF eventually joined with other northeast cooperatives to form Agway, a farm and garden supply company that at its peak had sales of over 4 billion dollars a year. Agway, declared bankruptcy in 2002, and its various businesses were sold.

Leonard Amby Maynard, founder and first Director of the School of Nutrition Cornell University. Maynard held positions as Professor of Animal Nutrition, Director of the U. S. Plant Soil and Nutrition Laboratory, and Head of the Department of Biochemistry and Nutrition in addition to being Director of the School of Nutrition.

Leonard Amby Maynard

Professor Savage made provisions for a chemical laboratory to be incorporated into the new Animal Husbandry building that was completed in 1913 (Wing Hall). He recognized the need for laboratory work to complement his feeding studies with cattle. Savage hired L. A. Maynard,[5] who had just completed his PhD in chemistry at Cornell, as an assistant professor of Animal Nutrition in 1915. Maynard became the central figure in the development of nutritional science and biochemistry at Cornell over the next 40 years until his retirement in 1955. Maynard studied chemistry as an undergraduate at Wesleyan University in Middletown, Connecticut, with W. O. Atwater, often considered the founding father of nutrition in the United States. In 1925-26, Maynard spent a sabbatical leave at Yale, in the laboratory of L. B. Mendel, another nutrition pioneer. At Yale, he met Clive McCay,[6] a postdoctoral fellow in Mendel's lab who had just completed his PhD in chemistry at the University of California at Berkeley. Maynard invited McCay to come to Cornell and together Maynard and McCay would expand the study of nutrition in the College of Agriculture at Cornell in the next 30 years. When I arrived on the Cornell campus as a graduate student in 1956, Maynard had just retired as Director of the School of Nutrition and McCay still taught in the Department of Animal Science. When I would be in Savage Hall, Maynard was often in the library or at a seminar, a rather shadowy presence to this new graduate student. He was a distinguished looking man, very short (his nickname was Stub). McCay was still teaching a course in history of nutrition, and he also taught a course in laboratory methods in animal nutrition research.



Clive McCay Professor of Nutrition

[5] Williams HH. Leonard Amby Maynard (1887-1972): a biographical sketch. J Nutrition. 1974;104:1-11. [See page 83 and also page 38.]

[6] Loosli JK. Clive Maine McCay (1898-1967): a biographical sketch. J Nutrition. 1973;103:1-10. [See page 46.]

Maynard's first graduate student, L. C. Norris,[7] was hired by the Department of Poultry Husbandry in 1923 to bring a biochemical dimension to nutrition study in that department. The nutrition division in the Poultry Husbandry Department eventually grew into a strong nutritional science group. Norris retired in 1959, the year I finished my PhD, and joined the faculty of the Department of Poultry Science. Norris was a member of my graduate special committee. He cared deeply for his graduate students, but was a demanding supervisor, stressing basic science in graduate training. Maynard described the early history of nutritional science at Cornell in notes he prepared for a School of Nutrition Seminar in 1969. These notes are reproduced in Appendix 2.

The partnership of Maynard and McCay

Maynard carried out extensive studies on the biochemistry of lactation during his early years at Cornell. He studied the influence of diet on milk composition in animals and carried out studies with laboratory rats in conjunction with his studies on large animals. He recognized that he could use diets with more purified ingredients in rat studies that would help him understand processes in larger animals. McCay, working with Maynard in the 1930s, discovered that restricting energy intake during the growth of rats would significantly prolong their life span.[8] This fundamental observation about diet and aging is still a focus of much of the research on nutrition and aging today.

McCay had a broad interest in the nutrition of many animal species and published work not only on farm animals but also on fish, chinchillas and mink, dogs, guinea pigs, rabbits and hampsters. He established a dog colony at Cornell and published one of the first books on the nutrition of the dog. The close partnership of the GLF and Cornell continued at this time with GLF marketing a dog food, named "Big Red," that was formulated by McCay. The Big Red dog food brand is still made in 2009 by the Pro-Pet company, which is owned by a group of regional cooperatives.

During World War II McCay served in the United States Navy and was assigned to direct research on food and nutrition. His experience there led him to devote more of his efforts toward human nutrition when he returned to Cornell. In 1946, he was given a joint appointment in the Department of Human Nutrition and Food in the College of Home Economics in recognition of his increasing interest in human nutrition.

McCay wanted to improve the nutritional value of bread, which was a major source of calories in the American food supply. He demonstrated how the nutritional value of bread was improved by the addition of dried milk, full fat soy flour and wheat germ, to wheat flour, ingredients which were the basis of a recipe for Cornell Formula Bread. In studies with rats, the Cornell bread would support growth much better than white bread and could be fed with butter or margarine to support rats for several generations. The Cornell bread was marketed at a cooperative grocery store in Ithaca, and was adopted by the New York State Department of Mental Hygiene where it was used in New York State mental hospitals for more than 25 years. With his wife Jeanette, he published the book, "You can make Cornell bread at Home or in the Bakery." [9] In the 1980s Patricia Thonney, working with Jeanette McCay revised the Cornell Bread book but unfortunately the new revision was never published.

McCay suffered a stroke which led to his retirement in 1962, and he died in 1967. His wife, Jeanette, published a biographical memoir of Clive McCay detailing his life and his work,[10] and a biographical article by J. K. Loosli in the Journal of Nutrition[11] provides details of his remarkable career.

McCay and Maynard were joined in the Animal Husbandry department (later named Animal Science) by a number of faculty members in the 1930s and 40s including J. K. Loosli, J. Thomas Reid, Segwick Smith and Richard

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[7] Nesheim MC, Kratzer FH. Leo Chandler Norris (1891-1986). J Nutrition. 2005;135:2079-2081. [See page 42.]

[8] McCay CM, Crowell MP, Maynard LA. The effect of retarded growth upon the length of life span and upon the ultimate body size. J Nutrition. 1935;10:63-79.

[9] McCay CM, McCay JB. You can make Cornell bread. Self published in Engelwood, FL; 1973. Copy in Cornell University Library.

[10] McCay JB. Clive McCay: nutrition pioneer. Charlotte Harbor (FL): Tabby House; 1994.

[11] Loosli JK. Clive Maine McCay (1898-1967): a biographical sketch. J Nutrition. 1973;103:1-10. [See page 46.]

Warner who were important in the Animal Nutrition program at Cornell during the early period when I joined the Cornell faculty. Maynard published the well known text "Animal Nutrition" first in 1937, which had 7 editions; the latter editions were prepared by J. K. Loosli still retaining Maynard's name. I taught a senior-level animal nutrition course in the Animal Science Department using Maynard's textbook, first with J. K. Loosli and later with Richard Warner.

Milton L. Scott

Norris in Poultry Husbandry (later named Poultry Science) discovered the need for manganese in poultry rations to prevent a serious leg disorder that was restricting the development of the broiler industry in the US. He also discovered the need for riboflavin in chickens and his laboratory contributed to the eventual identification of folic acid and B12 as essential nutrients. Norris was broadly interested in nutrition on the campus and as we shall see was instrumental in developing the School of Nutrition. Norris in the Poultry Science department together with Gustav Heuser, Milton L. Scott and Fred W. Hill formed a strong group that contributed much to basic nutrition knowledge, especially of the vitamins and mineral elements, as well as practical knowledge that led to the development of the modern poultry industry.

The origins of the Federal Nutrition Lab

The US Congress passed the Bankhead Jones act of 1935. Among the sections of this act was a provision that funds under the control of the Secretary of Agriculture could be used to establish and maintain regional research laboratories for research into "basic laws and principles related to agriculture." With Maynard's leadership along with Dean Ladd of the College of Agriculture, the US Plant Soil and Nutrition Laboratory was established at Cornell in 1940 and Maynard was made Director, a position he held until 1945, while he maintained his Professorship in Animal Nutrition. The USDA laboratory was established to examine the relationship between soils, plant composition and their nutritive value for animals and humans.[12] One of the first big projects of the lab was to examine the effects of fertilization on the ascorbic acid and β-carotene content of tomatoes. The lab was responsible for producing maps of the distribution of trace minerals in soils, notably for cobalt and selenium. Robert Holley worked as a biochemist in the laboratory and discovered the role of soluble RNAs in protein synthesis. Holley was awarded the Nobel Prize for Physiology and Medicine for the discovery in 1968. The laboratory on the Cornell campus was renamed the Robert W. Holley Center for Agriculture and Health in a ceremony on the Cornell Campus on May 12, 2008. The laboratory is the only USDA facility where a Nobel Prize was awarded for work carried out there.

2. The College of Home Economics

Martha van Rensselaer and Flora Rose

The germ of the College of Home Economics at Cornell began when the Dean of Agriculture, Liberty Hyde Bailey, brought Martha Van Rensselaer to Cornell to plan a reading course for farmer's wives in 1900. This reading course was extremely popular. Each year some five bulletins were sent out dealing with the interests of women in homemaking. Among the subjects considered in these bulletins, were the care and feeding of children, the selection of food, and food preservation. The success of this program led to Bailey supporting the development of a three-month winter course in Home Economics in the College of Agriculture. To assist in the teaching of the winter course, Van Rensselaer hired Flora Rose, who was studying at Columbia University for an advanced degree

[12] Hays SM. Making the plant/soil and nutrition connection. Plant Soil and Nutrition Laboratory. Agricultural Research: May 1991;39(5)16.

Martha Van Rensselaer

with Henry Sherman in nutrition. Sherman was an early pioneer in nutritional science and Flora Rose brought her expertise in food and nutrition with her to Cornell. Together Martha Van Rensselaer and Flora Rose guided the development of Home Economics at Cornell. Their names endure on campus in Martha van Rensselaer Hall, and the Flora Rose residential college on west campus at Cornell. Savage Hall also has a Flora Rose seminar room.

A department of Home Economics was organized in the College of Agriculture in 1907 and a four-year curriculum was outlined. Van Rensselaer and Rose were first appointed with the rank of Lecturer but Bailey prevailed on the University Faculty to grant them the title of Professor after much debate in 1911. They became the first women with the title of Professor at Cornell University,[13] though they were encouraged not to show up at University Faculty meetings! One of the first courses offered in the new department of Home Economics was a survey course in human nutrition, which proved extremely popular for students throughout the university. This was taught by Flora Rose for many years, but in 1913, Mary F. Henry came to Cornell to study nutrition with Flora Rose. She eventually left to obtain advanced nutrition training at Columbia. Upon her return from New York, Mary Henry taught the basic nutrition course, developing it into a five-hour course required by all students. The Department of Home Economics grew—in 1912 there were 117 students in the department—and the extension work throughout the state was flourishing.

Flora Rose, one of the founders of Home Economics at Cornell
Cornell University Archives

During World War 1, Martha van Rensselaer became Director of the Home Conservation Division of the United States Food Administration, after holding a similar position for the State of New York. According to Flora Rose "the department became an experiment station for the State in finding ways in which wheatless, meatless, and sugarless diets dictated by the United States Food Administration could be made as helpful and painless as possible."[14] In the postwar period, Flora Rose went to Belgium in 1923 to help organize food programs for malnourished school children.[15] She received the Order of the Crown from King Albert for her work there. Her work was an early example of work in international nutrition that has become such a major component of Cornell's nutrition programs.

The college continued to grow, and in 1919 the Department of Home Economics was designated a School in the College of Agriculture. The bill creating the New York State College of Home Economics passed the NY State legislature in February 1925. Departments of the College now became recognized by the Board of Trustees, and the Department of Foods and Nutrition officially came into being. Helen Monsch was appointed head of the department.

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[13] Rose F, Stocks EH, Whittier MW. A growing college – home economics at Cornell. Ithaca (NY): New York State College of Human Ecology, Cornell University. 1969; 37.

[14] Ibid.

[15] Faculty Biographies: Flora Rose. Ithaca (NY): Cornell University Archives. [See page 31.]

Hotel Administration

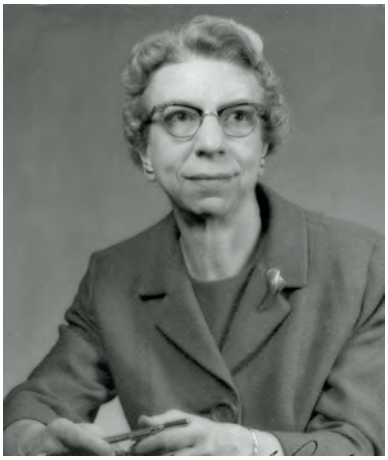
Another department in the new college was the Department of Institution Management, led by Professor Katherine Harris, a Cornell Home Economics graduate who was a well known dietitian This department was the center in the college for the training of dieticians and it ran the college cafeteria, a well-regarded eating place on the campus. In addition to courses in institutional food preparation and management, the department offered courses in hotel management, led by Howard Meek, who came to Cornell in 1922 to begin teaching hotel courses. The hotel program was supported by private funding from the hotel industry but was centered in the Institution Management Department of the College of Home Economics for many years. The Hotel Management Program became the independent Cornell School of Hotel Administration in 1954 and Howard Meek was appointed its first Dean. A history of the Department of Institution Management written by Bernice Hopkins provides a detailed view of the department and its history.[16]

Howard Meek with Eleanor Roosevelt

The Foods and Nutrition Department

Helen Monsch

The Department of Foods and Nutrition was a center of the sciences in Home Economics. A basic chemistry course for the students in the college was taught by the department. The first MS degree awarded to a student with a major in a home economics subject was in food and nutrition in 1922 , and the first PhD from the college was awarded in 1931, again in food and nutrition. From 1922 to 1944, 59 masters degrees and 11 PhDs were granted in food and nutrition. This was the largest concentration of graduate majors in the college during that period. The first research using human subjects, as opposed to experimental animals, was begun in the department in 1936 in studies on the metabolism and requirement for vitamin C. In the 1930s there was steady growth of the department program and faculty. One of the faculty most closely involved with research on human subjects was Frances A. Johnston,[17] who joined the nutrition faculty in 1946. She was particularly interested in iron and calcium requirements in children, adolescents, and young adults, and she was awarded a Borden Award for Nutrition research by the Home Economics Association in 1951. Frances Johnston came from a family with private wealth and she was a major benefactor to the department and later to the Division of Nutritional Sciences. Catherine Personius replaced Helen Monsch as Department Chair in 1944, a position she held until 1966. Hazel Hauck,



Catherine Personius, Chair, Department of Human Nutrition and Food from 1944 to 1966

Frances Johnston with subjects from a study of iron requirements.

[16] Hopkins BM. History of the Department of Institution Management 1925-1969. Ithaca (NY): Cornell University; 1984.

[17] Personius C, Nesheim MC, Morrison MA. 1983 Memorial Statements: Frances A. Johnston. Ithaca (NY): Cornell University Faculty. [See page 57.]

Hazel Hauck

Grace Steininger

who carried out considerable work overseas on nutrition problems in Thailand and Nigeria, was a prominent member of the department, and Grace Steininger was a respected teacher of the department core course. Both of these faculty members have student fellowships endowed in their names.

Home Economics to Human Ecology

In the early 1960s Home Economics in the United States was closely examined as to its role in modern society and in universities. Due to what historian Margaret Rossiter[18] characterized as a "male faculty mutiny abetted by the president," Cornell President James Perkins appointed a committee to study the College of Home Economics and to make recommendations about objectives and functions of Colleges of Home Economics in the United States, as well as for a state-supported institution for home economics education and research located on the Cornell Campus. The nine-member committee chaired by Professor Sara Blackwell reported in December 1966.[19] The committee made a large number of recommendations, among which was a change of name and a realignment of departments.

Martha Van Rensselaer Hall

Helen Canoyer, Dean of the College of Home Economics, retired in 1968 and David Knapp, the first male Dean of the College, was appointed that year. Knapp, with a PhD in government from the University of Chicago, was Director of the Institute for College and University Administrators and Associate Director of the Carnegie Corporation Study of American Colleges of Agriculture immediately before coming to Cornell. He was clearly expected to break the traditional mold of home economics and to implement many of the changes outlined in the Blackwell report.

One of the first acts after Knapp's arrival was to change the name of the College to The New York State College of Human Ecology, a change approved by the Cornell Board of Trustees and the State University of New York in 1969.

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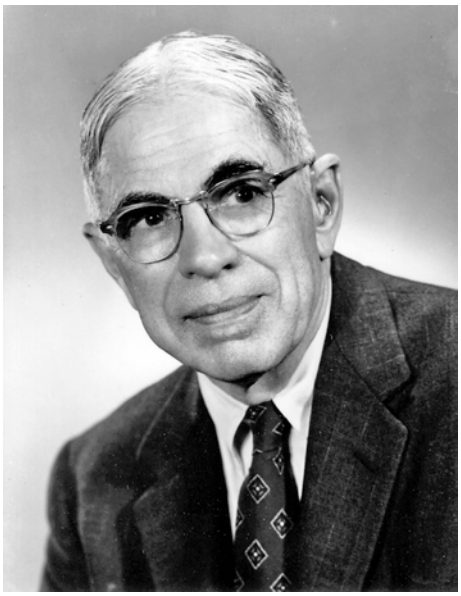
[18] Rossiter MW. The men move in: home economics 1950-1970. In: Stage S, Vincenti VB. Rethinking home economics: women and the history of a profession. Ithaca (NY): Cornell University Press; 1997. p. 112.

[19] Final report of the President's Committee to study the College of Home Economics. Cornell University, Dec. 1966.

Interestingly, the Blackwell Committee's preferred name for the college was The College of Human Development and Environment, and the name Human Ecology was well down the preferred list but it was the name eventually chosen. At the same time the former Department of Institution Management was merged into the Department now called Human Nutrition and Food. The new department had responsibility for dietetics training as well as undergraduate, graduate and extension programs in human nutrition. The revised department had about 20 faculty members and Catherine Personius remained chair. The changes initiated in the College of Human Ecology soon had broader implications for the organization of nutrition on the campus.

Knapp served as college dean until 1974 when he was named University Provost by President Dale Corson.

3. Formation of the School of Nutrition



Professor Leo C. Norris, Secretary of the School of Nutrition

By 1940, there was a flourishing nutrition community at Cornell. The College of Agriculture, through programs in the Departments of Animal Husbandry and Poultry Husbandry, had many faculty devoted to teaching and research in nutrition or food science; the College of Home Economics had an active Foods and Nutrition Department; and the US Plant Soil and Nutrition Laboratory was flourishing. Nutrition as a science was in an exciting phase. By 1940, the essential nutrients were largely identified and their chemical nature was being determined. This nutrition knowledge was rapidly being applied in animal production and in human nutrition.

L. A. Maynard, in his brief history of the early years of the School of Nutrition, describes a luncheon on June 3, 1941,[20] given by James A. McConnell, general manager of the Cooperative Grange League Federation Exchange (GLF) for Dr. Paul Manning, biochemist of the Peebles Company, San Francisco, California.

At this luncheon Dr. Manning suggested that some academic institution should establish a school for research and teaching in the field of nutrition, and explained why he felt Cornell should do so. Following this luncheon, McConnell wrote a letter to Howard E. Babcock, former general manager of GLF and then Chairman of the Cornell Board of Trustees, reporting what Manning said. McConnell told Babcock that there is a great need for some institution in the country to take the leadership in establishing a school for research and teaching in the field of nutrition. His letter said that Cornell has the faculty to do this and that Maynard was highly respected throughout the United States.

Howard E. Babcock

Babcock was enthusiastic about the idea and immediately raised the issue with President Ezra Edmund Day, who supported the idea and agreed to have it discussed at a faculty meeting on June 11, 1941. The faculty agreed to set up a committee of five faculty members to confer with the President and Trustees about the proposal. The committee was empowered to act for the faculty before its next meeting, which would not be until the next October. The President and Chairman Babcock brought the proposal to the Board of Trustees on June 16, 1941, who approved the following:

> *After discussion, it was moved and carried that "in furtherance of the National Defense Program, the administration of the University, subject*

[20] Maynard LA. Early years of the School of Nutrition at Cornell: 1941-1956. Cornell University [Ithaca (NY): #29/1/292 box 9]; 1968. [See Appendix 2 on page 85.]

to the approval of the faculty committee, is hereby authorized to organize and establish a School of Nutrition and the President was authorized to appoint a Director and the necessary staff, to work out details of the organization, and to fix the tuition and fees for such a school."

On June 17 and 18, 1941, Chairman Babcock and President Day met with the faculty committee and others around the campus to discuss organization of the school. The President suggested that students would study in several areas, "animal and human nutrition, food engineering, food marketing, and others." It was agreed that there would be a five-year course for the degree Master of Science in Nutrition (MNS), and that exceptional students could continue to the PhD degree. The School was to cut across departmental lines, and the faculty was drawn from across the University. As a result of these meetings on June 17 and 18, the faculty committee gave its approval and the President was authorized to establish and organize the School. In two weeks from the generation of the idea, the establishment of the School was approved by the University faculty, the administration, and the Board of Trustees. Maynard, in a classic understatement, says in his brief history "this was unusually fast action."

J. B. Sumner with an unidentified colleague

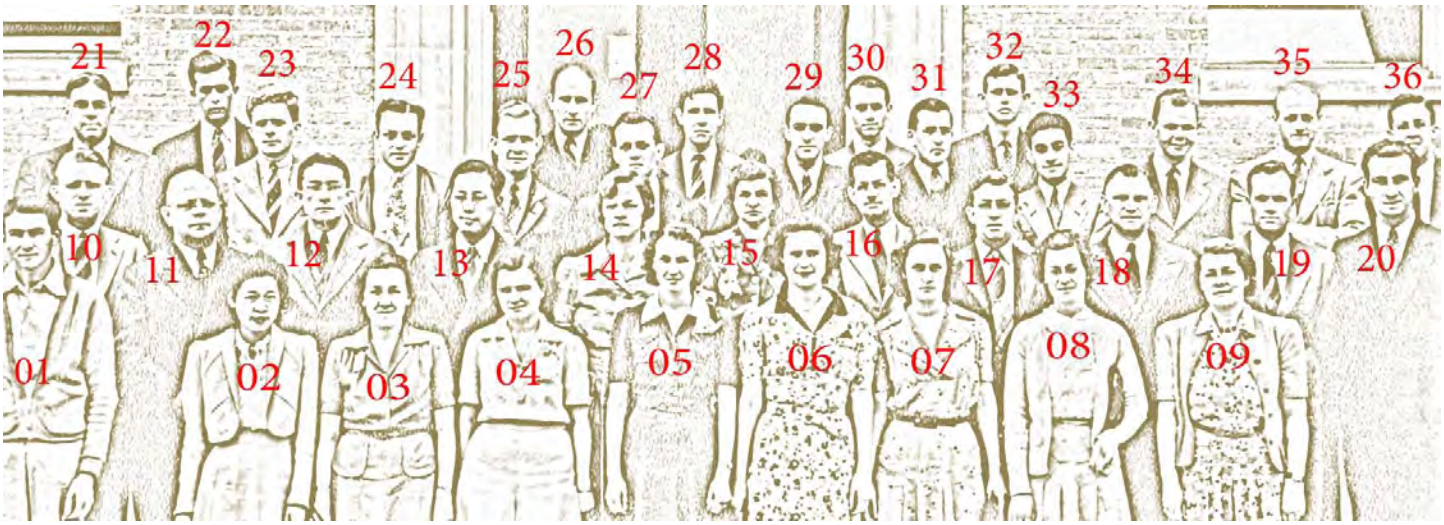
Maynard was named Director of the School of Nutrition, with the understanding he would continue as Director of the US Plant Soil and Nutrition laboratory and as Professor of Animal Nutrition. Professor Leo C. Norris was named Secretary of the School. The School of Nutrition was not a unit of the College of Agriculture, but was a free standing school of Cornell University, though students paid the state colleges' tuition rate. The first faculty meeting of the School was held May 19, 1942, after the Board of Trustees had approved 34 members of the University faculty as joint appointees to the School. The faculty roster in 1943 had 3 Nobel Prize winners as members: Vincent du Vigneaud, at the Cornell Medical College in New York City (Nobel Prize in Chemistry in 1955), Peter Debye (Nobel Prize in Chemistry 1936), and James Sumner (Nobel Prize in Chemistry in 1948).[21] The faculty appointments represented 5 colleges and seven departments of the University. The School of Nutrition represented an interdisciplinary approach to nutrition that has been maintained at Cornell up to the present day.

Much of the impetus to the formation of the School had come from a desire to support the national defense program by mobilization of University-wide resources. In the first years considerable effort was placed on research to better preserve foods. Non-rationed, frozen foods were in particular demand, and research in Engineering as well as in Home Economics was mobilized to address food preservation issues. A large study was undertaken to examine the relation of nutrition to cold resistance of human subjects under a grant from the Office of Strategic Studies. A cold chamber was built in the College of Engineering where human subjects (conscientious objectors) lived, ate and underwent specific activities. The results of this research were classified.

Savage Hall in 1947

[21] Maynard LA. A statement regarding the School of Nutrition. Submitted to the administrative board, Dec. 8, 1943. Filed in Director's office, Division of Nutritional Sciences.

Faculty, staff and students at first School of Nutrition seminar in 1942.



Faculty, staff and students at first School of Nutrition seminar in 1942

Unfortunately, it has not been possible to identify everyone in this group. The following is a key to those we have been able to identify. If any reader can identify others in the photograph, please let us know.

Key to the photo of the School of Nutrition's 1942 seminar:

12 Clive McCay, 15 Hazel Hauck, 16 L. A. Maynard, 18 G. F. Heuser, 19 J. K. Loosli, 20 S. E. Smith, 21 L. C. Norris, 26 Elmer Savage, 29 J. L. Krider, 32 Will Gortner, 34 F. W. Hill

Savage Hall and the Department of Biochemistry

Maynard's office was originally in the Plant Soil and Nutrition laboratory. The School was eventually given some space in Fernow Hall on the campus. As the program developed, space for the School activities was badly needed. In 1943, H. E. Babcock began to seek funds for the construction of a building to serve as a center for the School. Babcock felt that farmers might have their organizations contribute for a building because the School's program for better nutrition should enlarge markets for milk, eggs, and vegetables, principal crops of northeast agriculture. He felt that the interest of the farm organizations would increase if the building was named after Professor Elmer Savage, who had been so instrumental in the founding of the cooperatives in the northeast. In December 1944, Babcock announced to the Board of Trustees that the GLF would provide a gift of $200,000 for the building. The Trustees accepted the gift and agreed to name the building Savage Hall.

At this time new developments were taking place relative to a department of biochemistry. Until 1938 there was an Ithaca division of the Cornell Medical College. The Ithaca division was closed and all of Cornell's medical education was transferred to New York City. This prompted the closure of the Department of Physiology and Biochemistry in Ithaca and the transfer of faculty to the department of Zoology on the Ithaca campus. One of the faculty members of this department was James B. Sumner, who received the Nobel Prize in Chemistry in 1948 for the crystallization of urease, demonstrating the protein nature of enzymes. In 1940, Sumner was transferred to Wing Hall where he was given space with Maynard and McCay and provided an appointment in the College of Agriculture.[22] Maynard and the Dean of Agriculture, W. I. Meyers, convinced New York State to support a Department of Biochemistry in the College of Agriculture in 1945, and Maynard and Sumner were the first two faculty members of the new department. There was no space for the department, so a deal was made with New York State for an appropriation to equip Savage Hall, which would also house the new Biochemistry Department. The state appropriation totaled $123,500. Savage Hall was completed in the fall of 1947 at a total cost of $405,146. The difference between the GLF gift and the state money was paid by University funds. The building size was reduced by about one third from the original plan because of escalating building costs after WWII.

Governor Thomas E. Dewey speaking in Bailey Hall upon the dedication of Savage Hall, October 10, 1947; it was nationally broadcast on NBC radio.

At the dedication of Savage Hall on October 10, 1947, New York Governor Thomas E. Dewey spoke at a ceremony in Bailey Hall on the campus, a year before his famous loss of the presidency to Harry Truman. His address was broadcast nationally, on NBC radio. The closing paragraph of his speech was:

> *Here today, we dedicate it—a hall of science to the memory of Seth Savage, a man who foresaw that knowledge of the chemistry of food would do wonders for the well being of mankind. Only a few yards away from here another building is rising, a great laboratory of nuclear physics, devoted to the mastery of atomic energy. Within this small segment of one university campus we find the symbols of the hopes and fears of mankind today. We have the keys which Providence provided us to unlock the aspirations of free men everywhere. May God grant us the wisdom, the self control, and the hu-*

[22] Maynard LA. A biographical memoir of James Batcheller Sumner, 1887-1955. National Academy of Sciences; 1957.

man generosity to dispel the fears that press upon us and make real the hopes for human liberty. I am proud and happy to dedicate Savage Hall of the Cornell School of Nutrition to the better nutrition of the American people and to the science of making food for the advancement of health, the vigor and the good will of human beings everywhere.

Dewey, of course, was speaking of Newman Laboratory that housed the Laboratory of Nuclear Studies , being built at the same time across the courtyard from Savage Hall. In addition to the national radio broadcast of the dedication of Savage Hall, the building was featured on the cover of the October 10, 1947 issue of Science (Appendix 4).

Maynard was named Head of the new Department of Biochemistry (later named the Department of Biochemistry and Nutrition), while maintaining his position as Director of the School of Nutrition. He gave up the Directorship of the US Plant Soil and Nutrition Laboratory at that time. The small Department of Biochemistry became closely associated with the School of Nutrition, sharing facilities in Savage Hall. Most of the biochemistry faculty, including J. B. Sumner, were members of the School of Nutrition faculty as well. Maynard invited one of his former graduate students, Harold H. Williams, to join the faculty of the new department in 1945. Williams[23] had a similar background as Maynard. After his PhD training at Cornell under Maynard, he spent some time in the laboratory of Lafayette B. Mendel at Yale, where Maynard had worked several years earlier. When Maynard retired in 1955, Williams became Head of the Department of Biochemistry, a position he held until 1964, when the Department was moved to the new Division of Biological Sciences and greatly expanded, with new facilities in a remodeled Wing Hall.

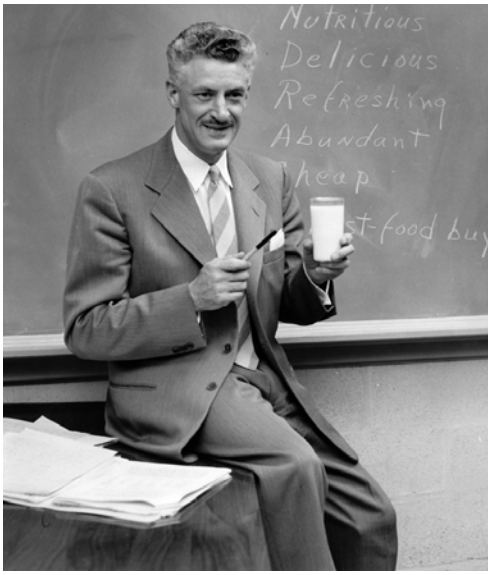
State support for the School of Nutrition

The School of Nutrition was not part of the state supported colleges, though the school faculty was largely drawn from the state units through joint appointments. The school became a recognized center of research and training in New York State. Mr. Babcock persuaded Governor Dewey to provide an item of $100,000 for the school in the state budget. This funding was to support a program of direct interest to the New York State Health Department, including study of the nutritional status of the state population. One of the uses of these new state funds was for a major nutritional status survey of nearby Groton Township in 1948 and 1949. The State funds originally came as a direct state grant to Cornell University but in later years, after considerable negotiation, the funds for the School of Nutrition were included in the state appropriation to the College of Agriculture. This established the funding relationship that continues to this day.

Norman Moore, Director of University Health Services, was an important figure in the development of the School of Nutrition, especially for linkages to clinical nutrition. An eight-bed metabolic ward was established by the School in the Sage Infirmary (now Schuyler House, a university dormitory on Sage Place) where clinical nutrition studies could be carried out. A nutrition counseling service to Cornell students was provided primarily by Professor Charlotte Young. Kathleen Berresford, instructor in public health, was appointed in 1948. She spent much of her time at the Tompkins County Health Department consulting on diets for persons referred to her by local doctors or public health nurses.

H. E. Babcock and Maynard were the principal architects of the School of Nutrition at Cornell. The support of the initial idea, the funds for Savage Hall, and the state appropriation came about because of Babcock's support and his position as Chairman of the Cornell Board at that time. Maynard had the ability to mobilize faculty across the university to support the program of the School. H. E. Babcock died on July 21, 1950, and his friends at Cornell and throughout agriculture and industry raised an endowment to support the H. E. Babcock Professorship of Food Economics in the School of Nutrition as a memorial to his leadership. Herrell DeGraff was the first holder of the Chair. DeGraff was a Cornell Agricultural Economist strongly associated with the dairy and meat industries who became President of the American Meat Institute in 1962. The Babcock Chair ensured the association with an economist interested in food issues with the Cornell nutrition program in future years. The Chair is currently held by Professor Per Pinstrup-Andersen, winner of the world food prize in 2001.

[23] Sansalone W. Harold Henderson Williams (1907-1991). J Nutrition 1999;129:591-5. [See pages 66 and 83.]

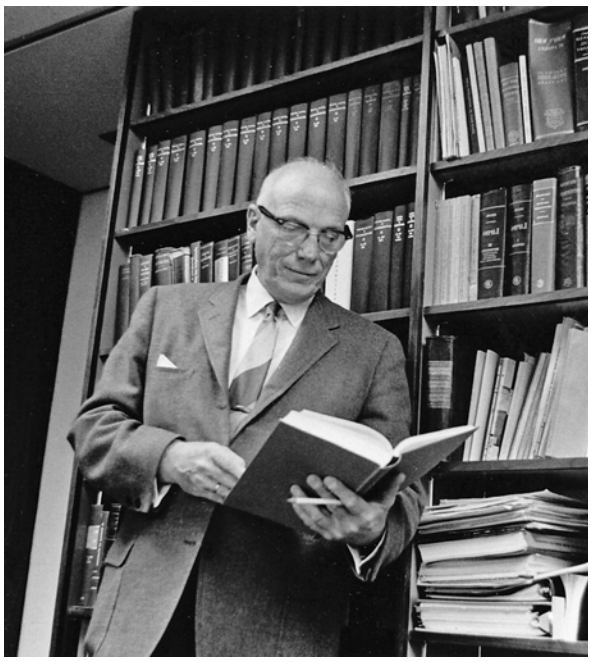


Herrell DeGraff, first Babcock Professor of Food Economics in the School of Nutrition

Maynard's influence on the development of nutritional science at Cornell and nationally was exceptional. He was elected to the National Academy of Sciences in 1944. Maynard chaired the Food and Nutrition Board and the Division of Biology and Agriculture of the National Research Council in the 1950s. In World War II he served on the Emergency Food Commission and he was also a member of several nutrition-related missions to the UK and Europe during and after the war. He served as President of the American Institute of Nutrition and the American Society of Animal production in 1942-43 and he received numerous research awards from the professional societies. Maynard retired as Director of the School of Nutrition in 1955, though he stayed as Director until his successor, Dr. Richard H. Barnes, arrived at Cornell in 1956.

The Barnes years

Richard H. Barnes[24] had been Director of Biochemical Research for Merck, Sharpe and Dohme laboratories before becoming Director of the School of Nutrition. At this time, the School's teaching program primarily involved students pursuing either the Master of Nutritional Science degree (MNS), or the Master of Food Science (MFS) degree. The School of Nutrition had been granted the authority to administer these degrees in 1946, following the precedent set by the University, which had granted the Graduate School of Business and Public Administration the authority to administer its own Masters' degrees. The MNS and MFS required two years of prescribed study at the graduate level. The administration of these degrees was transferred to the Graduate School in 1956 because the record keeping for the degrees could be more efficiently handled by the Graduate School. The academic program was still controlled by the School faculty.



Richard H. Barnes, Professor of Nutrition and Dean of the Graduate School of Nutrition 1956 to 1973

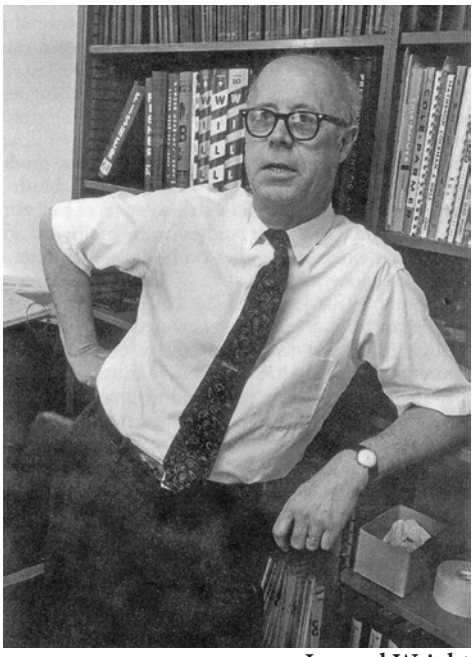
On October 25, 1956, the Board of Trustees voted to change the name of the School of Nutrition to the Graduate School of Nutrition and the title of Director Barnes was changed to Dean. As Dean, Barnes reported directly to the Provost and the School became a parallel organization to the Graduate School of Business and Public Administration. The School had similar administrative autonomy to that of the Business School, the Law School, and the School of Hotel Administration. The School still received an annual State appropriation through the College of Agriculture budget, but also retained much of the tuition paid by graduate students enrolled in the school and the overhead from research grants. The graduate students enrolled in the Graduate School of Nutrition paid statutory college tuition rates. This history of administrative autonomy has been a strength of the nutrition program on campus, but a source of some dismay from college Deans.

In the early years of the School of Nutrition, the faculty members were drawn primarily from other departments in the University as joint appointees. With the State appropriation and research grants, Maynard began to develop a core staff whose appointments were located directly in the School rather than some other University department. These core staff included Maynard, Herrell DeGraff, the first Babcock Professor, Charlotte Young, Professor of Medical Nutrition, and several young biochemists, food scientists, physicians, and public health professionals

[24] Roe DA. Richard Henry Barnes (1911-1978): a biographical sketch. J Nutrition. 1979;109:1509-14. [See page 70.]

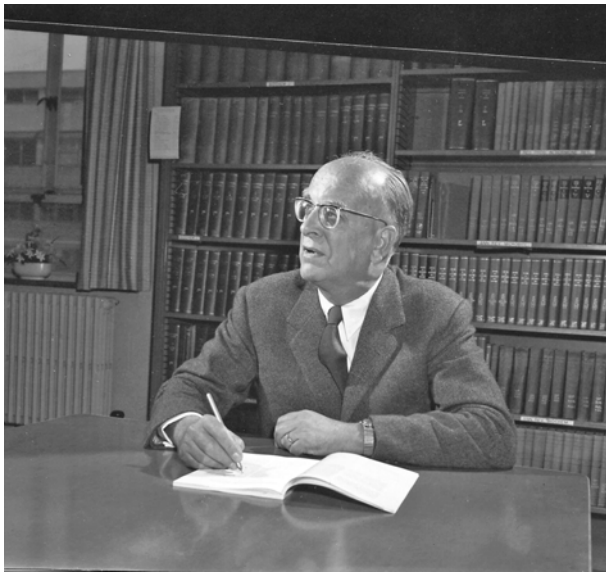
who spent short periods on the faculty. These were hired to assist in carrying out the research programs funded by several of the research grants received by the School of Nutrition during Maynard's years. The addition of permanent staff was limited because the State appropriation was renewed only on an annual basis at that time. A considerable portion of the School budget was also used to support graduate students or research technicians for some of the faculty located in other departments. When I joined the faculty of the Poultry Science Department in 1959, for example, I was given a joint appointment in the Graduate School of Nutrition and I was provided a laboratory technician funded by the School. Richard Barnes, as Dean, led an expansion of the School's core faculty. Barnes recognized that the faculty in biochemistry at Cornell was very small so he recruited biochemists Donald Zilversmit, who was supported by a career investigator award from the American Heart Association, and Lemuel Wright, who had an NIH Career Investigator award, along with two young biochemists, James Gaylor and Donald McCormick, to strengthen the campus resources in this area. Barnes also was instrumental in obtaining an endowment for the Jamison Professorship, a gift from Edward S. Jamison in Honor of his father, James Jamison. The professorship was to be in support of clinical nutrition and was used to support medically trained faculty who supervised the clinical nutrition unit in Sage Hospital. The 1969 annual report of the School lists 13 core faculty members and 45 faculty with joint appointments drawn from 10 departments and 4 colleges of the University. Barnes recognized that nutrition was not a narrow discipline, but a field of study where information and research methods from many fields were required to understand the relationship of humans to their food supply. The core faculty was very multidisciplinary, consisting of biochemists, physicians, psychologists, physiologists, and public health specialists. Research funding expanded rapidly during the years Barnes was Dean.

Charlotte M. Young, Professor of Public Health Nutrition in the School of Nutrition



Lemuel Wright

Barnes appointed Professor André van Veen,[25] one of the founders of the nutrition program of the Food and Agricultural Organization of the United Nations, to begin a program in International Nutrition. Upon van Veen's retirement in 1968, Michael Latham was appointed the Director of the International Nutrition Program. The international program has been one of the largest graduate programs in nutrition at Cornell since that time, and its graduates are found in countries throughout the world and in major positions in international agencies.

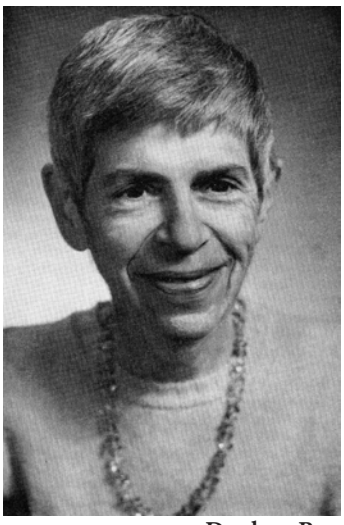


André van Veen, Professor of International Nutrition, in the Graduate School of Nutrition from 1962-1968.

During the Barnes era, Savage Hall was expanded, first with laboratories added to the second floor at each end of the building in 1960, completing parts of the building left out in the initial construction, and then fourth floor animal research facilities were

[25] Roe DA. André Gerard van Veen (1903-1986). J Nutrition. 1988;118:281-3. [See pages 62 and 83.]

completed in 1972. These facilities were built with School of Nutrition funds. The Sage Infirmary metabolic ward was closed in the 1970s.



Daphne Roe

Barnes was very active in the national nutrition community. He was Editor of the Journal of Nutrition from 1959 to 1969, and served as President of the American Institute of Nutrition in 1968-69, and the President of the Federation of American Societies of Experimental Biology in 1973-74. Barnes maintained a strong research program as Dean. He was interested in the relationship of intestinal microorganisms to nutritional needs, and he developed a program on the relationship of malnutrition and behavior, both in animal models and in children, in collaborative work with Dr. Joaquin Cravioto in Mexico. Barnes received the Borden Award from the American Institute of Nutrition in 1967 and the Conrad Elvehjem Award for Public Service in 1975. On May 3, 1973, Barnes announced his desire to be relieved of his duties as Dean. Daphne Roe was appointed acting Dean of the Graduate School of Nutrition. This announcement put in motion a much discussed reorganization of nutrition programs on the campus.

4. The Formation of the Division of Nutritional Sciences

By 1972 , the Graduate School of Nutrition was flourishing with 13 tenure-track core faculty members, 2 endowed professorships who advised 53 MNS and MFS students along with 16 PhD students.[26] The students came from 12 countries. The faculty was also made up of joint appointees primarily drawn from the College of Agriculture and the Department of Human Nutrition and Food in the College of Human Ecology. Graduate study in nutrition at Cornell was carried out in three separate graduate programs: the graduate Field of Human Nutrition and Food, the Graduate Field of Animal Nutrition, and the MNS and MFS programs administered by the School of Nutrition.

The Department of Human Nutrition and Food in the College of Human Ecology had grown to more than 20 tenure-track faculty, who were responsible for an undergraduate major in food and nutrition, dietetics training (a graduate program), and human nutrition extension programs throughout NY State. Professor Elizabeth Hester had been chair of that department since the retirement of Catherine Personius. Her term as department chair ended around the time Dean Barnes was to leave the Deanship in the School of Nutrition. Professor Mary Morrison became acting Department Head.

With the Graduate School of Nutrition core faculty, and the department in Human Ecology, there were essentially two separate administrative units emphasizing human nutrition at Cornell, along with 3 graduate fields dealing with nutrition. The small Graduate School of Nutrition as a stand alone academic unit was vulnerable, and Dean Knapp in his desire to strengthen the Human Ecology program proposed that the School be eliminated. Apparently there had also been questions raised by the auditors of the State University of New York, who questioned the use of state funds for the Graduate School of Nutrition, which was not a state unit. This had been a long-standing issue since the early days of the School.

In a memo to then Vice Provost Keith Kennedy on November 24, 1970,[27] Knapp outlined for the record a conversation with Kennedy in which he proposed that the Department of Human Nutrition and Food, along with 7 positions in the Graduate School of Nutrition, be combined into a School within the College of Human Ecology with a name to be decided later. Though not stated, this proposal seemed to presume that the biochemists in the Graduate School of Nutrition would be incorporated into biochemistry in the Biological Science Division. The Knapp proposal led to a flurry of activity, attempting to devise an organizational structure that would focus nutrition activities on the campus.

[26] Graduate School of Nutrition News. Volume VII, 6, 1971. Cornell University Library.

[27] Memo from David Knapp to W. Keith Kennedy, Nov. 24, 1970. W. K. Kennedy papers, box 21, Cornell University Archives.

Three study committees

A long-range planning committee of the Graduate School of Nutrition, chaired by David Call (I was also a member), sent a report[28] to the Graduate School of Nutrition faculty on June 8, 1971, that recommended that the name be changed to "School of Nutrition" and that it become a semi-autonomous inter-college unit headed by a Director reporting to the Deans of the CALS and HEc. The new School would be similar to the Biological Science Division in that it would have 3 sections, Human Nutrition, Physiological Chemistry, and Animal Nutrition, which would encompass essentially all nutrition programs on the campus. The committee also recommended that graduate study in nutrition be under the supervision of a single Graduate Field of Nutrition.

At the same time, in spring 1971, Dean Charles Palm of the College of Agriculture asked me to chair a committee to examine the location of college resources associated with the Graduate School of Nutrition. This committee, composed of faculty from the Departments of Animal and Poultry Science and Food Science,[29] recommended in May 1971 that an intercollege Department of Nutrition be created between the College of Agriculture and Human Ecology or that a Department of Nutrition be created within the College of Agriculture. The committee couldn't agree as to which course was preferred, primarily because the Department of Animal Science favored the department in the College of Agriculture.

Shortly after my committee reported, a committee of the Department of Human Nutrition and Food, chaired by Professor Jerry Rivers, recommended[30] to Dean Knapp (June 4, 1971) that the Graduate School of Nutrition and the Department of Human Nutrition and Food be merged into a School of Nutrition within the College of Human Ecology.

One of the major issues in these discussions was the fate of animal nutrition in the reorganization. Though the Graduate School of Nutrition and the Department of Human Nutrition and Food focused on human nutrition, both the Department of Animal Science and the Poultry Science Department had strong nutrition groups, with faculty who worked on many basic nutrition problems in the spirit of Maynard and McCay. These faculty members did not want to be left out of the new nutrition organization on the campus. In the end animal nutritionists were offered joint appointments and the animal nutrition programs were left in their original departments.

The discussions about organization continued through the 1972-73 academic year. The Corson presidential papers are full of correspondence from Nutrition and Biological Science faculty outlining concerns about the demise of the Graduate School of Nutrition. The essence of these discussions pointed out that the Graduate School of Nutrition was a highly successful interdisciplinary unit, with a strong national reputation, which may not survive a reorganization. The biochemistry faculty (male) were expected to be reluctant to join a unit made up of applied nutrition faculty (all female) from Human Ecology and the basic science strength would be lost.

I was not on campus during that year as I was on sabbatical leave at the University of Cambridge in England. Probably that was a good thing as I was not closely identified with a particular faction in the discussions!

Decision on an intercollege unit

Ultimately, the College and University administrations concluded that some sort of intercollege unit would be formed from existing units in nutrition on the campus. David Knapp outlined the shape of a proposed School of Nutrition in a memo[31] to Keith Kennedy on May 23, 1973. His memo recommended that a School of Nutrition be established within the College of Human Ecology and the College of Agriculture, made up of faculty from the

[28] Graduate School of Nutrition Report of the Long Range Planning Committee, June 8, 1971.

[29] Committee Recommendations on the Role of the Graduate School of Nutrition in Agriculture and Life Sciences, May 13, 1971. W. K. Kennedy papers, box 21, Cornell University Archives.

[30] Proposal for Reorganization of Human Nutrition at Cornell; attached to memo from E. E. Hester to Dean Knapp, dated June 4, 1971. W. K. Kennedy papers, box 21, Cornell University Archives.

[31] Draft of proposed School of Nutrition; attached to memo from David C. Knapp to W. K. Kennedy, dated May 23, 1973, with notes of agreement from Kennedy. W. K. Kennedy papers, box 21, Cornell University Archives.

Graduate School of Nutrition and the Department of Human Nutrition and Food. Faculty in the school would be members of both college faculties. There was a provision for joint appointments from other departments. Undergraduates in nutrition would be admitted through the College of Human Ecology, while graduate student programs would be administered by the Graduate School. A Director who would have responsibility for leading the new school would report to the two Deans, budget would come from both colleges, and overhead from research grants would be retained by the School. This organization would be effective upon the appointment of a Director. The outline was agreed to by Keith Kennedy, the Dean of the College of Agriculture on May 24, 1973.

The animal nutrition programs would remain in the Departments of Poultry and Animal Science, though joint appointments would be possible in the new intercollege program. Today, animal nutrition is primarily taught in the Department of Animal Science in the College of Agriculture and Life Sciences. The Department of Poultry Science was eliminated in 1991. The later history of the animal nutrition programs is not discussed further here.

A search for a director

A search committee for the Director chaired by W. Donald Cooke, the Vice President for Research, was formed and the first meeting was in mid June of 1973. The appointment of the committee triggered another batch of letters on organizational issues, dealing with nutritionists from other departments of the College of Agriculture and with the idea that the school should be an organization similar to the Division of Biological Sciences.[32] There was concern that the "nutritional science" of the program would be diluted by the "home economics" nutrition in Human Ecology. The varying proposals and faculty discussions led Dean Knapp to complain in a June 25, 1973, letter[33] to Dean Keith Kennedy and Provost Robert Plane that "there are as many prima donnas in nutrition as there are in humanities and that's going quite a distance!"

The search process involved bringing a group of outside advisors to meet with the Deans and Provost to recommend who might be good candidates for the position.[34] This meeting took place in August of 1973. Eventually, the Director position was offered, in November of 1973, to Professor Alfred E. Harper from the University of Wisconsin. Harper was Chair of the Nutrition Department at Wisconsin and was a well-known individual in the field, with a strong record of research and public service. Harper declined the offer on December 18, 1973.

With the Director's position still unresolved, the nutrition programs on campus felt a need to make decisions on vacant positions that needed filling to meet teaching and extension needs. This was especially true of the Department of Food and Nutrition, which had not hired for several years due to the pending reorganization. There were up to 7 or 8 vacant positions in the department. In January 1974, Dean W. Keith Kennedy asked me to chair a committee consisting of 2 faculty from the Graduate School of Nutrition and 2 from the Department of Human Nutrition and Food to consider critical hiring needs to maintain the program. The committee reported on March 24, 1974, with recommendations for filling 6 positions.

In February of 1974, I was asked to meet with the search committee, faculty from the Graduate School of Nutrition, and the Human Nutrition and Food Department to interview for the Director's position. In early March, 1974, President Corson offered me the Directorship of the new intercollege unit in nutrition, as yet unnamed. Knowing the contentious nature of the debates that had gone into the reorganization, I accepted the position with some trepidation! One of my requests was to transfer my colleague, André Bensadoun, from the Poultry Science Department to the new unit. I also sought and received assurances from the biochemists in the Graduate School of Nutrition that they would not leave for the biochemistry department and would assist in the development of

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[32] Letters about the proposed School of Nutrition from several sources are found in the W. K. Kennedy papers in the Cornell University Archives, as well as in the papers of President Dale Corson in files dealing with the School of Nutrition.

[33] Memo dated June 25, 1973, to W. Keith Kennedy and Robert A. Plane from David C. Knapp. W. K. Kennedy papers, box 21, Cornell University Archives.

[34] Some aspects of the Director search are found in the papers of President Dale Corson that deal with the graduate School of Nutrition. Cornell University Archives.

the new unit. The opportunity to direct the new nutrition unit came at a good time in my career, as I wished to expand my interests beyond those of the Poultry Science Department. I had just returned from a sabbatical leave at the University of Cambridge where Dr. David Crompton and I extended our budding collaboration on studies of the influence of parasitic infections on nutrition of the host. The move to a human nutrition unit gave us an opportunity to work on the influence of these infections on human nutrient needs. Crompton and I worked in close collaboration for nearly 30 years in studies in Asia, Africa, and in Latin America.

Trustee action

The Executive Committee of the Board of Trustees voted on March 14, 1974, to abolish the Graduate School of Nutrition and the Department of Human Nutrition and Food in the College of Human Ecology and to establish an intercollege unit within the Colleges of Agriculture and Life Sciences and Human Ecology. At the same time the Trustees voted to name me Director of the new unit effective April 1, 1974.

The following explanation,[35] provided to the Executive Committee of the Board prior to their action on March 14, provided the details of the responsibilities of the new Cornell nutrition unit:

> *Cornell University has a large group of faculty members who have an interest in nutrition scattered throughout the campus. In fact, there are more members of the American Institute of Nutrition at Cornell than in any other University. The establishment of the new school will focus a substantial percentage of the effort in nutrition within an organizational unit.*
>
> *The name of the school will be decided by its faculty at one of its first meetings. Three alternatives have been discussed, School of Nutrition, School of Human Nutrition, and School of Nutritional Sciences.*
>
> *The faculty of the school will be under the leadership of the Director, responsible to the Deans of the Colleges of Human Ecology and Agriculture and Life Sciences. The faculty of the School will offer undergraduate and graduate instruction in the nutritional sciences, conduct research, and provide extension programs to the people of the state.*
>
> *The faculty of the School will be composed of members of the faculties of the Colleges of Human Ecology and Agriculture and Life Sciences with principal interest in human nutrition and basic nutritional sciences. Faculty members in the School will have faculty status in both colleges. It is understood that the full time faculty will initially be composed principally of members of the Department of Human Nutrition and Food of the College of Human Ecology and the Graduate School of Nutrition. Faculty in other colleges may hold joint or courtesy appointments within the School.*
>
> *Undergraduate students pursuing a degree through the School will be admitted to and subject to the requirements of the College of Human Ecology.*
>
> *The School will be under the leadership of the Director, responsible to the Deans of the Colleges of Human Ecology and Agriculture and Life Sciences. The Director will be responsible for the budgeting of resources allocated to the School including grants and special discretionary funds as well as the administration of instructional, research and extension programs within the School. The School will be supported by a combination of State, Federal and endowed funds. State funds will be provided through the College of Human Ecology and Agriculture and Life Sciences. Endowed support will include funds for support of academic positions as well as programs.*

The Trustee action created a new intercollege unit, but the action preserved much of the funding mechanism of the Graduate School of Nutrition. The new unit received the state funds that had supported the Human Ecology Department and the Graduate School of Nutrition, but the agreement preserved the use of research grant overhead income that had been the case for the Graduate School of Nutrition. This preserved a significant degree of discretionary funding available to the Director, which has been extremely valuable to the unit since its formation. It also has been a matter of considerable discussion with the College Deans! The new unit did not receive directly the tuition income from students that had come to the Graduate School of Nutrition from the MNS students enrolled.

[35] Supplemental agenda item, Cornell University Board of Trustees Executive Committee, March 14, 1974. Cornell University Archives.

From the November 24, 1970, memo from David Knapp to Keith Kennedy outlining his recommendations for reorganizing nutrition on the Cornell campus, to the Trustee action, three-and-a-half years had passed, quite a contrast to the 2 weeks it took to organize the School of Nutrition in 1941. It is an example of how difficult it can be to make organizational changes in a university, especially when different established colleges are involved.

The New Division

The faculty members of the new unit met on March 15, 1974, and recommended that the unit be called the Division of Nutritional Sciences (DNS). This was considered a parallel structure to the Division of Biological Sciences, another intercollege Division that was formed a few years earlier. The original faculty of the Division included 34 members, including 23 from the department of Human Nutrition and Food, 9 from the Graduate School of Nutrition and 2 from other departments in the College of Agriculture and Life Sciences, including the new Director. Several more faculty members were invited to hold joint appointments in the DNS from around the campus, primarily from Animal Science, Poultry Science, Food Science and the College of Veterinary Medicine. About 9 faculty positions were vacant, and by the fall of 1975, 5 new faculty appointments had been made. There were 200 undergraduate majors in nutrition in 1974 and 110 graduate students were studying with faculty in the new Division. The Division was responsible for providing leadership to Cornell Cooperative Extension programs in nutrition throughout New York State. Cornell's Nutritional Science unit became the largest of its kind in the United States.

Along with the formation of the Division of Nutritional Sciences, a Graduate Field of Nutrition was formed in the Graduate School and the Field of Human Nutrition and Food was abolished. Masters degree level students in the Division would study for MS degrees rather than the MNS degree used by the Graduate School of Nutrition. The MNS degree was retained and eventually was awarded to students involved in specific programs in dietetics in the Division. DNS faculty established seminar requirements for all graduate students and a requirement that all graduate students have some teaching experience.

After the formation of the Division, both undergraduate and graduate programs grew significantly. Ten years later, in 1983-84, there were 396 undergraduate majors advised by Division faculty and 141 graduate students were enrolled. Twenty-six percent of the graduate students came from outside the United States, representing 16 separate countries. Cornell was graduating more than 10% of the PhDs in nutrition in the United States. Research funding grew to more than 6 million dollars, up from 1.4 million in 1974. More than half the faculty of the Division were new since 1974.

The DNS facilities included Savage Hall plus considerable space for offices, classrooms, and laboratories in the original Martha Van Rensselaer Hall as well as in the North Wing. New facilities for the DNS were provided by renovation of basement space in MVR in 1975 for animal research facilities. In 1977, space on the fourth floor of Martha Van Rensselaer Hall was renovated to provide facilities to carry out human feeding studies. The human metabolic unit was named for Frances A. Johnston and Charlotte M. Young who had carried out early human feeding studies on the campus. The metabolic unit is now in the west wing of MVR Hall. Savage Hall was not a New York State building, having been built in 1944 by private funds. To modernize the building and provide space for the DNS expanding research programs, private funding was needed. Laboratories were removed from Savage Hall and replaced in a new laboratory wing completed in 1988. Funds for the new wing and the renovation of Savage Hall (about 9 million dollars) came from The Pew Trusts, of Philadelphia, former faculty member Frances Johnston, funds borrowed from Cornell University and eventually from Harvey Kinzelberg, a Cornell Engineering Alumnus and a member of the Cornell Board of Trustees with a strong interest in health and fitness. In a deal with the State, future maintenance of the building would be covered by state funds. The new wing was named Kinzelberg Hall in 1997. The Division also received new facilities in a new West Wing of Martha Van Rensselaer Hall, completed in 2002.

Kinzelberg Hall

I was privileged to continue as DNS Director until September 1987, when I moved to Cornell's central administration as Vice President for Planning and Budgeting, and two years later, in 1989, I became the Cornell University Provost. I left that position in 1995 and retired from the University in 1997, after 38 years as a faculty member. I was succeeded as Director by Dr. Cutberto Garza, from Baylor University, who served until 1998 when he became a Vice Provost for Cornell. Professor Jere Haas was Director for 5 years, from 1998 to 2003, when Garza returned to be Director until mid 2004; he then left to become Provost and Dean of Faculties for Boston College. Patrick Stover, the current Director *(photo on next page)*, was named to the position in 2004.

Malden C. Nesheim 1974-1987

Cutberto Garza 1988-1998 & 2003-2004

Jere Haas 1998-2003

Patrick Stover 2004-

Today the Nutrition program at Cornell is exceptionally strong. The Division faculty in 2009 consists of 32 professorial faculty, 2 joint professorial appointments, 3 lecturers, 17 research associates, 7 Extension Associates, and 28 other academics appointed as postdoctoral research associates, research fellows, visiting fellows and scholars, adjunct and courtesy appointments. These individuals provide a rich mixture of interests and disciplines that underpin the DNS program. In 2009, DNS faculty advised 600 undergraduate students in 3 colleges, Human Ecology, Agriculture and Life Sciences, and Arts and Sciences, in 3 undergraduate majors. These are Nutritional Sciences, Human Biology, Health, and Society, and in a Nutrition Program of Study in the Cornell Biology major. The DNS faculty that also advise 75 graduate students are members of 24 separate graduate fields across the university, another reflection of the interdisciplinary nature of the faculty. Since its formation, the Division has held NIH training grants supporting students in several aspects of nutritional science. Research funding is strong and the Division continues to serve New York State through the cooperative extension program.

The Cornell program in nutrition has flourished for over 100 years, since the time of Seth Savage, Martha van Rensselaer, and Flora Rose. There are few institutions where the nutrition program has had such a long and continuous history. I think there are significant reasons why the Cornell program has been so successful over such a long period of time:

1. The Cornell program has had strong institutional support from its early days. State funding from both the College of Agriculture and Human Ecology have provided a strong base even when the School of Nutrition was not a state unit.

2. Nutrition at Cornell has benefited from strong leadership of faculty with a national reputation, who have shown the continued relevance of the subject to Cornell, the state and to the nation. Maynard, McCay, Flora Rose and Martha van Rensselaer, established a strong base and tradition for the program.

3. The program has been able to maintain a strong interdisciplinary character that has been able to adapt to changes in the field over the years. The concept of the original School of Nutrition in the 1940s brought many disciplines together under the concept of nutrition and this tradition has been carried out by successive generations of faculty. The size of the program has also enabled a critical mass of faculty to be deployed in several areas of importance to the field.

4. The Division of Nutritional Sciences has been the focus of many aspects of human biology and public health on the Ithaca campus. With the Cornell Medical School in New York City, the Division has responsibility for several human biology and health related programs in Ithaca. The DNS currently teaches human physiology, epidemiology, metabolism, international health, toxicology, and food economics, in addition to a broad range of nutrition and dietetics courses.

5. The Division has benefited from the funding mechanisms that have supported the program. The independence of the Graduate School of Nutrition has been preserved to some degree in the funding of the Division, which has kept a large share of its research grant overhead income since its founding. The roots of the School of Nutrition as a stand alone academic unit at Cornell have run deep and still allow the DNS to be entrepreneurial in supporting programs and students. The income to the Division from research has been a strong incentive to maintain a strong, externally funded program. Such independence has not always been popular with the Deans of the Colleges and it has taken skillful management of this relationship by DNS Directors to preserve the semi autonomy of the program.

In 2009, the nutrition program seems as important to our society as ever. The nation and much of the world suffer from an obesity epidemic that has reached alarming proportions, while at the same time hunger and malnutrition still affects more than 20 percent of the world's people. The relationship of diet to long-term health and chronic disease is still a fertile area for research. I hope this look back at the roots of Cornell's nutrition program may provide some insights for the future, but also remind us of the legacy we owe to those who have preceded us.

Bibliographic Notes

I have tried to document the sources of the material discussed in this brief history by including text references in the footnotes. I will deposit my notes and material reproduced from the Kennedy and Corson papers in a separate file in the Cornell archives along with other historical material I have uncovered. The activities of the faculty of the School of Nutrition, Graduate School of Nutrition, and the early years of the Division of Nutritional Sciences are covered in collections of newsletters published from 1950 to 1987. These chronicle the activities of faculty, report on new faculty appointments, announce research grants, highlight research findings and provide a good historical record of events not covered in detail in the history I have discussed here. These newsletters are available in the Cornell library cataloged under Graduate School of Nutrition News or Nutrition Newsletter. The Maynard History of the early years of the School of Nutrition is especially valuable. The books of Gould Colman[36] on the College of Agriculture, Flora Rose and Esther Stocks on the College of Home Economics, Bernice Hopkins on the Institution Management Department, and Ken Turk[37] on the history of Animal Husbandry are rich sources of the early history of Cornell and its nutrition programs. The book *The GLF Story* by Thomas Milliman provides a fascinating story of how involved Cornell was in the formation of this cooperative. They are referenced in the footnotes. Some of what is recorded here is based on my personal recollections of events in which I was involved. I have included an appendix of biographies of Cornell nutrition faculty published in scientific journals or in published faculty obituaries where their contributions to the field are outlined.

Some of the photographs are from the Division of Nutritional Sciences files but most of them have been provided from the photographic collections of the University Archives.

[36] http://ecommons.library.cornell.edu/handle/1813/10733

[37] http://ecommons.library.cornell.edu/handle/1813/1519

About the Author

Malden Nesheim was born to a farm family near Rochelle, Illinois. He attended the University of Illinois, receiving a BS degree in Agricultural Science in 1953, and an MS degree in Animal Nutrition in 1954. After two years in the United States Air Force, he enrolled in Cornell's Graduate School and received a PhD degree in Animal Nutrition in 1959. He joined the Cornell faculty as an Assistant Professor of Animal Nutrition in the Department of Poultry Science in February 1959, and remained a Cornell faculty member until his retirement in 1997.

In 1974, Nesheim was named Professor of Nutrition and Director of the Division of Nutritional Sciences, a new academic unit that combined the Graduate School of Nutrition and the Department of Human Nutrition and Foods into a single inter-college academic unit. In 1987 he was appointed Vice President for Planning and Budgeting for Cornell, and in 1989 he became Cornell University Provost. After 6 years as University Provost, he was named Provost Emeritus and in 1997 retired as Professor of Nutrition Emeritus.

During his Cornell years, Nesheim spent three sabbatical leaves at the University of Cambridge in the UK, holding fellowships at Churchill College and Sidney Sussex College during those periods. His research in his early years involved aspects of amino acid metabolism and nutrition-genetics relationships. In later years he became interested in the relationship of parasitic infections to the nutrition of the host, and along with colleagues and students carried out field studies in Panama, Indonesia, Kenya, and Burma. He taught courses in animal science and in human nutrition.

Nesheim spent several years on the Council of the American Institute of Nutrition (now American Society for Nutrition) and was President of the Society in 1986-87. He was a member of the Food and Nutrition Board of the Institute of Medicine for nine years, and served on many review panels of the USDA and the National Institutes of Health, including serving as Chair of the Nutrition Study Section. He chaired a joint USDA/HHS committee that prepared the 1990 edition of the Dietary Guidelines for Americans. In 1995 he was appointed Chair of a Presidential Commission on Dietary Supplement Labels that reviewed some of the issues involved in new legislation on dietary supplements. He has received an award for research in Animal Nutrition from the American Feed Manufacturers Association (1964), and the Conrad A. Elvejhem award for public service from the American Society of Nutritional Sciences (1990). He was elected a Fellow of the American Society for Nutrition and the AAAS. In 1995, he was elected a Fellow of the American Academy of Arts and Sciences. He is a National Associate of the National Academy of Sciences. He is also a past Chairman of the Pan American Health and Education Foundation.

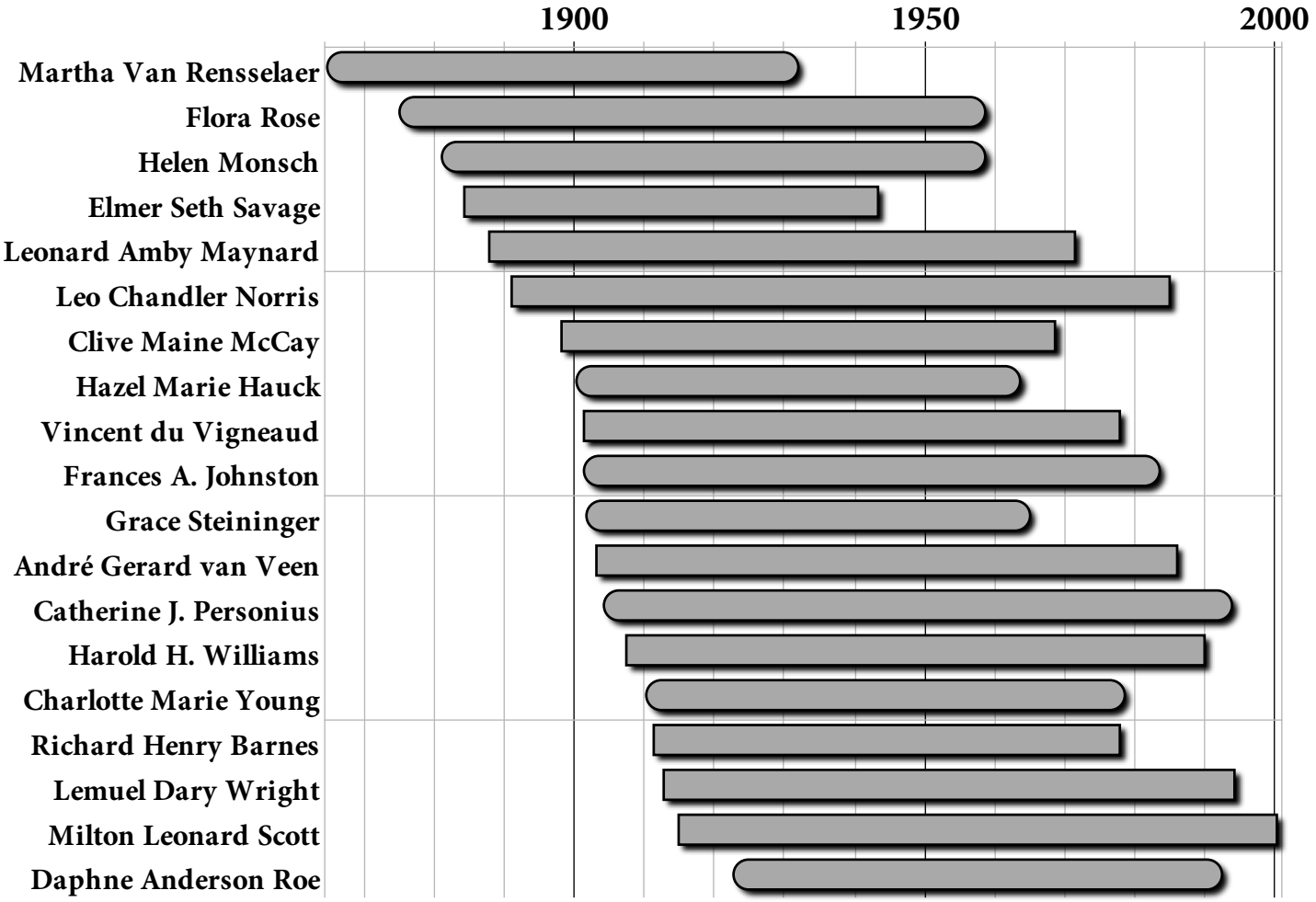
Appendix 1
Faculty Biographies

The Division of Nutritional Sciences at Cornell University
Biographies of Faculty Pioneers

Faculty Pioneers in Nutrition at Cornell University

Biographical information for the faculty mentioned prominently in Cornell's nutrition history is assembled in the following section. The faculty are listed chronologically on the figure below. The bars span the years between birth and death, ovals for women and rectangles for men. These biographies provide additional details about their accomplishments and the research themes of their times.

Some of the biographies of these early Cornell nutritionists have been published in the Journal of Nutrition or the Journal of Animal Science. The remainder are from the Memorial Statements of the Cornell Faculty (earlier called Necrology) or from the website of the College of Human Ecology.



Faculty pioneers timeline, in birth-order.

Note: *When reading this as a PDF, simply click on a name above to turn instantly to that biography; use "previous page view" to return to this page.*

Martha Van Rensselaer

June 21, 1864–May 26, 1932

Although Martha Van Rensselaer (1864-1932) grew up in modest circumstances in Randolph, New York, her mother's active involvement in the suffrage and temperance movements convinced her that women could effect change in American life. After completing her high school education, Van Rensselaer held a variety of teaching positions before she was elected school commissioner of Cattaraugus County, New York, a position usually held by men, which she held from 1893 until 1899. In this role, Van Rensselaer was introduced to Cornell's small agricultural extension program, designed to educate farmers in the latest scientific advances. Although she supported the program's aims, Van Rensselaer recognized that there was no equivalent instruction for the farm wife.

In 1900, Liberty Hyde Bailey invited Van Rensselaer to organize an extension program for New York State's rural women. Under Van Rensselaer's leadership, the fledgling extension program blossomed. She believed that only by adopting new scientific strategies to their daily tasks could women ease the burdens of daily tasks involved in farm life. In less than five years, the program enrolled more than 20,000 women members across New York State.

Due to the success of female extension work, in 1908 Cornell decided to offer full-time home economics courses. Van Rensselaer and Flora Rose were invited to head the fledgling Department of Home Economics. Van Rensselaer and Rose acted as a team: Rose's sophisticated scientific background in nutrition gave the department academic credibility; Van Rensselaer's hands-on experience, creative vision, and capable leadership allowed the department to experiment, expand the scope of its curriculum, and make linkages to others in the new profession. From 1914 to 1916, Van Rensselaer served as president of the American Home Economics Association. In 1919, her duties expanded when the Cornell trustees authorized the establishment of a School of Home Economics. Van Rensselaer and Rose were not only professional partners: they lived together as companions until Martha's death in 1932. One colleague even wrote to them as "Miss Van Rose."

Van Rensselaer was regarded as a leading authority on issues affecting women and families, and she used mass media to disseminate her views. In 1919, with Flora Rose and Helen Canon, she co-wrote A Manual of Home Making, a widely read text on home management. From 1920 to 1926, she was the home economics editor of the Delineator, a popular women's magazine that reached over two million readers. Van Rensselaer also wrote regularly for the Ladies Home Journal, Children's Magazine, and Boys and Girls.

Van Rensselaer played a prominent national role in setting social policy that affected families and children. During World War I, she directed the Home Conservation Division of the United States Food Administration. She also participated in the 1930 White House Conference on Child Health and Protection, which set a critical Progressive Era agenda for youth health, social policy, and education. There Van Rensselaer was instrumental in drafting the Children's Charter, a national declaration on child rearing. In 1931, she participated in the President's Conference on Home Building and Home Ownership, which advocated moving poverty-stricken urban workers out of the cities into smaller, allegedly healthier rural communities. As a result of her significant national contributions, in 1923 the League of Women Voters recognized her as one of the twelve most important women in America.

From the College of Human Ecology website. Used by permission.
http://rmc.library.cornell.edu/homeEc/bios/

Flora Rose

October 13, 1874–July 25, 1959

Flora Rose, former director of the New York State College of Home Economics at Cornell University, died July 25, 1959, at her home in Berkeley, California, where she had lived since her retirement in 1940.

As teacher and as administrator, Miss Rose gave thirty-three years of distinguished service to the development and guidance of home economics at Cornell University.

Born in Denver, Colorado, in 1874, she received her early education in the Denver schools. Then followed a period of travel, informal study, and reflection that brought both a sure desire to become a teacher and a growing interest in a newly developing field of education—a field that was later to be called home economics. In 1903 she received a diploma in Household Arts from the Framingham Normal School in Framingham, Massachusetts, and in 1904 the B.S. degree from the Kansas State Agricultural College, after which for three years she taught courses in food and nutrition at that college. The next year she completed work for the Master's degree at Columbia University under the direction of Dr. Henry C. Sherman in the Department of Chemistry. Her first association with Cornell University came in the winter of 1907.

At this time Martha Van Rensseleaer had been at Cornell for seven years. She had come to the College of Agriculture to write leaflets and organize groups of study clubs for farm women throughout the state with the purpose of giving meaning and method to their work and thus easing their daily tasks. On this concept and on these beginnings was to be built slowly what has become the New York State Extension Service in Home Economics.

Another concept also was taking shape in the minds of both Martha Van Rensselaer and Liberty Hyde Bailey, Director of the College of Agriculture. They had begun to explore the possibility of offering courses in home economics at the college level within the College of Agriculture. They saw the scope of such a development and were not deterred by the difficulties that they also foresaw. A first step could be taken: an able person must be found to give assistance to the undertaking.

In Miss Van Rensselaer's files was a letter from Miss Rose expressing a wish to be considered for an opening in home economics should such a position materialize. In 1907 she was invited to teach a course for two weeks in food and nutrition as part of the winter course in the College of Agriculture. Impressed with her scientific training, her educational philosophy, the enthusiasm that her teaching aroused, the vigor of her personality, Director Bailey offered her the opportunity to join Miss Van Rensselaer in building a Department of Home Economics in the College of Agriculture.

Thus began the long friendship and close association of two great women which continued until Miss Van Rensselaer's death twenty-five years later. Each one had fundamental qualities of clear and far vision, pioneering spirit, capacity for hard work, humor, and high courage. Each added to the power of the other; the two were greater than two times one. Through their work there came to be built first a Department of Home Economics in the College of Agriculture, then a School of Home Economics, and finally the New York State College of Home Economics at Cornell University, which was to become a force throughout the state and an influence in national education.

Miss Rose's unique contributions grew out of her vital interest in human Nutrition. Generations of students remember the depth and vividness of her teaching. She was called upon for national and international assignments when food and nutrition were of critical concern, as during World War I and the depression years. She served as deputy director of the Food Conservation bureau of the New York State Food Commission, the arm of the United States Food Administration in the state. She took a leading part in the research and development of low-cost reinforced cereals. For her study of the nutrition of Belgian school children, she was awarded the Insignia of the Order of the Crown by King Albert of Belgium.

In time the demands of a growing College forced Miss Rose to relinquish formal teaching, yet she never gave up her devoted interest in students and her contacts with them. For eight years after Miss Van Rensselaer's death, she continued as Director of the College—leading, guiding, experimenting, achieving. Enthusiasm, generosity, capacity for rigorous and sustained effort are qualities she possessed in full measure. When she retired, she left a College of Home Economics with a large Faculty and undergraduate student body, an Extension Service program enrolling 50,000 young persons and adults, and an expanding graduate student body and program of research.

Miss Rose's memorial will always be then the College that she helped to build. Yet for those who knew her, the person herself dominates. The abiding picture is one of vividness and warmth, of poise and strength, of open-door hospitality, of instant and personal interest, and of loyal friendship.

Mabel A. Rollins, Beulah Blackmore, Dorothy Delany, Mary F. Henry

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Helen Monsch

January 28, 1881–July 31, 1959

Helen Monsch came to Cornell University in 1918 and was a teacher of food and nutrition throughout the period when home economics progressed from a department to a school in the New York State College of Agriculture, and then to the New York State College of Home Economics in Cornell University. Professor Monsch was appointed head of the Department of Food and Nutrition in 1925 when the Board of Trustees of Cornell University officially recognized the departments which had been in operation since home economics became a school; she served in this capacity for twenty years. Under her leadership the program of the department was expanded to include, in addition to undergraduate teaching and the Cooperative Extension work in the state, graduate teaching and research. The department's Faculty increased from five members in 1918 to twenty members in 1947; at this date there were also fifteen graduate assistants.

Helen Monsch was born in Louisville, Kentucky, January 28, 1881. She received the Bachelor of Science degree from the Kansas Agricultural College in l904 and from the University of Chicago in 1909, the latter degree in chemistry and physics. In 1916 she was awarded the Master of Arts degree in nutrition by Columbia University. Professor Monsch also studied at the Iowa Child Welfare Research Station, Rush Medical College, and the Illinois College of Medicine, specializing in infant and child nutrition. She was head of food and nutrition instruction in the public schools of Gary, Indiana, from 1909 to 1913; an instructor at Simmons College, Boston, Massachusetts, in 1913-1914; head of the food and nutrition department at Iowa State College from 1914 to 1918 when she came to the then Department of Home Economics in the College of Agriculture at Cornell University. She retired as Professor Emeritus of Food and Nutrition at Cornell University in 1947.

In addition to the administration of the Department of Food and Nutrition and her classroom teaching, Miss Monsch supervised the nutrition of the children in the College nursery school and of the infants who were cared for by the students in the home management houses of the College. She also had a unique relation with mothers and babies in many homes in the community. These homes, the nursery school, and the home management houses were all used as laboratories for the teaching of child nutrition in practical situations.

Professor Monsch was co-author with Marguerite K. Harper of the book, Feeding Babies and Mothers of Babies. With the late Miriam Birdseye of the Federal Extension Service, U. S. Department of Agriculture, she organized and directed the movie For Health and Happiness. She was the author of several Cornell Extension Bulletins and of articles on the feeding of infants and preschool children.

Miss Monsch was a member of the American Home Economics Association, the American Dietetic Association, and of Phi Kappa Phi, Omicron Nu, and Pi Lambda Theta. Locally she was affiliated with the Bethel Grove Home Bureau and the Family Welfare Society of Ithaca, having served as an officer of the latter organization.

A friendly person, Helen Monsch will long be remembered for her genial smile and quick cordial greeting. Her friendly concern for people was characteristically expressed in action as well as in words. Her enjoyment of colleagues and friends, students, the children with whom she worked and their families, her neighbors, and her own immediate family was made evident by her hospitality, her generosity, and her helpfulness in many thoughtful ways. These qualities endeared her to her associates. Her great love of the outdoors, especially of her flower gardens, was continued during her retirement years in Florida. Her death occurred at her home in Winter Park July 31, 1959.

Professor Monsch was an outstanding, dynamic, and effective teacher. Students remember her strong personality, her great sense of humor, her integrity and vision. She was respected by all with whom she worked for her accom-

plishments and success in the area of child care and nutrition. Many students acknowledge her inspiration and guidance in their professional careers.

Catherine Personius, Beulah Blackmore, Lillian Shaben

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Elmer Seth Savage, 1884–1943: A Brief Biography

June 15, 1884–November 22, 1943

Early Years

Elmer Seth Savage was born in Lancaster, New Hampshire on June 15th, 1884, and grew up on the home farm. He graduated from the New Hampshire College of Agriculture (now the University of New Hampshire) in 1905. After teaching Animal Husbandry for two years at the Baron de Hirsch Agricultural School in New Jersey, he took up graduate study at Cornell University. He served as an assistant and received his Master of Science degree in Agriculture in 1909 and his Doctor of Philosophy degree in 1911. The latter was under the leadership of H. H. Wing and was only the second Ph.D. degree to be offered in Animal Husbandry at Cornell.

He was appointed an Assistant Professor in 1910 and a Professor of Animal Husbandry in 1913. About 1915 he encouraged a young Ph.D. organic chemist, L. A. Maynard, to join the staff and to organize a chemical laboratory to assist in nutritional investigations. In 1929 he was put in charge of the Dairy Cattle Division. Throughout his period of service he taught large classes of students who were drawn to him because of the soundness of his teaching and his rare gift of kindling enthusiasm for his subject.

His Ph.D. thesis in 1911 tested the accuracy of the Haecker nutritional standards for milk production. His work resulted in a slight increase in the protein and "nutriment" requirement and resulted in the Savage Standards for milk production. These were widely recognized but later gave way to the more generally accepted Morrison Standards. Professor Savage, however, spent one sabbatical leave with Professor Morrison in Wisconsin.

Cooperative Movement

Professor Savage was a progenitor of the Farmer's Cooperative Movement and the "Open Formula Feed." In May 1914, Savage spoke before the American Feed Manufacturer's Association requesting them to "guarantee a certain formula on every bag of feed sold so that I may teach all of my students to compute exactly the total nutrients in a ton of compounded feed." The idea received a cool reception. Thirty years later Savage wrote, "Right then and there, the real idea of open-formula feeds was born. From that day on, way back in 1914, I determined to do all I could to see that farmers had the opportunity to buy their feeds cooperatively, and I came back home and worked harder than ever to get this accomplished." In 1915, Frank W. Godfrey stated that the Grange Purchasing Agency "put on the market an honest dairy ration and it was done through the instigation of Professor Savage of Cornell.... I believe it is the only honest dairy ration that is on the market today in the State of New York."

In 1920, the charter of a farmer's cooperative, the Grange League Federation (GLF) was enacted. "It was a monument to these men [its founders]. It was also a memorial to Professor Savage, whose dream of a great cooperative it brought one step closer to reality." The backbone of the cooperative was its Open Formula Feed policy, whereby the exact composition of the feed was displayed on the tag. Professor Savage went weekly on the Lehigh Valley Railroad to Buffalo to assist in the formulation of feeds for all species. He was for many years chairman of the College Feed Conference, which annually developed feed formulas for the cooperatives in the east. In 1924, the pressure of economics led to the development of the "Flexible Formula Feeds," which permitted a range of a given ingredient to be included, rather than a fixed amount. In the 1950s and 1960s, with the advent of least-cost technology, all feeds of the cooperatives became closed once again. By this time the suspicions about the feed companies had been mollified. It is obvious that by championing "open formula" feeds Savage had been one of the prime movers in establishing the integrity and quality of the commercial feed industry and its products. By 1950 GLF had "attained a stature that no one, in 1920, had dreamed possible, unless it were E. S. Savage." The Grange League Federation later formed a part of the current organization, Agway.

Research

In 1927 Savage began a series of experiments to determine the level of protein that was required in the concentrate mixture for dairy cows fed the types of roughages common in the Northeast. He proved that the level of protein that was currently being recommended was excessive. It represented a dramatic saving for the northeastern dairymen. He also developed a Cornell Calf Starter that could be fed as the sole feed after 7 to 10 weeks of age. This program eliminated the use of milk or skim milk after the early weeks, resulting in a significant increase in total milk for sale. Just prior to his death, Savage carried on experiments to determine the effects of making decided changes in the formulas of mixed dairy feeds, which were necessary under war-time conditions. These studies showed that considerable changes could be made in formulas without lowering production, provided the mixtures were made up of suitable feeds that supplied the proper nutrients.

Teaching

Professor Savage was a good teacher, always warm, friendly and responsive to the needs of his students and advisees. He gained the respect and the admiration of all by his kindliness and helpfulness. He had an immeasurable influence on the lives of his students and friends alike.

Publications

In addition to his many bulletins and scientific articles on dairying, Savage wrote a regular column, "Savage Feed Service," for the Dairymen's League News for over 18 years. It included a timely article on dairying and a list of concentrate feeds with the prices and cost per 100 pounds of total digestible nutrients. This was one of the most effective extension, educational projects of the department at the time. Savage wrote articles for Holstein World that later became a book, Feeding Dairy Cattle. He was author of a Feeds and Feeding Manual and coauthor with L. A. Maynard of Better Dairy Farming. In addition to plain facts about dairying he advanced wisdom, prime for then and now. He said, "every farmer must return" to the soil each year, a little more fertility than he takes from it. In no other way is he truly farming; he is simply mining and on most of our farms too much mining has already been done. We must now begin to farm." Regarding the quality of commercial calf meals of his day he said, "Since we cannot name them all and give results for each, it is only fair that we do not name any."

Travels

Professor Savage traveled extensively to study agricultural and dairy conditions in various parts of this country. In 1932 he was representative of the United States Government at the World's Dairy Congress in Denmark, and at that time he made observations of dairying in several countries, including Africa and Europe.

Community Service

Professor Savage was always deeply interested in other people and took a prominent part in organizations for human betterment. For several years he was member of the board and also treasurer of the interdenominational organization Cornell United Religious Work. He took a prominent part in the activities of farmers in his home county. He maintained continuous membership in the Farm Bureau and the Grange, and for 11 years he was the genial and respected Superintendent of Dairy Cattle at the New York State Fair. For many years he operated a dairy farm at Ithaca, where he developed a purebred Guernsey herd to a 400-pound fat level. In 1911, Savage helped organize the livestock breeders of Tompkins County into a County Breeders' Association with the object of "promoting the breeding and improvement of high grade and purebred livestock in Tompkins County." He was Master of the Forest City Grange and Secretary of the Tompkins County Pomona Grange for many years. He was always one of the fathers who helped set up and dismantle the local girl scout camp.

In the book *The GLF Story*, the frontispiece includes Seth's picture with the following testimonial: "Elmer Seth Savage. Professor of Animal Husbandry at Cornell University–Advocate of the Open Formula Feed Principle–Architect of the GLF Distribution System." In a separate tribute, the farmers of New York state under the leadership of GLF contributed funds for the construction of a new building to house the recently formed School of Nutrition

(now Division of Nutritional Sciences). It was dedicated Savage Hall in 1947, and a plaque hangs in the lobby with the following inscription: "Built and equipped for the School of Nutrition with funds provided in large part by the farmers of the northeast and the State of New York. Dedicated to research and education for improving the food and health of mankind. Named in honor of Professor Elmer Seth Savage, a pioneer in the field of nutrition at Cornell and a leader in the effective cooperative effort for the public welfare."

Professor Savage was a fellow of The American Association for the Advancement of Science and a member of the American Dairy Science Association and the American Society of Animal Production. In the last-named organization he served as secretary and vice-president. He was a member of the social fraternity Kappa Sigma and the following honorary and professional fraternities: Sigma Xi, Gamma Alpha, and Alpha Zeta. He also received the Honorary Doctor of Science from his alma mater, The University of New Hampshire, in 1933.

Family

Seth was married to Clara Blandford in 1908. After her death, he married Genevieve Boyle in 1916. Each marriage resulted in two daughters, Ruth and Clara, then Mary and Joan, respectively.

Epilogue

One of the most poignant tributes to Professor Savage was one he probably never saw or heard. In 1948, five years after his death, his newspaper photograph was thumbtacked to the bulletin board of the tool shop in the Laboratory of Animal Nutrition at Cornell. Scrawled in pen along the bottom of the picture were the words, "The little man's friend."

Richard G. Warner

Acknowledgment is given to the following sources: (1) Cornell Faculty Necrology; (2) Animal Husbandry at Cornell University: A History and Record of Development from 1869-1963, by Kenneth L. Turk; (3) Obituary Notice, Ithaca Journal, Nov. 23, 1943; (4) The GLF Story 1920-1964, by Thomas E. Millman and Francis E. Sage; (5) Mrs. Mary Savage Kyle.

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Leonard Amby Maynard, 1887–1972: A Brief Biography

November 8, 1887–June 22, 1972

Leonard Amby Maynard was born on a farm in Hartford Town, Washington County New York, on November 8, 1887, a son of Edward Maynard and Fanny Cotton. Life on the farm gave him early appreciation of plants and animals and an interest in biology and agriculture that lasted throughout his life-long work. In 1968, Dr. Maynard described his early home life as

> a simple but happy one. Church attendance was a prominent feature. Church was also the center of the limited social life available. Sandlot baseball, fishing and swimming were the sports. There were visits to relatives and friends, an annual trip to the county fair, two weeks vacation on one of the nearby lakes, all by horse and buggy, and rare trips by rail to more distant points. There were plenty of books to read—history, agricultural science and also fiction of the Dickens type. My parents encouraged reading. Whatever the disadvantages were of growing up in so limited an environment, I was not conscious of them.

At age five he started school in a one-room red school house and completed the eighth grade in a two-room school in Hartford village. His parents sent him to Troy Conference Academy, a coeducational boarding school in Poultney, Vermont. There the emphasis was on a classical education that included four years of Latin and three of Greek. Training was excellent in mathematics, language and literature but was otherwise limited. He worked for part of his room and board and was active in debate, baseball and basketball. He graduated in 1906 with a desire for further study. During prep school he took examinations for a certificate to teach in a New York State District School. He taught one year in the same school that he attended as a boy. Maynard entered Wesleyan University, Middletown, Connecticut in 1907 because his brother had gone there before and had arranged opportunities for him to earn part of his expenses. There he took courses in physical, biological and social sciences along with language and literature. In the course in chemistry taught by W. P. Bradley he learned about W. O. Atwater's work in applying chemical knowledge and technique to the study of agriculture and to human and animal nutrition. This caught his interest and he took all of the available chemistry courses. He graduated cum laude with an A.B. degree in 1911 and was elected to Phi Beta Kappa.

Maynard then worked one year as an Assistant in Chemistry at the Iowa Experiment Station and another one as Assistant Chemist in the Rhode Island Experiment Station. In the fall of 1913, he entered Cornell University for graduate studies in chemistry and received the Ph.D. degree in 1915. His greatest stimulation came from classes and conferences with Professor Wilder D. Bancroft, who set an outstanding example in teaching and research because of his knowledge of the literature of chemistry, his wealth of ideas for research and his facile mind and enthusiasm for teaching and research.

After graduation, Maynard accepted an offer by Professor Elmer Seth Savage to plan and equip a laboratory for chemical and animal studies in nutrition in the Department of Animal Husbandry, College of Agriculture at Cornell University. He served as Assistant Professor of Animal Husbandry (1915-20), Professor of Animal Nutrition (1920-41), Professor of Nutrition (1941-44), Director of the School of Nutrition (1941-56), and Professor of Nutrition and Biochemistry and Head of the Department of Biochemistry and Nutrition (1944-55). From 1939 to 1945, on a part-time basis, he was the first Director of the U.S. Plant, Soil and Nutrition Laboratory, built on campus by the USDA in cooperation with Cornell University.

Many assignments took Maynard off campus for varying periods of time while he was a member of the Cornell faculty. From August 1917 to July 1919, Maynard served in World War I as Lieutenant, Captain and Major in the Chemical Warfare Service, and participated in Ypres-Lys, Oise-Ainse and Meuse-Argonne offensives in France. In 1919 in Tours, France he married Helen Hunt Jackson of Tama, Iowa, who had been serving with the YWCA during the war.

Returning to Cornell University after the war he resumed his research and teaching. He formulated a calf meal that could replace milk for calves from four weeks to six months of age; it found wide use on dairy farms in the northeastern states for more than 25 years. Maynard discovered that calcium deficiency was a cause of stiffness and leg weakness in swine and that sunlight promoted bone development. Later findings showed that rock phosphate and phosphatic limestone, used as calcium supplements to animal rations, retarded bone calcification because of their fluoride content.

Maynard took advantage of Cornell's sabbatic leaves. In 1926, he took a leave to study at Yale University under Lafayette B. Mendel. He has said that of all of his teachers, Professor Mendel provided the greatest stimulation and soundest guidance for his career in biochemistry and nutrition. The space in Mendel's laboratory was limited and a young National Research Council Research Fellow, Clive M. McCay, offered to share his space. A life-long collaboration started. In 1927, Maynard invited McCay to accept an Assistant Professorship in Animal Nutrition at Cornell.

In 1919, Maynard began teaching a course to advanced undergraduates and graduates dealing with the biochemical and physiological principles underlying nutrition and their application to feeding practice. This elective course drew students from animal husbandry, human nutrition, biochemistry and various other biological fields throughout the university. He taught the history of the nutritional discoveries and how they were made by citing scientific journals because no textbook was appropriate.

A memorial statement printed by the Cornell University faculty in 1971-72 stated "Maynard was recognized by his students as a superb lecturer. His lectures were highly organized, concentrated and interestingly presented. He followed Mendel, who could bring into one sentence more understanding than another could in two paragraphs." The Laboratory of Animal Nutrition seminars under Maynard and McCay were similar to those at Yale. Graduate students made frequent reports and received evaluations of their presentations. Nutritionists in the Poultry Department and in Home Economics became involved and for years participated in the seminars.

Over several years, Maynard organized his lectures into a textbook, Animal Nutrition, first published in 1937. Revisions were made as justified by new findings. The 7th edition was published in 1979. This textbook brought wide recognition to Professor Maynard and Cornell University. Several editions were translated into Spanish and Portuguese. The fifth edition also was translated into Polish and printed in Warsaw.

In 1928, Maynard took a leave of absence to study in France on an international Education Board Fellowship at the University of Strassburg and Ecole Veterinaire in Lyon. After his return in 1928, Maynard began studies on the biochemistry of lactation in rats, goats and cows. Neutral fat was found to be a precursor of milk fat. In dairy cows, a relationship between the level of fat in the ration and maximum milk yield was demonstrated.

In the 1930s Maynard, along with McCay and their graduate students, developed a nutritionally satisfactory purified diet for growth of herbivores. This led to the finding that cod liver oil caused degeneration of skeletal and cardiac muscle in herbivores on certain diets. Later studies demonstrated that the harmful effect was due to the destruction of vitamin E by unsaturated fatty acids in the oil. In studies of the relationship of diet to length of life and to the biochemical and pathological changes in aging, the most significant early finding was that calorie restriction promoted longevity.

In 1934 Maynard served as Visiting Professor of Nutrition at the University of Nanking to study the nutrition of Chinese farm families. At a visit to an orphanage near the city, he was pleasantly surprised to find a modem dairy enterprise. However, he was chagrined to learn that the orphans did not receive the milk. Instead it was sold in the city for cash to maintain the orphanage. Such experiences strengthened his interest in international organizations involved with food and nutrition problems in developing countries.

His productivity in research and teaching was recognized at Cornell and nationally and his administrative ability became widely utilized. Maynard's administrative style deserves mention. He kept a clean desk, answering letters the same day or no later than the next. Professor Maynard always was available to students or colleagues, except

during dictation or an hour before lectures. If he was responsible for a committee or a group effort, he always talked to each member before the meeting and knew ahead of time the reaction or thoughts of those involved. After listening to a discussion, he had the ability to make a brief summary statement that expressed the majority opinion on a question.

In 1939, the Agricultural Research Service of the USDA established the United States Plant, Soil and Nutrition Laboratory on the Cornell Campus. Professor Maynard was appointed the first Director (1939-1945). He also was appointed the first Director of the School of Nutrition and served in this position from 1941 to 1956. This brought closer cooperation in nutrition. In 1940, the biochemistry unit in the Department of Zoology, formerly in the Ithaca Division of the Cornell Medical College, was transferred to the College of Agriculture and given laboratory space in Stocking Hall in association with the Laboratory of Animal Nutrition. Professor James B. Sumner, a Nobel Laureate, along with an instructor were the personnel. In 1945, a Department of Biochemistry was established at Cornell. Professor Maynard was asked to take the headship. Savage Hall was completed in 1947 and housed the Department of Biochemistry and the School of Nutrition.

At the start of World War II and food rationing in New York Governor Thomas E. Dewey established the Emergency Food Commission with Dr. Maynard as Commissioner. He also served as United States Nutrition Expert on the Interallied Food Missions to London, England and Canada in 1943 to 1945 and to Germany in 1945.

Maynard's other international services included membership in the U.S. Delegation to the Second American Agricultural Conference in Mexico City in 1942 and on the scientific panel of the United Nations Interim Commission for Food and Agriculture in 1946. He later served on several committees of the FAO; was U.S. delegate to the Office of Naval Research Conference, London (1951); U.S. delegate to the combined conference on Administrative and Scientific Problems of Food Aspects of Civil Defense, London (1951); member of the Joint FAO-WHO Nutrition Committee that met in The Gambia, West Africa (1952); member of the Scientific Advisory Committee of the Institute of Nutrition of Central America and Panama of the Pan American Sanitary Bureau, involving a series of meetings in 1950-56 in Guatemala and visits to other Central American Countries; FAO-UNICEF consultant in that region in 1956, 1960 and 1961; member of Citizens Advisory Committee, Food and Drug Administration (1954-55); U.S. delegate to International Nutrition Congress, Paris (1957); Chairman, Standing Committee on Nutrition, 9th Pacific Science Congress, Bangkok, Thailand (1957); Chairman, Organizing Committee on Nutrition, 10th Pacific Science Congress, Hawaii (1961); several years as a member of the Council of Foods and Nutrition of the American Medical Association and of the Scientific Advisory Board of the Nutrition Foundation.

Dr. Maynard served on various committees of the National Academy of Sciences-National Research Council from 1942 to 1958. He was Chairman of the Committee on Animal Nutrition (1942-45); member of the Agricultural Board (1945-55) and one-time Vice-Chairman; member of the Division of Biology and Agriculture (1941-46) and 1951-61, Vice-chairman 1943-45, Chairman 1955-58; and served at various times on several committees of the Academy-Council. He organized sub-committees to write reports on the nutrient requirements of farm and laboratory animals. Such committee activities are still being continued by the Academy.

Professor Maynard received many honors and awards for his service. He was elected a member of the National Academy of Sciences in 1944. He received Honorary Doctor of Science degrees from Wesleyan University in 1945 and from Rhode Island University in 1956. He was given an Award of Distinction in 1952 by the Grocery Manufacturers of America, "In recognition of his fundamental contributions to the science of nutrition." The American Institute of Nutrition recognized him with the Borden Award in Nutrition in 1945 for "contributions to the knowledge of physiology of milk secretion and of the requirements of animals for dietary fat," and with the Osborne Mendel Award in 1954 for "outstanding achievement in the general field of exploratory research in the Science of Nutrition." The Republic of Guatemala awarded him the Order, Rudolfo Robles, "For Scientific Service for the Benefit of Mankind." He was elected an Honorary Member of the American Dietetic Association in 1957. He was elected a Fellow in the American Institute of Nutrition in 1960 and the American Society of Animal Production in 1961.

Maynard was a member of the American Institute of Nutrition and served as Secretary (1938-41), Vice President (1941-42), and President (1942-43). He was Vice President of the American Society of Animal Production in 1941-42 and President in 1942-43. As a member of the American Chemical Society, he chaired the Division of Biological Chemistry in 1936-37. He also was a member of the American Society of Biological Chemistry, the American Association for the Advancement of Science (Fellow), the Society of Experimental Biology and Medicine and the American Dairy Science Association.

Dr. Maynard was author of over 100 scientific papers. Some 50 students received Ph.D. degrees in nutrition under his direction and others received the Master of Science degree. In his early Cornell years, he was co-author with Professor Elmer Seth Savage, for whom Savage Hall was named, of Better Dairy Farming.

Leonard Amby Maynard died after a short illness on June 22, 1972. He was survived by his wife, Helen Hunt Jackson Maynard, two daughters, Patricia (Mrs. J. P. Downing), Nancy (Mrs. H. E. Harlan), seven grandchildren, a sister, Harriet E. Maynard, and a brother, William Cotton Maynard.

John K. Loosli

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Note by Malden Nesheim: Wonderful further personal impressions of Maynard are found in the Graduate School of Nutrition News, Volume VIII, 2, August 1972. These are tributes to Maynard by W. I. Meyers, Norman Moore, and Charlotte Young at his memorial service on July 14, 1972.

Leo Chandler Norris (1891–1986)

March 6, 1891–February 3, 1986

Leo Chandler Norris died on February 3, 1986, in Lawrence, Kansas, in his 95th year. He was one of the founders of nutrition programs at Cornell University in the formative years of the development of nutrition as a science. Norris was one of the great teachers and researchers of his era. His career spanned most of the period of discovery of the nutrients required by animals and humans.

Leo Norris was born on March 6, 1891, in Canaseraga, New York, 1 of 4 children of Charles Leslie Norris and Sarah Chandler Norris. He graduated from high school in Hornell, New York, in 1909 and spent 1 year at Alfred University. Tragedy struck when his mother died of cancer after that first year of college. Norris took on the responsibility of caring for and overseeing the education of his 2 younger sisters, working as a school custodian for 6 years to support them. He enrolled in Cornell's College of Agriculture in 1916. He was in the Reserve Officers Training Corps (ROTC), and he enlisted in the army in 1918, where he was commissioned as a 2nd Lieutenant. He served in the 6th machine gun battalion of the 10th infantry at Camp Custer, Michigan, until he was discharged. With the end of WW I, he returned to Cornell and received his B.S. degree in Agriculture in 1920.

In 1915, the Department of Animal Husbandry at Cornell University hired L. A. Maynard, a new Ph.D. graduate in Chemistry from Cornell. Maynard had developed a strong interest in nutrition while he was an undergraduate at Wesleyan College where he was inspired by a course he had taken from W. O. Atwater. The department head, Elmer Savage, was interested in research in the developing field of nutrition and Maynard was hired to form a laboratory and to develop teaching and research in animal nutrition. Over the next 40 years, he became the guiding force behind many developments in nutrition at Cornell, including the founding of a School of Nutrition, development of a Department of Biochemistry, and the establishment of the USDA Plant Soil and Nutrition Laboratory at Ithaca.

Leo Norris, as a mature undergraduate, attracted Maynard's attention and became Maynard's first Ph.D. student. Norris's work with Maynard was directed primarily to the nutrition of dairy calves. His thesis, submitted in February of 1924, was entitled: The Volatile Fatty Acid Production in the Intestinal Tract of Calves Fed Whole Milk or Cereal Gruel. Norris's graduate program reflected Maynard's background. Although his major was Animal Nutrition, his minors for the Ph.D. were in organic and physical chemistry. Essentially all of his graduate course work was taken in the Chemistry Department.

In August 1922, the Vice Director of Research in the College of Agriculture, W. H. Chandler, wrote to the Dean of the College of Agriculture, Albert R. Mann, urging him to press the Head of the Poultry Husbandry Department, James E. Rice, to hire a man with a doctoral degree in biological chemistry. Chandler emphasized that this person should carry out his own program of research and should not be an analyst for others in the department. He went on to recommend that this person should have training similar to that of Maynard. Dean Mann quickly made that recommendation to Rice. On June 6, 1923, Rice recommended the appointment of Leo Norris to the Dean. Because Norris had not yet completed his Ph.D. degree, he was hired as an Instructor by the Poultry Husbandry Department and was made an assistant professor in 1926 when his degree was completed. He was named Professor of Poultry Husbandry in 1936. Although he was appointed to join the nutrition division of the department, headed by G. F. Heuser, Norris was to develop his own program of research. His appointment had no expectation of undergraduate teaching.

The appointment began a career of 36 years at Cornell in the Poultry Science Department. Norris's first research paper, published from his work with G. F. Heuser, was on rickets in chicks and he continued to publish on this topic for several years. The rapid growth of newly hatched chicks made them sensitive to the lack of nutrients in the simplified diets that Norris devised. The search for "unidentified growth factors" characterized much of the future research from Norris's laboratory. In 1930, he described a specific type of leg weakness or paralysis in growing chickens that could be prevented with a milk concentrate (1). This was the first description of the classic deficiency

disease termed "curled toe paralysis" that later became known as a principal sign of riboflavin deficiency in growing chicks. This condition was often observed in commercial poultry raising and limited the success of efforts to intensify poultry production. In the early 1930s, the deficiency was considered to be the result of a lack of vitamin G, a designation that eventually was sorted out as involving both riboflavin and pantothenic acid. In 1931 Norris and his colleagues described a pellagra-like syndrome, which later proved to be the result of a pantothenic acid deficiency (2). Vitamin G deficiency and requirements were described in detail in a series of papers published during the 1930s. Using a bioassay based on growth of young chicks, Norris and his students determined the vitamin G potency of many feedstuffs (3). When pure riboflavin became available, the validity of the vitamin G research was confirmed, and the careful quantitative studies were readily translated to amounts of pure riboflavin.

The discovery that milk contained vitamin G led to a new use for dried whey as a feed ingredient. Whey, a by-product of cheese making, had been largely thrown away until its value as a riboflavin source became apparent through Norris's work. He developed a close relationship with David Peebles who had developed a drying technique for milk products that he used to convert whey into a feed ingredient. Peebles was a founder of the Western Condensing Company in Appleton, Wisconsin. The company produced large amounts of dried whey, which was important in the early growth of a broiler industry in the United States. Norris and Peebles became close friends, and Peebles provided considerable support for Norris's work over many years,

In 1936, in a letter to Science, with his graduate student, Herbert Wilgus, Jr., and colleague Gustav Heuser, Norris showed that another problem of leg weakness in growing chickens termed "perosis" was due to manganese deficiency (4). The elucidation of the need of growing chickens for sufficient manganese to prevent leg weakness led to the large-scale intensification of broiler production in the United States. For a few cents per ton of feed, it was possible to add enough manganese sulfate to prevent the poor growth and reproduction, and the crippling leg weakness in commercial poultry flocks.

In the 1930s and 40s, Norris's laboratory was involved in the study of most of the newly discovered growth factors of that era. Along with his student Milton Scott, he worked on folic acid and vitamin B-12. Scott, working with Norris at the time, said that they had concentrated the animal protein factor in a "pink solution" about the time vitamin B-12 was isolated by Karl Folkers and colleagues at Merck and by Smith and co-workers at Glaxo laboratories in the United Kingdom. His laboratory spent considerable effort attempting to identify an "unidentified mineral" in the 1950s, which later turned out to be zinc.

With L. A. Maynard, Norris was one of the founders of the School of Nutrition at Cornell. This School was established in 1941 to bring together faculty from throughout the University to participate in teaching and research in nutrition. Norris was named Professor of Nutrition in 1943, and he served as the Secretary of the School of Nutrition from 1941 to 1948. He continued to be a member of the School of Nutrition faculty until his retirement in 1959.

The association of Norris with the training of graduate students is probably his most significant legacy. During his tenure at Cornell, 35 students received the Ph.D. degree under his direction. Norris was not married, and his graduate students became his extended family. He worked closely with them, insisted they have strong training in the basic sciences, and was demanding in his expectations for accuracy, honesty, hard work, and attention to detail. He wanted them to attend scientific meetings, and through seminars, he insisted that they learn to present their work well. Although he was a stern taskmaster, "Doc" was held in great affection by his students. He told his students that to succeed in the world they should learn to play bridge and golf. Although Norris seldom taught in a formal classroom setting, he was given the Teaching Award of the Poultry Science Association in 1957, in recognition of his influence on the field through the training of graduate students. His students were widely distributed in important positions in universities and industry throughout the United States and abroad.

Leo Norris served the nutrition community at large by his work on many boards and national committees. He was a member of the Board on Agriculture of the National Research Council from 1949 to 1961, and a member of the Committee on Animal Nutrition from 1943 to 1963. He served as Chairman of the Committee from 1945 to 1962. This Committee directed the preparation of nutrition standards for most of the domestic animals important

in food production. He helped to establish the Cornell Nutrition Conference for Feed Manufacturers in 1934, a meeting that continues to the present time.

Norris was on the editorial board of the Journal of Nutrition, Poultry Science, The Proceedings of the Society for Experimental Biology and Medicine, and the editorial committee of the American Society of Biological Chemists. He became President of the American Institute of Nutrition in 1962-63. He was elected a Fellow of the American Association for the Advancement of Science, the Poultry Science Association, and the American Institute of Nutrition. In addition to the teaching award, he received the first Borden award for Nutrition Research from the Poultry Science Association in 1938. He was a Fulbright Lecturer at the University of Sydney in 1964, and in that same year, he was also elected an honorary member of the Japanese Society of Zootechnical Sciences.

When Norris reached the mandatory retirement age of 65 in 1959, he became an Emeritus Professor at Cornell. The University of California at Davis offered him a 1-year appointment, which he accepted in 1960, intending to return to Cornell to continue his work in Ithaca in retirement. The lure of California was too great, however, and he spent his retirement years in Davis, working with colleagues in the Avian Science and Nutrition groups. He developed an active research program at Davis and continued to publish with students and colleagues there for a number of years. He became interested in calcium requirements of male chickens while working on a NASA project. He found that the male fowl had an extremely low requirement for calcium (5). At Davis, he enjoyed attending weekly informal seminars and stimulated others with his historical perspectives and comments. Norris gave several stimulating lectures on the history of nutrition as part of an advanced nutrition course at Davis. He was a member of the Davis community for more than 25 years after he left Cornell. In the course of his work at Cornell and Davis, he published over 250 papers.

The opportunity to enjoy the outdoors for much of the year was one of the attractions of California for Norris. He especially enjoyed hunting and fishing. There was a mounted head of a big horn mountain sheep in his Cornell office, and he also had a moose head mounted as a trophy. The moose head turned out to be too large to hang either in the department or in his home, and its disposition caused some consternation. It eventually ended up decorating a wall of a local Boy Scout Camp near Ithaca. He owned several horses in his lifetime, and riding was a favorite pastime. He also loved to travel, frequently to out-of-the-way places in Canada, the Rockies, and Alaska.

Leo Norris often had students live with him for companionship and to help with the chores of living, particularly in his later years. For about the last 10 years, this student was Christopher Asey, a raptor enthusiast from the Avian Science Department at Davis. He understood Norris very well and was a devoted companion to him. They went on frequent trips, usually to go boating or camping since they both loved the outdoors. When Chris married, his wife Janet joined the household and Leo was treated as one of the family. Janet was accepted for graduate study at the University of Kansas, and they all moved to Lawrence in the summer of 1985. Leo's health deteriorated after the move, and he died in Lawrence on February 3, 1986. Leo Norris will be remembered as a prolific and productive research scientist and dedicated teacher, whose achievements are an enduring part of the history of nutrition.

Acknowledgments

We are indebted to the Cornell University Library, Division of Manuscripts and Rare Books, for providing the photograph and some of the historical information about Leo Norris. We also acknowledge the input of the late Fredrick W. Hill and Milton L. Scott, who reviewed and contributed to earlier versions of the manuscript. We are also grateful for the comments of Richard Austic and Roland Leach, who read the manuscript.

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Malden C. Nesheim and F. Howard Kratzer

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Clive Maine McCay (1898–1967): A Biographical Sketch

March 21, 1898–June 8, 1967

Clive Maine McCay was born March 21, 1898, on a farm in Winamac, Indiana, the oldest of three children and the only son of Lewis J. McCay, a country school teacher, and May Crim. In 1902, the family moved to Logansport, Indiana, where his father began to work on the Pennsylvania railroad. His mother died of stomach cancer (in July 1909) when Clive was 11, and his father was killed in a train accident in 1914 when he was 16 years of age.

Clive's sisters, Mrs. Evelyn Stevens and Mrs. Helen Six, now of Venice, Florida, report him to have been a serious, industrious child, never getting into trouble and willingly cooperating with his teachers and other adults. He earned good grades in school. His father, in writing to a friend, characterized him as having no bad habits, but being original in the way he did things. His father encouraged him to get as many varieties of experience as possible during summer vacations. The summer be was 15, he worked on a farm earning $3 per week above board and room, "but at least $30 a week in experience," his father thought.

A school-boy friend, Kendall Whipperman, joined with Clive in developing a summer lawn mowing business. Later as a banker on Wall Street, Whipperman described Clive as follows: "In grammar and high school he was a leader, both in and out of school. His scholastic work was always keen, thorough, painstaking and honest, and the same qualities characterized whatever he did. His father's death during high school did not deter him from completing his education. With little or no outside financial help he earned his way for his Bachelor's, Master's and Doctor's degrees in the universities of his choice. However, work never overshadowed the impulses or desires of a normal life. McCay's vacations and recreations were those of a red-blooded American boy. There was this difference, however, from the normal. McCay did what he set out to do. For instance, we dreamed of climbing in the Rockies, McCay did it. We planned to see and to work in the wheat fields of the West. One summer McCay started harvesting in the fields of Oklahoma and ended in those of the Dakotas. To an unusual degree McCay combined the dreamer and the doer."

Clive graduated from Logansport, Indiana, high school in the spring of 1916 and entered the University of Illinois that fall. He completed the A.B. degree in 1920 specializing in chemistry and physics. He taught chemistry at Texas A & M College in 1920-21. The M.S. degree in biochemistry was awarded in 1923 at Iowa State College, Ames, and the Ph.D. degree at the University of California, Berkeley in biochemistry in 1925 under C. L. A. Schmidt. From 1925 to 1927, he studied nutrition at Yale University on a National Research Council Fellowship under L. B. Mendel. Nutrition apparently interested Clive even as a boy for he wrote: "When I was a boy forty-odd years ago, I learned about calories from a government bulletin. My sister says there was never a calm meal thereafter because I always sat down and counted the calories in the potatoes and bread." It was probably this interest that stimulated him to seek an opportunity to study under Dr. Mendel, a leading nutritionist of the day, even though he was trained in chemistry. During his post-doctorate studies at Yale he became acquainted with L. A. Maynard who was on leave from Cornell University, also studying with Osborne and Mendel at the time. In 1927, the young McCay accepted Maynard's invitation to join him as assistant professor of animal husbandry and assistant animal nutritionist in the Experimental Station in the Department of Animal Husbandry at Cornell. He was promoted in rank and became Professor of Nutrition in 1936, a position he held until retirement in 1962. He also held an appointment in the School of Nutrition, which he helped develop. In 1946 he was given a joint appointment to the Food and Nutrition faculty of the College of Home Economics.

In his early years at Cornell, McCay was eager to do nutrition research with any animal species that became available to him. At the outset he joined with Maynard and his students, adding his competence in biochemistry to strengthen the studies underway. The early reports involved tests on the effects of diet on fat metabolism during lactation, measurements of blood lipids, phosphorous and hemoglobin of lactating cattle, and of fish, eels and turtles. He studied the nutrition of the clothes moth, flour beetle and bean weevil, and with R. E. Bowers found that the cockroach had no need for dietary vitamin A.

McCay joined the fisheries research program and contributed to the development of special feeds for trout, including purified diets which could be chemically defined. Studies were planned to determine the requirements of protein, fat, minerals and vitamins for growth, the effects of water pollution and temperature on growth rate and mortality, and the effects of nutrition on the body composition of trout. McCay and Tunison (Cortland Hatchery, Report, 1933) apparently unknowingly produced the first reported vitamin C deficiency in fish and described the typical signs which were recently shown to be preventable by ascorbic acid.

An important problem in doing research in the 1920's and 30's was that of procuring satisfactory diets for experimental animals. A diet of natural feed ingredients had been formulated in the Laboratory of Animal Nutrition at Cornell which gave excellent growth performance of calves, rats and mice. Studies were initiated to develop purified diets which would be more adaptable for use in producing nutritional deficiencies and in defining the quantitative requirements of various animals. Over a 25-year period much progress was achieved in devising semi-purified diets for young growing rats, lambs, pigs, goats, calves, rabbits and guinea pigs.

McCay's most important early contribution was probably the demonstration that the restriction of calories in a diet otherwise adequate extended the life span. The stimulus for this research came during his post doctorate studies at Yale University. In Mendel's studies, rats stunted by diets based on deficient proteins were later able to reproduce when fed better diets. Clive asked why the experiments were terminated before the effects on their life span were observed. Mendel answered "you are young; you try it." He started lifespan studies with trout while at Yale, and continued these after joining the Cornell faculty where he initiated experiments with rats. It was found that a severe restriction of energy, which retarded growth, markedly extended the life span of rats and delayed the biochemical and pathological changes related to aging. In cooperation with S. A. Asdell it was shown that retardation delayed sexual maturation. This research brought him international recognition, and much of his later research was related to the aging process.

More than 50 papers were published reporting the results of various nutritional factors on the aging process and life span of rats and hamsters. Special consideration was given to those foods which have importance in the diet of man. Exercise was shown to have a favorable influence on longevity, apparently because it helped to prevent obesity of mature animals given free access to food. Female rats were found to have a significantly longer life span than littermate males fed the same diet and in the same environment. The female rats were much more active than males under similar conditions. In hamsters no sex difference existed in life span or in the amount of voluntary exercise. The experimental animals were not able to regulate their caloric intakes to prevent obesity when sugar solutions or sweet carbohydrate were provided free choice as supplements to a well-balanced diet. The interesting findings relating to health and longevity cannot be reviewed because of limited space, but McCay's interest in human nutrition and health is illustrated by the nature of the research he carried out.

On July 11, 1927, Clive married Jeanette Beyer of Iowa. Her training, interest and stimulation to his research undoubtedly added greatly to his accomplishments. Thus, a note about Mrs. McCay seems appropriate.

Jeanette Beyer was the daughter of Dr. S. W. Beyer, Professor of Geology and Dean of Science at Iowa State College. Jeanette obtained the B.S. degree from Iowa State in foods and nutrition. She worked for General Mills, Inc. for several years teaching cooking schools for homemakers. She and Clive were married just before moving to Cornell University. Jeanette wrote a weekly newspaper column on foods for about 10 years while she pursued graduate studies in nutrition and child development at Cornell where she was awarded an M.S. degree in 1934 and a Ph.D. degree in 1939. During World War II while Clive was on active duty with the U.S. Navy, Jeanette joined the Extension teaching faculty in Foods and Nutrition at Cornell. She was appointed to the Nutrition Division of the Emergency Food Commission of New York by Governor Thomas E. Dewey and collaborated on the writing of many leaflets on foods and nutrition and food preservation. A book, Land for the Family, in collaboration with other Cornell authors was published by the Cornell Press. During the war she also served as an editor in the Bureau of Home Economics and Human Nutrition in Washington, D.C.

Clive and Jeanette developed a true partnership devoted to the teaching and practice of proper nutrition. Together they developed the Cornell formula bread (also called Triple Rich bread) which contained 8% of nonfat dry milk

solids, 6% of full fat soybean flour and 2% of wheat germ. This bread was used widely, in hospitals and other New York State institutions where bread formed a substantial part of the diet. The results of their cooperative research in their home kitchen on ways of improving the nutritional quality of bread and other bakery products have been used by many people and there is still much demand for the booklet You Can Make Cornell Bread at Home or In the Bakery by Clive M. and Jeanette B. McCay.

At the beginning of World War II, McCay undertook food and nutrition research for the New York State Defense Council. The improved bread was made available widely. Alternative sources of foods were studied and methods were developed for using soybeans, brewer's yeast and other materials in case of emergencies. McCay had received training as Apprentice Seaman in the U.S. Navy in 1918. Perhaps this along with his desire to serve his country explains his enlistment in the Navy in 1943. He was commissioned and assigned to take charge of research on food and nutrition. His work included the improvement of "abandon-ship rations" for men on naval aircraft, for landing forces, and for men on submarines. He also served with the Eastern Seaboard Air Command aboard the Essex Class Carrier, U.S.S. Bon Homme Richard, and in various areas in the Pacific including Saipan, Okinawa, and the Philippines.

A mobile laboratory was fitted up in a truck, and with a staff of Waves and naval officers he visited various naval stations, taking food samples and studying the food selections of the men. Studies were published on the nutritional value of large naval messes, the messes on 1arge carriers and battleships. He was advanced to the rank of Commander and was awarded the Surgeon General's Commendation, U. S. Navy, upon being honorably discharged in 1946.

Upon returning to Cornell after the war McCay devoted more of his energy to research on problems directly related to human nutrition and health. He bad been deeply impressed by the large quantities of coffee and acid beverages consumed by the military personnel. Studies carried out to test the effects on health and longevity of providing coffee as the sole fluid to experimental rats fed a well-balanced diet did not reveal measurable harmful effects on the animals. Acid beverages as the sole fluid caused severe teeth erosion in rats, dogs and monkeys, the initial damage being detectable after only a few days. After six months on acid beverages as the only fluid the molar teeth of rats were dissolved down to the gum line even though the diet was fully adequate. These studies were extended to include an evaluation of calcium and phosphorus utilization by experimental animals throughout the life span. Calcium absorption and utilization were found to decrease as animals become older and larger intakes were needed to prevent depletion of the bones and loss of teeth. It became clear that many Americans and especially the elderly were consuming diets critically deficient in calcium as well as in other nutrients, but excessive in energy.

This great concern about nutrition and health was the major emphasis of many of his talks and writings. In 1953 he wrote, "The object of nutrition research is to discover diets that will preserve the best possible health and the greatest productivity throughout the life of man and his domestic animals. Research upon aging is not concerned with protracting the worthless years at the end of life when a senile body and a deteriorated brain make living nothing but a heavy burden.

"The nutritional status of every person lies largely in his own hands during the latter half of life and depends largely upon his ability to curb his intake of such common foods as sugar, alcohol, low-grade cereals and many fats, as well as his ability to select foods of high nutritional value. Every pound of sugar that goes into the American home pushes off the table more than five pounds of wholesome natural foods such as milk, potatoes and apples."

He was concerned about the men in prisons, the feeble-minded and spastic children, and the ill and aged in institutions. These he felt could play a vital part in improving the lot of the human race by serving as experimental subjects in studies of food and diet if a proper program could be planned. Through his efforts the diets were improved in many of these institutions in New York State.

Studies were started in 1954 for the Medical Laboratory of the U.S. Army to test the effect of ionizing radiation, used as a preservation agent, on the nutritive value of foods. Dogs were fed irradiated beef, pork and several vegetables to test their safety over 3-year periods. All of the foods tested proved satisfactory for reproduction and for growth and development of the pups as well as for maintenance of adult animals over the experimental period.

While spending a sabbatical leave at Oxford University in England in 1936 and visiting research laboratories in Europe including the U.S.S.R., he became impressed with the difficulty of a man alone in a small laboratory making much progress in solving the tremendous problems related to nutrition and human health. He wrote, "Little hope of progress in studying the process of aging can exist until special institutes of research are established in which whole groups of specialists will devote their lives to cooperative attempts to solve the intricate problems. The field of nutrition probably affords the most promising line of attack but specialists in this field must work side by side with the physicists, biochemists, bacteriologists, pathologists, physiologists, histologists and psychologists. When these cooperative attacks are made upon the basic problem of age-changes it is likely that the by-products will afford entirely new methods of attacking the diseases of old age such as cancer, arteriosclerosis and those of the heart."

Although the full objective could not be realized in planning his studies on longevity he involved as wide an assortment of scientists and professional personnel as possible. With a research grant from the Rockefeller Foundation he obtained the part-time services of Dr. LeRoy L. Barnes, Professor of Physics at Cornell, to carry out biophysical measurements on the experimental animals. Teeth were shipped to dentists, tissues were taken to pathologists in several hospitals in the Eastern United States and these cooperators made visits to Cornell's laboratories to plan studies and write up the research results. Among these cooperators were Edward Bortz, M.D., and Clark E. Brown, M.D., of the Lankenau Hospital in Philadelphia; John A. Saxton, Jr., M.D., of Cornell Medical College; O. H. Lowry and A.B. Hastings of the Harvard Medical School; Clifton A.H. Smith, a dentist in New York City; and Frank Pope, a physician in New York City. The extent of his cooperative studies continued to expand throughout his active life in an attempt to involve anyone who might contribute to basic knowledge.

The research was extended to include measurements of vitamin losses of foods in large-scale cookery and in the preparation and storage of jellies and preserves. Several studies were made on fluoride metabolism and its effects on bones and teeth of experimental animals over their life span. He became concerned with fluoridation of public water supplies, the enrichment of foods and the application of sound-nutrition practices by home makers as well as in institutions and public dining facilities. His public addresses and writings were directed to the objective of expanding applied nutrition knowledge to improve health and productive capacity of people. With the cooperation of medical surgeons be studied the impact of parabiosis between old and young rats as a new approach to obtaining basic information on the control of the aging processes. Even in the later years McCay remained receptive to new ideas and research techniques which might extend basic knowledge or its application for the general good.

In carrying out his diverse research program McCay had many collaborators. Some of them have been mentioned. He published several papers jointly with L. A. Maynard. Among other collaborators at Cornell, including graduate students, were: Mary Crowell, G. K. Davis, G. H. Ellis, C. A. Heller, F. Konishi, J. K. Loosli, T. C. Huang, F. E. Lovelace, L. L. Madsen, Henry Paul, A. M. Phillips, P. Sambhavaphol, Gladys Sperling, V. Tunison, R. H. Udall, L. C. Will. While in charge of food and nutrition research for the U.S. Navy the principal collaborators were R. A. Gortner, Jr. and A. S. Retarski.

History of Nutrition

As a graduate student and especially during his study at Yale with Lafayette B. Mendel, McCay read the classic papers in chemistry and physiology which laid the foundation for the development of the science of nutrition. This interest in history was maintained throughout his active life. Wherever he traveled to attend scientific meetings, to lecture on nutrition, or on vacation, he would search the second-hand book stores for volumes on nutrition, physiology, dietetics and health. During a sabbatical leave in 1935-36 at Oxford, England, and in 1953 at Basel, Switzerland, he visited laboratories where early research had been done and he spent much time in libraries reading papers which had not been available to him previously. The copious notes be made became invaluable in graduate

seminars which be and Maynard offered jointly and served as a basis for a course he developed on the history of nutrition described in the announcement as follows: "Lectures and conferences on the nutrition of animal species from the invertebrate to man with special emphasis upon the fundamental discoveries of such fields as growth, comparative biochemistry, and physiology that have been synthesized into the modern science of nutrition." He had planned to publish a book on the history of nutrition. Although illness prevented his completing the book, his Notes on the History of Nutrition will be published by Hans Huber, Bern, Switzerland, with Professor F. Verzar as editor and with a foreword by L. A. Maynard.

Although be brought home stacks of scientific journals and books on modern science to go through, history was his great passion. He loved to read it and loved to quote it. Mrs. McCay once wrote, "One felt that Roger Bacon was his best friend, and that just last week he had talked with von Bunge, Beaumont and St. Martin, Magendie and Chevreul." Clive felt that his study of older research publications had been extremely valuable to him. This value is clearly expressed in one of his papers. "The study of history affords a means of maturing in wisdom without the usual accompaniment of deterioration due to aging and the onset of senility. In the course of a few days one can often encompass the significant achievements of a creative mind working a whole lifetime. At the same time the history of nutrition affords a background that permits a balanced if a less enthusiastic evaluation of current discoveries. Careful study will reveal in each decade during the past two centuries some optimist who was convinced that his age knew almost the last word in nutrition with little hope for great advances. History tends to inculcate a spirit of modesty in regard to our own time and to make us realize that we have made but a beginning in solving the intricate and difficult problems of feeding men."

McCay's broad knowledge of the early historical development in nutrition, physiology and the related chemistry, pathology and health problems is well illustrated in his review of the research contributions of Gustav B. von Bunge (J. Nutr. 49: 3, 1953). He was able to relate von Bunge's research contributions to those of his contemporaries and to present a balanced story of the status of nutritional knowledge and the conflicts in views in that period, rather than to merely tabulate his personal accomplishments. He sorted out and reemphasized the problems which existed decades ago that still trouble us today.

Among the topics given special note was the research on milk composition, purified diets and why animals could not survive when fed diets that were supposed to be chemically complete; also the nutritive value of blood proteins, the importance of the nutritive quality of bread, problems arising from excessive consumption of sugar and the use of alcohol.

McCay as a Teacher

McCay's teaching responsibilities at Cornell were primarily concerned with graduate students and included a graduate course in laboratory methods in nutrition, a seminar in nutrition in cooperation with Dr. Maynard, a graduate course in the history of nutrition which provided specific training and experience in library research, and directing the training and research programs of graduate students. The graduate seminar provided extensive experience in the critical reading of scientific papers, evaluation of the methods and brief summarization of the results in relation to current knowledge in the field. The frequent presentation of oral summaries gave the student experience in public speaking, and confidence in his evaluation of research. Graduate training also involved teaching experience in laboratory exercises, and advanced students presented certain lectures.

In doing thesis research students were expected to review thoroughly all of the available literature on the selected topic including that published in other countries before an outline of the proposed thesis research was approved. McCay planned carefully the use of his time and was able to follow his plans. His ability to accomplish things on schedule proved a strong stimulus to his students to form desirable work and study habits, which followed them later in their careers. There was full recognition of the importance of basic training in physiology, microbiology, pathology, histology, statistics, and biochemistry as well as in animal science to do effective research in animal nutrition. The training program in animal nutrition was closely coordinated with that in human nutrition with joint courses and seminars and there were many opportunities for studies of comparative nutrition. Most of the Ph.D. theses included work with more than one animal species.

McCay had great ability in his chosen field of teaching and research. As a teacher he was stimulating, both for the student and the assisting staff member.

He read very widely and his depth of knowledge as well as his inclination to take a broad view of a particular problem was most impressive. He did not suffer fools gladly and many of his students had occasion to regret lapses of performance or evidence of shoddy thinking. At the same time, he was very competent in drawing out the best in others and in stimulating discussion. There was never a dull moment when he was around.

McCay directed the training of some 30 graduate students, all of whom devoted their careers to some aspect of nutrition in many different countries.

He had great concern for the poor and unfortunate. Several of his technicians were employed because they were in critical need of help. If they were honest and willing to work and learn he would give them an opportunity. Several women who had little or no college education were developed into excellent animal caretakers and laboratory technicians and made important contributions to his scientific research.

The McCay home became a family center for his many graduate students. There they made frequent visits for food and fun liberally spiced with discussions of nutrition research, both theoretical and applied. The kitchen served as a laboratory for making doughnuts well fortified with brewer's yeast, bread or rolls made with home-ground whole wheat, or chop suey packed with home-sprouted soybeans. His great eagerness to learn by reading or hearing experiences of others, as well as by testing new ideas that came to him, filled his every hour and this enthusiasm greatly stimulated his students and associates. The McCays had established their home on a farm near Ithaca which had acreage and woods where they loved to hike and study the birds. They had space to keep horses, sheep, dogs and geese and to cultivate a garden for vegetables and fruits, and they freely shared all of these with their students and associates. After retirement they moved to a new home in Englewood, Florida, where he died on June 8, 1967 after a long illness. Mrs. McCay still resides there.

During the 35 years he served on the faculty of the Department of Animal Husbandry at Cornell he authored or coauthored some 200 technical articles published in more than 30 journals. The broad range of his contributions is indicated by the variety of journals, which included The Journal of Nutrition, American Journal of Clinical Nutrition, Archives of Biochemistry and Biophysics, Science, Ecology, Geriatrics, Archives of Pathology, New York State Dental Journal, and Cornell Veterinarian, to name only a few!

He contributed review chapters to Vitamins and Hormones, Cowdry's book on Problems of Aging, Gerard's Food and Life, the CIBA Foundation Colloquia on Aging, and Proceedings of the Animal Care Panel.

His book, Nutrition of the Dog, published in two editions (1943 and 1949), included an account of the many researches with dogs which made pioneer discoveries in physiology and nutrition as well as a summary of his own research with dogs, from Beagles to Great Danes and won for him the National Dog Week Award and Medal in 1948.

McCay's basic interest was in improving human welfare through better nutrition of man himself and of the animals that serve him. In furthering this broad interest his research involved studies with many species including brook trout, eels, turtles, clothes moth, bean weevils, flour beetles, cockroaches, cows, calves, goats, sheep, pigs, rats, cotton rats, mice, guinea pigs, hamsters, rabbits, monkeys, chinchillas, dogs, mink and humans.

He was a member of the American Chemical Society, the American Society of Biochemists, the American Institute of Nutrition (a charter member and a president), the American Gerontological Society (President, 1949), the Swiss Society of Nutrition (honorary member) and the Association of University Professors. He was elected to the honor societies of Phi Kappa Phi, Sigma Xi, and Phi Lambda Upsilon.

There was no sharp division between Clive's professional life and his recreation and every day home life. His friends were his fellow workers and other scientists from near and far. He had many close, interesting and unusual friends, closer and more intimate than most family members, with whom he loved to walk and talk. His travels

were usually to scientific meetings or to speak to groups about nutrition. At least part of every holiday was used for writing and study.

His pets often served as subjects for his studies. When his first farm dog died of old age, Clive examined his bones, photographed the calcification of the joints and used the picture in his book, Nutrition of the Dog. Even the lambs and geese spent various intervals in metabolism cages for studies by his students. In the garden, he would include plants in which he happened to be interested at the moment such as soy beans, saffron or special varieties of squash. And family meals often had an experimental aspect, as when liver was consumed as the only meat for a month.

Reading was Clive's great delight, and if reading maketh a full man, he was very full indeed. Clive's happiest hours at Cornell were spent in the libraries. He loved to study old book catalogs and browse in second-hand book stores to find treasures for his own library or for the University. He willed his personal library to Cornell University and a reading room has been named in his honor in the Albert R. Mann Library at Cornell.

Though Clive was intense, he gave the impression of doing everything easily. He could keep many projects going at the same time without showing worry or strain. He would often sit in the evening listening to music, reading technical journals and even take part in the conversation that was flowing around him. "Intense living" is a fair description of Clive's working life.

He was very much a "do it now" person. If he had a long report to write, he sat down and whipped it off, even though it might be two weeks before it was due. He mulled over the subject matter for his talks months before they were given, and the cards with their outlines and notes were always ready in his pocket when it was time to deliver.

McCay wrote and spoke well, and he wanted all of his students to speak well and tried to make his seminars a training period for simple, direct, clear presentations. He liked to bring a personal touch to his subject matter and to allude to members of his audience when possible. He seemed able to pick out material that was amusing and interesting and gave people something to improve in their own lives—never burden them with all the details about a subject.

Camping, canoeing, walking and playing his violin and viola were also beloved activities. The McCays had no children of their own, but adopted a son, Kenneth, who with his family became a great joy to them and who now lives in Victoria, Texas.

Clive McCay gained national and international recognition especially for his research on the relation of nutrition to the aging process, for his attempts to improve nutrition of older people by improved bread and greater use of milk and vegetables. His research demonstrated the beneficial effects of restricted caloric intake and of avoiding obesity in the latter half of life, and the harmful effects of letting sugar replace fruits and vegetables in the diet. His knowledge, experience and enthusiasm as a speaker brought many invitations to give public lectures on nutrition and various aspects of gerontology. There is no way to estimate the extent of his direct influence in helping people practice sound nutrition, even though they may not understand all of the principles involved, but it was very great. Letters are still being received in the laboratory at Cornell asking his advice on nutritional matters.

J. K. Loosli

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Hazel Marie Hauck

July 15, 1900–April 23, 1964

The death of Dr. Hazel M. Hauck, Professor Emeritus of Food and Nutrition, brought to a close the active career of a distinguished member of the Cornell University Faculty. Miss Hauck served in the Department of Food and Nutrition in the New York State College of Home Economics for twenty-nine years, and was a member of the Faculty of the Graduate School of Nutrition from the time of its establishment in 1941 until her retirement in 1961. Her scholarly teaching, her contributions to research in human nutrition, and her international services in Thailand and Nigeria are widely recognized. She was a member of many college and University committees and a member of the board of Cornell United Religious Work; she was secretary of the University Faculty for three years.

Miss Hauck came to Cornell as Assistant Professor in 1932 from the University of Wisconsin, where she had received her Ph.D. degree in 1932 with a major in nutrition and a minor in medical science. She was promoted to the rank of full Professor in 1936. Before her appointment at Cornell she taught at the universities of Oregon, North Dakota, Washington, and Tennessee. She was a fellow of the American Public Health Association and of the American Association for the Advancement of Science, and was a representative of the American Dietetic Association in the latter organization. She held membership in Sigma Xi, Phi Kappa Phi, Omicron Nu, and Pi Lambda Theta.

Soon after her appointment to the Faculty Miss Hauck began the first human dietary studies conducted at the College of Home Economics. These studies contributed significantly to the understanding of human requirements for ascorbic acid, and were used by the National Research Council in establishing recommended dietary allowances.

Her nutrition and diet therapy courses were of major importance in the undergraduate teaching program, and her graduate courses were among the first taught at the College. Graduate students who worked under her direction hold positions of leadership in many countries. Though Miss Hauck's standards were high, she never failed to recognize the potentialities of her students and always won their respect. In 1961 the students of the College voted her the distinguished professor of the year. She followed the careers of her students with genuine interest and was the first of the College Faculty to be elected to honorary membership in the College of Home Economics Alumnae Association in recognition of her continuing friendship with graduates.

Miss Hauck always sought to put the fruits of her scholarship to practical use in furthering human welfare, and her talent in finding means to do so was apparent in her own work in foreign countries and in the training of others for this same work. Especially noteworthy was her work with missionaries who came to Cornell under the auspices of Agricultural Missions Incorporated. In the spring of 1961 this organization presented her with a certificate for distinguished service in recognition of her twenty-eight years of Christian service to rural people. The citation read in part: "The hundreds of rural missionaries who profited by your friendship and your professional knowledge so graciously shared are serving in over forty different countries."

She was one of the first of the Faculty of the College of Home Economics to take a foreign assignment. In 1952-1953, under a Fulbright grant, she served as nutrition specialist for the Cornell-in-Thailand project under the leadership of Lauriston Sharp. Her work involved a systematic investigation of the food habits of the people in Bang Chan, a rural rice village. The study she conducted of the food supply and nutritional status of the people resulted in dietary recommendations of particular help to mothers and children, and led to further research in ways to improve the health of rural Thai.

In 1959-1960 she served as field consultant with the village improvement and leadership training program of the Unitarian Service Committee in Awo Amamma, Eastern Nigeria. In her experiments with 125 Ibo families, she was instrumental in demonstrating how they might incorporate into their diet a native and inexpensive food, the groundnut, which would increase the supply of those nutrients most lacking in the foods they normally consume. Her way of working with women as they prepared meals for their families demonstrated an effective technique for others to use in continuing education in nutrition.

Miss Hauck felt the importance of making her research findings available to others in the fields of nutrition and health. Her many articles appeared not only in American professional journals but also in such publications as the Journal of Tropical Pediatrics and African Child Health, the West African Medical Journal, and the Journal of Obstetrics and Gynecology of the British Commonwealth.

Soon after her return from Nigeria she became ill. Most of the data she had collected had to be prepared for publication under health restrictions which would have made the task impossible for the average person, but with the valiant courage that was evident throughout her illness she brought her studies to completion.

In the memorial service held for Miss Hauck a young Nigerian educator from Awo Amamma, now studying in Ithaca, paid tribute to her as a worker among his people. As he described her work in remote villages, one realized again her courage, her understanding of how to work with groups struggling to develop better practices in nutrition, sanitation, and family welfare, her natural and unassuming empathy with these people. "Know you not," he said, "that a great person has passed away from us."

Helen H. Gifft, Esther H. Stocks, Kathryn E. Walker

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Vincent du Vigneaud

May 18, 1901–December 11, 1978

Vincent du Vigneaud was born in Chicago in 1901. He majored in chemistry at the University of Illinois at Urbana and received the Master of Science degree in 1924. H. B. Lewis and W. C. Rose introduced him to biochemistry, which became his major field of interest. At Urbana he supported himself by working as a waiter and teaching cavalry tactics and equitation as a reserve second lieutenant. He received his Ph.D. degree in 1927 from the University of Rochester for work on the chemistry of insulin. Insulin is a protein containing sulfur, an atom that became his life-long center of interest, as vividly told in his book A Trail of Research (Cornell University Press, 1952).

For his postdoctoral work du Vigneaud moved to Baltimore with his wife, Zella, whom he had married in 1924, to work with J. J. Abel at Johns Hopkins. There, in the first steps following the sulfur trail, he worked on cystine, a constituent of insulin which Abel had crystallized in 1925. Du Vigneaud helped to establish that insulin is indeed a protein, an unpopular veiwpoint at the time. After another year of postdoctoral fellowship in Europe, du Vigneaud returned to Urbana as an assistant professor in physiological chemistry (1930-32). He continued his work on cystine and developed an important method for the reduction of the disulfide bond by metallic sodium in liquid ammonia. These reagents remained valuable tools in his hand for his later synthetic work. In 1932, at age 31, he was appointed chairman of biochemistry at George Washington University School of Medicine, where he remained for six years. Here he broadened his research interest to include nutritional studies on cystine isomers and other sulfur-containing amino acids, particularly methionine and homocystine. He also began work on the synthesis of cystine peptides. Both of these new approaches laid the groundwork for du Vigneaud's later and most important work on amino-acid metabolism and peptide synthesis. In 1938 he moved to New York City as the head of biochemistry at Cornell Medical College. Once again he broadened his sphere of interest to include studies on the structure of biotin and pituitary hormones, keeping close to the tracks of the trail of sulfur atoms. At Cornell he established the metabolic process of transmethylation. He was helped in these fundamental studies by three collaborators, Mildred Cohn, Sofia Simmonds, and Joseph Chandler, who later became well-known biochemists in their own right. It is of interest that two of these collaborators were women, an unusual pattern at the time. During World War II, du Vigneaud worked on the chemistry and synthesis of the sulfur-containing antibiotic penicillin. In this work he was aided by a team that included Robert W. Holley. After the war he concentrated on the elucidation of the chemical structure of the pituitary hormones oxytocin and vasopressin. By 1953 the chemical synthesis of oxytocin was achieved and its biological potency established. For this and earlier work on sulfur-containing biological molecules he received the Nobel Prize in Chemistry in 1955. In 1967 he moved to Ithaca where he was warmly welcomed by the chemistry department and remained active until the summer of 1974. His primary interest in Ithaca was the relationship between chemical structure and biological activity of oxytocin and vasopressin (which he had synthesized earlier).

On a Saturday morning during a conference with one of his postdoctoral fellows, he had his first stroke, which interrupted his brilliant career. It was a tragic end because he remained mentally alert but incapable of communication and physically feeble for several years until his death on December 11, 1978, in St. Agnes Hospital in White Plains, New York. Zella, his wife, who had attended him with love and devotion during his illness, died in 1977.

Du Vigneaud's most outstanding characteristic was his devotion to science and enthusiasm for research. When he retired as chairman of biochemistry in New York, instead of taking a vacation he moved to Ithaca on July 1 with two moving vans full of equipment and spent the summer "getting started." He set an exacting example for his colleagues by extending his work week through Saturday mornings and by designing laboratory work with meticulous care. He was a great listener and stimulated young scientists to greater efforts. He remained a father image to many brilliant scientists, now leaders in the field of biochemistry.

Du Vigneaud received many awards, both before and after the Nobel Prize, including the Lasker Award in 1948, the Passano Award in 1955, and honorary degrees from several universities.

Stuart J. Edelstein, Gordon G. Hammes, Efraim Racker

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Frances A. Johnston

June 22, 1901–May 27, 1984

Frances Johnston's association with Cornell began in 1946, when, as an assistant professor, she joined the Department of Food and Nutrition in the New York State College of Home Economics. At that time her responsibilities were primarily with research and the graduate nutrition program. Her active professional career with the college continued for the next nineteen years. During that period, and afterwards as a professor emerita, she exerted a profound and lasting influence on the caliber and scope of nutrition programs at Cornell.

Professor Johnston was born in Troy, Ohio, where she received her high school education. After a year at Mt. Holyoke College, in Massachusetts, she completed her Bachelor of Science degree in chemistry in 1923 at Western College, in Ohio. In 1926 she received the master's degree in home economics-nutrition from the University of Chicago, where her primary interest was in the factors affecting appetite in preschool children. Following graduation she accepted a position for one year with a biochemist in the Northwestern Yeast Company, in Chicago. During the summer of 1928 she taught at Wittenberg College of Wittenberg University, and from 1928 until 1936 she held the position of assistant professor at Wesleyan College, in Delaware, Ohio.

Returning to Chicago to study for her Ph.D., she worked with Dr. Lydia J. Roberts on the iron requirements of children. She received her doctoral degree in 1941 and remained in Chicago as a research associate until 1946, when she joined the faculty of the Department of Food and Nutrition at Cornell. She was promoted to associate professor in 1949 and to professor in 1955, holding simultaneously a membership on the faculty of the School of Nutrition. At the time of her retirement, in 1965, she was made a professor emerita.

Professor Johnston remained in Ithaca after her retirement until 1979, when she moved to Scottsdale, Arizona, where she died on May 27, 1984, at the age of eighty-two.

Continuing her research on iron requirements after coming to Cornell, she focused primarily on young children, adolescents, and young adults. Extending her research to include the availability of iron from selected foods, her studies were among those used in the evaluation and establishment of the recommended dietary allowances for iron by the Food and Nutrition Board of the National Research Council. Her research also included studies on the effect of adaptation to long-term low-calcium intakes on human calcium requirements. She continued her research on human requirements to include the requirement for Vitamin B6, an area in which very little research had been done previously.

Professor Johnston's work was conducted primarily with human subjects, although in her later research she also used experimental animals, particularly for pilot work needed to establish methods and to select metabolic products for analysis. Research using human subjects presented particular problems in that she had to develop methodology for both the conduct of the study and analytical procedures. Her work led to improvements in the methods and procedures needed for work with human subjects. In 1977 the Division of Nutritional Sciences remodeled the laboratory area in which she had pursued her research and dedicated it as the Frances A. Johnston-Charlotte A. Young Human Metabolic Research Unit in honor of two of the faculty members who had advanced human metabolic studies at Cornell.

Professor Johnston's original career choice had been chemistry, but she found that there were more opportunities for women in nutrition. In her research she was able to combine both interests. Her high laboratory standards and attention to detail provided excellent training for her students. She participated actively in her laboratory work, instructing the students and technicians personally in the various methods used. Although her studies were so well planned they almost seemed to run by themselves, nevertheless she made it a point to be present at every meal to determine the progress of the study and to encourage the subjects on the strict dietary regimens. During one summer, when she conducted studies with adolescent girls, she obtained the cooperation of colleagues in providing the girls with diverse activities, thus helping to assure the success of the study. Because of her concern for others both

academically and personally, she received excellent cooperation from her students and from her human subjects alike.

During her active career at Cornell Professor Johnston was adviser to some thirty graduate students at both the M.S. and Ph.D. levels. Most of her teaching and research responsibilities were with the graduate program. In addition to the students in her laboratory, she worked with all nutrition students in the various seminars offered. Although reserved, she came to know her students well, and many remember the short afternoon break for tea that she routinely prepared. She was often affectionately referred to by her students as Miss J. Because of Dr. Johnston's dedication and teaching abilities, her students received excellent training professionally and in interpersonal relationships. Many have assumed leadership positions in academia in the United States, Canada, and elsewhere.

Professor Johnston was also quick to offer support to new faculty members when they joined the department and was open to the pursuit of new ideas and programs. She was also ready to help to assure the success of a new venture. She did not hesitate to establish her own ideas in a quiet and gracious way, but she was also able and anxious to encourage the development of others.

During the period of her distinguished tenure at Cornell, she published some fifty scientific papers, most of which were co-authored with her students. In 1951 she received the Borden Award from the American Home Economics Association for her outstanding research in nutrition. She was a member of several professional societies: the American Institute of Nutrition, the American Home Economics Association, the American Dietetics Association, and the American Association for the Advancement of Science, as well as honorary societies including Sigma Xi, Phi Kappa Phi, Omicron Nu, and Sigma Delta Epsilon.

Each year, with other colleagues in the department, she prepared Thanksgiving dinner for those faculty and graduate students who were too far from home to share the holiday with their families. This hospitality might include as many as twenty-five or thirty sitting down together on the festive occasion. Professor Johnston was also generous with her lake cottage, and visits there provided a welcome relief from the hot summer days for many faculty members.

Because she was a person who was deeply interested in the community in which she lived, upon retirement Dr. Johnston became very active in many community projects, contributing both financially and with personal involvement. She worked quietly but effectively, and her example influenced the community. She was forward-looking, quickly recognizing community needs and encouraging and supporting the activities of others while taking little credit for herself. Shortly after retirement, as a member of a committee of the Presbyterian Church, she became one of the principal organizers of the Meals on Wheels program in Ithaca, a joint project involving the Tompkins County Health Department, the hospital dietary department, and local churches who supplied the volunteers. She approached the project as she would a research project and evaluated similar programs in other areas in the state and nationwide. The organization and structure of the program was uncomplicated but provided for emergencies. The program was effectively instituted in 1967 and is still in operation in much the same way today. Those who were associated with her in her community endeavors speak of her as a friendly, warm, outgoing but quiet person who had a profound impact on the organizations to which she contributed.

Both during her active professional life at Cornell and as a professor emerita, Frances was a good friend and benefactor of Cornell. She established a Nutrition Research Grant in 1950 and made gifts to support research in both the Department of Food and Nutrition and later in the Division of Nutritional Sciences. Some of this support is still available. Many graduate students can be grateful for her generosity in supporting graduate fellowships: the Katharine Wyckoff Harris Fellowship for students in human nutrition, food, and food-service programs and the Grace Steininger Fellowship. She made a generous commitment that will help the building expansion in the Division of Nutritional Sciences and has established a major trust for the benefit of the University, for which she was honored in 1982. The American Association of University Women named a scholarship in her honor in 1980.

Professor Johnston was predeceased by a brother, Edward, and is survived by her sister-in-law, a niece and nephew in Arizona, as well as six great-nephews, two great-great-nephews, and one great-great-niece.

She will be remembered by her friends and colleagues as a gracious, thoughtful, considerate, and unassuming person with a pleasant sense of humor; by the community for her encouragement, recognition, and support of community endeavors; and at Cornell for her research contributions and her continued interest and support in the development of an outstanding nutrition program.

Catherine J. Personius, Malden C. Nesheim, Mary A. Morrison

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Grace Steininger

October 30, 1901–January 13, 1966

The sudden death of Grace Steininger, Professor Emeritus of Food and Nutrition, stunned her friends and colleagues, many of whom had seen her as her usual vibrant self at a College faculty meeting less than two hours before her untimely and fatal heart attack.

Grace Steininger was born in Sedalia, Missouri, the daughter of Anna Morris and William Frederick Steininger. She received her early education in Missouri and the Bachelor of Science degree from the Kansas State College in Manhattan. Following a dietetic internship at Johns Hopkins Hospital she returned to Kansas State College for further study and was awarded the Master of Science degree with a major in nutrition. She was an Associate Professor of Food and Nutrition at Oklahoma A. and M. College for ten years before continuing her studies. She received the Ph.D. degree in 1939 from the University of Chicago where she began a long and close association with her major professor, the late and eminent nutritionist Lydia J. Roberts. Immediately after obtaining the Ph.D. degree, Dr. Steininger became Director of Home Economics at Ohio University in Athens.

Professor Steininger served with distinction as a member of the Cornell University faculty. She was appointed Assistant Professor of Food and Nutrition in July, 1943, Associate Professor in 1945, Professor in 1947, and Professor Emeritus upon her retirement in August, 1965. She was also a member of the faculty of the Graduate School of Nutrition.

Grace Steininger was above all a master teacher; she was equally effective in stimulating the minds of freshmen and graduate students. She developed the core course in the Department of Food and Nutrition, a course in which the fundamental concepts of human nutrition and the basic principles of food preparation were meaningfully integrated. The young instructors and numerous graduate assistants who participated with Professor Steininger in this course gained an unusually valuable teaching experience. Those who continued in the teaching profession have expressed their desire to pass along to their students some measure of the fine qualities that Grace Steininger possessed—warmth in manner, tolerance in attitude, competence in knowledge, and patience in guidance.

Although the core course was her primary teaching responsibility, her contributions were outstanding to curriculum development in the Department, to the Honors Program for undergraduate students majoring in food and nutrition, and to formal and informal graduate seminars in nutrition. As a scholar with an alert and questioning mind, she had an exceptional gift for asking questions that would stimulate discussion in small or large groups. She also served on the Special Committees of many graduate students, including a significant number of international students, each of whom found her a warm friend as well as a scholarly adviser.

At the invitation of personnel from the U.S. Office of Education with responsibility for education in home economics, Miss Steininger met with a small group of professors to consider ways of improving college teaching in food and nutrition. From 1954 to 1962 she played a leadership role in the establishment of the organization which now arranges regional and national meetings of college teachers devoted to the improvement of instruction in this field. In 1963 she served as a curriculum consultant to the College of Home Economics at the University of Tennessee; in 1964, as a consultant for the development of a graduate program at the School of Home Economics at the University of Puerto Rico. She was an active member of the College Advisory Committee for the Winneba Training Center in Ghana. Her success as a consultant may be attributed to her keen insight, to her firm but kindly manner in dealing with people, and to her awareness of the personal relationships involved.

For twenty years Professor Steininger carried certain administrative responsibilities in the Department of Food and Nutrition where she was affectionally called the "straw-boss." She actively participated in numerous standing committees and major ad hoc committees of the College faculty. She served on various standing committees of the University faculty and on the Summer Session Administrative Board. She was the Graduate Representative for the

Field of Food and Nutrition from 1959-62 and a member of the General Committee of the Graduate School from 1955-60.

Professor Steininger was active in professional and honorary organizations at local and national levels; notably the American Home Economics Association, the American Dietetic Association, Omicron Nu, and Phi Kappa Phi. She was also a member of Sigma Xi, Delta Sigma Lambda, Sigma Delta Epsilon, and an honorary member of Alpha Lambda Delta; she was a Fellow of the American Association for the Advancement of Science.

Grace Steininger found time for her many hobbies which exemplified her wide interest in the world around her. She was an enthusiastic traveler at home and abroad, an avid reader of science and fiction, a talented flutist and pianist, an accomplished photographer, an amateur artist, and a "green-thumb" gardener.

She was challenged by puzzles, and she possessed unusual skill with her hands which she employed in numerous activities ranging from the preparation of minutely decorated and fragile ornaments to the assembly of a knocked-down work bench. No problem seemed too large; some solution would be found through her tireless efforts.

Her friends, colleagues, and students, recognizing her as an exceptional teacher, will also long remember her as a person—a person of integrity, one with strong loyalties and a sensitivity to the feelings of others, and one with a delightful sense of humor who could always laugh at herself. She increased the richness of the lives of many because she gave so freely of herself.

A general expression of our personal loss and an appreciation of our heritage from a wise and kindly friend may best be said by paraphrasing a verse from The Torch Bearer by Margaret Parsons:

She has taken her bright candle and has gone
Into another room we cannot find,
But anyone can tell where she has been
By all the little lights she left behind.

Frances A. Johnston, Catherine J. Personius, E. Elizabeth Hester

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André Gerard van Veen

March 13, 1903–December 7, 1986

André Gerard van Veen, Cornell's first professor of international nutrition, died in Ithaca on December 7, 1986, at the age of eighty-three. He was born in Medemblik, the Netherlands, and spent his early years in that country. He studied at the University of Utrecht, where he majored in plant physiology and biochemistry and obtained his master's degree (1926) and Ph.D. degree (1928), both cum laude.

In 1929 Dr. van Veen was selected to succeed Professor B. C. P. Jansen at the Eijkman Institute in Batavia, Netherlands East Indies (now Jakarta, Indonesia). He went there in 1930. Initially he worked on the purification of the B vitamin, thiamin, which Jansen had been the first to isolate. In 1935 he became chief of the institute's Biochemical Division. He was also deputy director of the Nutrition Research Institute, which he had helped to create in 1934. The Eijkman was a medical institute; its Biochemical Division included nutrition work, mostly of a laboratory nature. The Nutrition Research Institute was concerned mainly with fieldwork. Together the two institutes were well equipped to handle both practical nutrition problems and nutrition research. Prior to the Second World War the two institutes carried out about thirty-five food and nutrition surveys, mainly on Java and Sumatra. Those surveys included food consumption studies and clinical and biochemical studies, as well as agricultural and economic assessments. It was during those surveys that Dr. van Veen's interest and attention were first drawn to endemic outbreaks of poisoning that he discovered were due to natural food toxins. He studied several of these toxins in his laboratory. He found that the so-called bongkrek poisonings of Central Java were caused by a bacterium, Pseudomonas cocovenenans, that produced two toxins, tonoflavin and bongkrek acid. In localities where the poisoning occurred he found that it was associated with the eating of a fermented soybean cake containing pressed coconut.

In 1938 Dr. van Veen became professor of biochemistry in the medical school of what is now the University of Indonesia, and he was instrumental in establishing an agricultural faculty at that university. In 1936 he became secretary of the Indonesian Science Council and in 1940 president of the Royal Society of Natural Sciences. He was chairman of the Round Table Conference on Nutrition of the Far Eastern Association of Tropical Medicine held in Hanoi, Vietnam, in 1938.

From 1942 to 1946 Dr. van Veen was a prisoner of war during the Japanese occupation of Indonesia. During that time his knowledge of the nutritional properties of local plants helped to save the lives of many who were interned with him, because he was able to demonstrate how they could be used to supplement the meager prison diet. Following the war he was awarded the Order of Officer of Orange—Nassau.

In 1948 Dr. van Veen returned to his native country to become professor of biochemistry at the Technical University in Delft. He returned to Indonesia on behalf of the Food and Agriculture Organization of the United Nations (FAO) in 1951, 1953, and 1969-70. The first two visits were concerned with helping to rehabilitate the Nutrition Research Institute and to draw up a national nutrition plan; in 1969-70 the purpose was to lay down the basis of a national food and nutrition policy in the five-year development plan of the country.

While on leave of absence from the Dutch government in 1947, Dr. van Veen helped to organize the newly created Nutrition Division of FAO, which at that time had its headquarters in Washington, D.C. The director of its Nutrition Division was the eminent nutritionist Dr. Wallace R. Aykroyd. That year Dr. van Veen was also instrumental in preparing Rice and Rice Diets, the first of FAO's Nutritional Studies Publications. He returned to FAO headquarters as a permanent staff member of the Nutrition Division in 1950; in 1951 FAO headquarters were moved to Rome, Italy. Dr. van Veen was initially senior supervisory officer of the Nutrition Division and later chief of its Food Science and Technology Branch. Significant undertakings included the initiation of work on food additives, which was done in close cooperation with the World Health Organization (WHO) and which led, among other things, to the establishment of the Codex Alimentarius Commission, which today plays a very important role in many countries throughout the world in protecting consumers from health hazards in food. Also of significance was work on protein-rich foods for use in child-feeding programs in developing countries where surveys were

revealing that protein malnutrition among young children was a very widespread and serious problem. That work was done in close cooperation with WHO and the United Nations International Children's Emergency Fund.

In 1952 he married Marjorie Scott in Rome, a Canadian who had joined the Nutrition Division of FAO in 1946. Their ensuing time in Rome together was both professionally productive and personally rewarding. Both grew to be very fond of Rome and of things Italian.

In 1962 Dr. van Veen was appointed professor of international nutrition in what was at that time the Graduate School of Nutrition at Cornell University. In the following six years he built up an impressive program focusing on problems of food and nutrition in developing countries. It evolved into the Program in International Nutrition, and he was its first director. Research work carried out at Cornell under his guidance included study of the nutritive value and wholesomeness of a number of fermented foods consumed in the Far East, Near East, and Latin America. He was also Cornell's pioneer in the area of aflatoxin research. In collaboration with social scientists at Cornell he was the first to develop ways of applying social science research methods to the study of food and nutrition problems. He supervised field studies of graduate students in a number of countries in Latin America and the Caribbean. He worked closely with Professor Frank Young in rural sociology, Professor Kathleen Rhodes in community service education, and Professor Keith Steinkraus at the Geneva experiment station. He retired from Cornell in 1968. Since that time Cornell's Program in International Nutrition has expanded greatly and become the preeminent program of its kind in the United States if not in the world.

Dr. van Veen was a frequent consultant to the U.S. Interdepartmental Committee on Nutrition for National Defense (ICNND) in connection with national nutrition surveys, and he participated in the ICNND survey in East Pakistan (now Bangladesh) in 1964. In 1972-73 he served as a consultant to the U.S. Agency for International Development (AID) in connection with vitamin A problems in developing countries and prepared one of three status reports published by AID in 1973. Dr. van Veen's publications throughout his varied career number more than 165. He was on the editorial advisory board of Ecology of Food and Nutrition—an International Journal—and of the Dutch Voeding.

In 1970 Dr. van Veen received the Eijkman Award at a ceremony in Rotterdam, the Netherlands. The award is for scientists who have made significant contributions to tropical medicine and health in their broadest sense. The first recipient in 1927 was a nutritionist, Professor B. C. P. Jansen, for his work on thiamin. Dr. van Veen was the second nutritionist to have his work thus recognized. In 1983 he was elected a Fellow of the American Institute of Nutrition.

Dre, as he was fondly known by his friends and relatives, was a warm and understanding person, a humorous raconteur, and a good friend to many people, and he devoted much of his life to serving humanity. He will be greatly missed. He is survived by his wife, Marjorie; a son by his first wife; two grandchildren; and a sister.

Daphne A. Roe, Diva Sanjur, Michael C. Latham

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Catherine J. Personius

August 5, 1904–October 31, 1994

Emerita Professor Catherine J. Personius joined the faculty of Home Economics in 1930, when Martha Van Rensselaer and Flora Rose were co-directors. She provided a continuation of strong leadership in the college until she retired as Coordinator of Research in 1966. When she came to Cornell, a new building was in the process of being erected and before she retired she helped develop plans for a new addition.

Catherine was born in Elmira, New York, and graduated from Elmira College in 1925 with a degree in home economics and chemistry, subsequently joining the staff as foods instructor. In 1928, she completed an M.A. degree at Teacher's College, Columbia University and then accepted a teaching position at Hampton College in Virginia for two years. She was at Cornell during the thirties, a time best remembered for the depression, and joined the Home Economics staff first as an Instructor, later as a Research Assistant, or as a supervisor of the Home Management House. At the same time, like others of her generation, she studied for a doctoral degree, not in home economics, but in the field of biological chemistry, bacteriology, and physical chemistry. It is little wonder that she learned to manage time and resources, a prelude to her later career where she assumed a large range of responsibilities. After obtaining her degree from Cornell in 1937, she joined the faculty as an Assistant Professor. From 1940-43, she was an Associate Professor at the University of Wisconsin, Madison, and then was invited back to Cornell as Professor and co-Head of the Department of Food and Nutrition and a year later as Head. In 1947, she added two more responsibilities—Coordinator of Research for the College and Assistant Director of the Experiment Station. She was the first woman at Cornell to hold the latter position and one of two in the entire United States. These responsibilities she carried until her retirement. Thus not only did she have a significant role in the development of the Department of Food and Nutrition but she also influenced the direction of the College, most significantly in development of research programs.

She provided strong leadership for the Department in teaching, extension and research. Not only was she a dedicated teacher herself but she encouraged department faculty in a commitment to teaching. She was instrumental in developing courses that emphasized the physical and chemical properties of major groups of food products in relation to their utility. During most of her career at Cornell, Catherine continued to teach. She came to know the seniors well and was instrumental in encouraging them in various career paths. It is perhaps significant that she was honored in 1976 by a scholarship in her name endowed by two former students, a mother and daughter, giving us a glimpse of her impact over a generation. It is perhaps less well known that CJP, as she was known by the faculty, took time from her busy schedule to address the needs expressed by some upper level students, namely that they have the opportunity for additional depth in subject matter and be allowed to pursue individual projects in the laboratory—and the opportunity was provided. This actually became the basis for the Honors Program in Food and Nutrition started in 1961. There seems little doubt that she was ahead of her time encouraging the involvement of undergraduates in research.

Catherine was equally committed to encouraging extension and research programs in the department. In the late forties she participated in a weekly radio program, "What's New in Home Economics," where she interviewed different faculty members about research programs. She also worked with the Nutrition Council, a state-wide association, and in alternate years provided leadership for a program at Cornell where recent research findings were made available to state-based health professionals. She was more diligent than many in reviewing the various publications which were developed in the department. She also served as an Administrative Advisor on many regional research projects in the Northeast. She had a knack of posing just the right questions to steer diverse individuals toward a common goal, and was one of the most effective people in this role and was sorely missed following her retirement by those who had the benefit of her guidance.

One of the lasting influences on the college was probably her encouragement of research-based personnel as an addition to the faculty. Using her role as Coordinator of Research, she encouraged departments to seek individu-

als with discipline-based research and to encourage these individuals to adapt their research to the needs of the department program. She believed that while Home Economics was the focus of the college, the strength was in utilizing the education of those who were in areas basic to program areas in the college. She believed that students needed to understand basic principles that would enable them to use knowledge intelligently, to think analytically, critically and constructively when facing new situations.

Although her schedule did not permit extensive involvement in her own research, she was, nevertheless active with a number of research areas, and worked with graduate students. Further, during the war years, and shortly after, many new methods of food preservation and utilization were studied as part of the war effort. Her published work is found in Food Research, Cereal Chemistry, Food Technology, and Journal of Home Economics. She was recognized throughout the country for her leadership in research.

The many demands on her did not deter her from responsibility to the university community. Among her commitments were Long-Range Planning, Review of University Calendar, Executive Committee of Center for Housing and Environmental Studies, Governing Board of Social Science Research Center, Board of Control of Cornell United Religious Work, Board of Trustees Cornell Research Foundation, and the Faculty Council. It is perhaps illustrative of her career that she was the first woman to be a faculty representative on the Board of Trustees where she served from 1959-64.

At the national level, she was appointed to a number of committees, including the Executive Committee for both the Association of State Universities and Land Grant Colleges, and the Home Economics division of the Association. She also served as member of the U.S.D.A. Advisory Committee on Home Economics Research, the Commission on Home Economics and as an advisory member of the N.Y.S. Nutrition Council.

She belonged to a number of professional organizations including American Home Economics Association, American Association of Cereal Chemists, Institute of Food Technology, American Chemical Society, American Association for the Advancement of Science, among others. She was also a member of honorary societies such as Omicron Nu, Phi Kappa Phi, Sigma Xi, Phi Tau Sigma, Alpha Lambda Delta (honorary member).

She decided to retire at the peak of her career, long before any of us thought she should. After a year or so of involvement at the national level, she returned in leadership roles in the community. She was active with volunteers at the Tompkins County Hospital, and had a regular schedule there. She served as treasurer for the Directors of the Ladies Union Benevolent Society, an organization concerned with housing of the elderly. She was active at St. Paul's Methodist Church where she taught a Sunday School Class and helped with a day care program for children. In 1979, she moved to Horseheads, New York, near her family home. Here she worked with nursery school children where interaction of the older adults and children was beneficial to both. Catherine once said that Flora Rose was a person of enthusiasm who would try anything once and that Martha Van Rensselaer was a very effective leader. Catherine had qualities of both.

Throughout her life she retained a strong interest in activities at Cornell. Her greatest regret being away from Ithaca was the loss of interaction with former colleagues and the opportunity to take advantage of Cornell events. Although during her career at Cornell she was involved in what can only be described as a rigorous program, she still took time to encourage students and faculty. She routinely did more than she asked of any of us. She perhaps exemplified the motto "Freedom with Responsibility." As faculty members we had leeway to develop different pursuits and interests with the understanding (never expressed) that we had a responsibility to both the department and to the college. By those who knew her, either as a student or a colleague, she will long be remembered and she has significantly influenced our lives.

Henry Ricciuti, Mary A. Morrison

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Harold H. Williams

August 29, 1907–February 25, 1991

Harold H. Williams was appointed professor of biochemistry in Cornell's Graduate School of Nutrition and the Department of Biochemistry and Nutrition in 1945, one year after the department was established. He served as department head from 1955 to 1964. He retired as professor emeritus in 1973. During these years, he made a significant contribution to the excellence of biochemistry on this campus.

Professor Williams was born in Blanchard, Pennsylvania, in 1907 and received a B.S. degree in agricultural biochemistry in 1929 from Pennsylvania State College. He was an undergraduate research assistant in their Institute of Animal Nutrition. He received a Ph.D. degree from Cornell in 1933 in animal nutrition, biochemistry and physiology. During his years as a graduate student, he served as a graduate research assistant in the Laboratory of Animal Nutrition. Following completion of his Ph.D. degree, he studied for two years as a Sterling Fellow at Yale University School of Medicine under Lafayette R. Mendel, one of the great pioneers in nutrition and biochemistry.

Immediately prior to his return to Cornell, Harold Williams spent four years in the research laboratory of the Children's Fund of Michigan, first as a research associate, then as assistant director and finally as associate director. Here he studied the nutrition of growing children. This organization has established standards of nutrition for normal children and has studied the vitamin and mineral composition of human milk and the nutritional problems of children afflicted with leukemia, anemia, nephrosis and diarrhea. While with this project in Detroit, Professor Williams was also a special chemistry instructor at Wayne University and at the Children's Hospital of the Medical School at Wayne.

At the same time, Dr. Williams and Dr. Icie Macy Hoobler, director of the research laboratory, also wrote Hidden Hunger, which was published just before Dr. Williams came to Cornell. This book, prompted by the worldwide nutrition problems pointed up by World War II, is a semi-popular text describing human food and nutrition problems.

Another project of Professor Williams while he was in Detroit during wartime dealt with the treatment of burns. As a civilian with the Office of Scientific Research and Development, he worked with Dr. John Hirshfeld, a surgeon who has since come to Ithaca, to determine the hitherto unknown connection between burns and human metabolism.

At Cornell, Professor Williams continued to study human nutritional requirements and explored various aspects of nitrogen and amino acid metabolism, the biochemistry of the digestive processes of ruminants, milk synthesis in man and animals, and the biological activity of selenium in microorganisms. He published more than 140 scientific papers on these subjects. In 1953, he was honored by being given the Borden Award of the American Institute of Nutrition for his studies on milk production. He was elected a Fellow of the American Institute of Nutrition in 1983.

During his tenure at the State College of Agriculture and Life Sciences, Cornell, Professor Williams served on numerous university and government committees including the Nutrition Research Advisory Committee of the U.S. Department of Agriculture; the Food and Nutrition Board of the National Academy of Sciences-National Research Council; the Nutrition Study Section of the National Institutes of Health; and the United Nation's Food and Agricultural Organization Expert Panel on Milk Quality. In 1971, as an authority in nutritional biochemistry, he gave expert testimony to the Senate Subcommittee on Labor, Health, Education and Welfare Appropriations. The objective was to urge the committee, by its support, to continue and enhance the international leadership of the United States in the life and health sciences. He also served on the editorial board of the Journal of Nutrition and as an overseas correspondent of "Nutrition Abstracts and Reviews." While in Detroit, Professor Williams was chairman of the Detroit section of the American Chemical Society, and in 1951 he was chairman of the Cornell section. He was also a fellow of the American Association for the Advancement of Science, a member of the American Insti-

tute of Nutrition, the American Society of Biological Chemists, the Society of Experimental Medicine and Biology, Sigma Xi, Phi Kappa Phi, Phi Lambda Upsilon, and Alpha Zeta.

As head of the Department of Biochemistry, Dr. Williams was very interested in the teaching program, encouraging the staff to attempt new courses and methods of presentation.

Professor Williams was married in 1935 to Agnes T. Gainey, a Cornellian and Ithacan. After he retired, he and his wife were on the golf course early on many a morning from the time that the snow had departed until cold weather came again. They were constant companions, sharing an interest in sporting events, concerts, other university functions and travel. Dr. Williams was extremely proud of his three daughters who were all Cornell graduates. After retirement, he and his wife enjoyed a family reunion each summer in the West.

He is survived by his wife, Agnes Gainey Williams of Ithaca, and daughters Patricia of Washington, D.C., Margaret of Encinitas, California, and Kathleen of Denver, Colorado.

Louise J. Daniel, Leon A. Heppel

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Charlotte Marie Young

August 19, 1910–July 2, 1979

Charlotte Young began her career at Cornell in 1942 as a member of the newly organized School of Nutrition. From that time onwards until her retirement in 1974, she carried a triple appointment in the Graduate School of Nutrition, the New York State College of Home Economics (now Human Ecology), and in the University Health Services. We are indebted to her for the development of a strong program in human nutrition at Cornell. She also provided a nutrition counseling service for students which was a pioneer achievement at the University.

Professor Young obtained her bachelor's degree with high distinction from the University of Minnesota in 1935. Following graduation from a program that provided training in nutrition, she became a dietetic intern at the Indiana University Medical Center. She then proceeded to carry out her graduate work and obtained the Master of Science and Doctor of Philosophy degrees from Iowa State University, receiving her doctoral degree in 1940. From 1940-42 she taught nutrition at Michigan State University. She very soon became recognized for her studies in human nutrition, and it was this early recognition that encouraged the late Professor Leonard A. Maynard to bring her to Cornell.

Her research was in four major areas: dietary methodology, food habit determinants, obesity, and body composition studies. Data from her studies on the body composition of girls and young women have provided national and international standards for normative values. At Cornell she will also be much remembered for her teaching program in public health nutrition, in which she trained future public health nutritionists in a program which, unlike others in the United States, functioned independently of a school of public health. She was also instrumental in obtaining wide national recognition for the Master of Nutritional Sciences (M.N.S.) degree at Cornell.

Charlotte's administrative duties at the University included being the secretary of the Graduate School of Nutrition and secretary of the Graduate Faculty.

She also developed nutrition training programs outside of Cornell and outside of the United States. In 1956 she was invited by the World Health Organization to serve on the technical advisory committee of the Institute of Nutrition of Central America and Panama (INCAP). As a result, she developed the plans for a university-based school of nutrition to be built in Guatemala. In 1966 the first graduating class from that program honored her for her work there. She also served as an Agency for International Development consultant to the Agrarian University, La Molina, Peru, in 1963 and was successful in the establishment of a department of home economics at that university.

She is particularly well known for the national guidance she provided in the training of dietitians and in the development of their professional society, the American Dietetic Association (ADA). She joined the Executive Board of the ADA in 1962, and subsequently was speaker and delegate-at-large of that organization.

Her public appointments were to the board of directors of the American Board of Nutrition (1962); membership of the Advisory Board of the National Heart and Lung Institute from 1973 onward; and her membership of the United States national committee of the International Union of Nutritional Science (IUNS). She also served as consultant to the United States Department of Agriculture and served on a panel of experts for the Federal Trade Commission.

She was multiply honored for her academic and public service achievements. In 1958 she obtained the Centennial Award from Iowa State University; she also received the Borden Award for research from the American Home Economics Association in 1963; the distinguished achievement citation from Iowa State Alumni Association in 1971; and the Marjorie Hulsizer Copher Award from the American Dietetic Association in 1972. She was the ninth Lena F. Cooper Memorial Lecturer of the American Dietetic Association in 1971, and the seventh Lydia J. Roberts Memorial Lecturer in 1972. In 1973 she was awarded an honorary Doctor of Science degree by Syracuse University.

She was particularly interested in the national honor society Omicron Nu, and served as its president. Both in Ithaca, and after her retirement, in Minneapolis, she was a prominent lay member of the Protestant Episcopal Church.

Charlotte will be remembered for her many contributions to nutrition and dietetics, but particularly at Cornell for her part in creating a center of excellence in nutrition.

Daphne A. Roe, Norman S. Moore, Lemuel D. Wright

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Richard Henry Barnes

June 29, 1911–November 16, 1978

Richard Henry Barnes came to Cornell in 1956 as director of the School of Nutrition, which was then an endowed unit of the University. From that time onwards his guiding role in the development of nutritional science became increasingly apparent. Under his leadership an outstanding program of graduate education in nutrition was established at Cornell. Soon after Dick arrived on the Ithaca campus, the name of the School of Nutrition was changed to the Graduate School of Nutrition. Dick was dean of the school from 1956-73. The graduate teaching and research program of the school flourished through his foresight in bringing together a multidisciplinary core faculty including not only nutritionists with expertise in animal nutrition, public health nutrition, and international nutrition but also biochemists, physiologists, physicians, a food economist, and a psychologist.

In 1973, when it was decided to amalgamate the various nutrition units at Cornell to form the Division of Nutritional Sciences, Dick stepped down as dean and was appointed the James Jamison Professor of Nutrition.

Born at La Jolla, California, in 1911, he received the Bachelor of Arts degree in chemistry at San Diego State College and then worked for four years as a research chemist at Scripps Metabolic Clinic at La Jolla. In 1937 he went to the University of Minnesota where he was granted the Doctor of Philosophy degree in physiological chemistry in 1940. After obtaining his doctoral degree, he stayed at the University of Minnesota until 1944, first as an instructor and then as an assistant professor.

Dick joined the Medical Research Division of what was then the Sharp and Dohme Company in 1944 as a biochemist, where he became associate director of research in 1950. In 1955 he was appointed director of biochemical research for the combined laboratories of Merck, Sharp and Dohme.

From his early career onward, Dick maintained a deep interest in the role of microorganisms on the nutritional state of the host. After he came to Cornell, his work in this field was carried out with outstanding success due to Dick's genius for meticulous experimental design and the outstanding technical skills of his associate, Eva Kwong. Major advances made through this research program were in the development of a better understanding of the limitations as well as advantages of using the laboratory rat in nutritional research. While it was previously known that the intestinal microbial synthesis of vitamins contributes positively to the nutritional economy of the rat because these vitamins are recycled by the process of coprophagy, Dick discovered the extent to which coprophagy prevention as well as administration of antibiotics altered the rat's nutrient requirements. In the course of these studies, he devised methods to monitor changes in gut microflora by examination of urinary metabolites. These techniques were later applied to studies of factors influencing the microbiological degradation of nutrients in human subjects.

Dick taught that major problems in nutrition can best be solved by a multidisciplinary approach, and in his further studies he put his teaching into practice. About five years after he came to Cornell, Dick developed an interest in relationships between early malnutrition and learning disability. Tracing the development of his own investigations in this field serves to illustrate his particular genius for collaborative research. Through a close association with the distinguished Mexican nutritionist, Dr. Joaquim Cravioto, he learned of the defect in cognitive and emotional development that follows severe protein-energy malnutrition in infants and young children. In the early 1960s when Dick first addressed this problem, the causes of retardation in these children were not well understood. Current theories were that early food deprivation caused damage to the developing brain or that infants and children who were malnourished were also socially disadvantaged because they came from impoverished households where there was a lack of stimulation and a reduced opportunity to satisfy their emotional needs. Dick believed that a new understanding of the respective roles of malnutrition and other environmental factors in determining mental development could be gained by animal experimentation. Choosing weanling rats and pigs as animal models for the human condition, he had to develop techniques to produce states of protein-energy malnutrition that were

analogous to those occurring in children, and he had to have testing procedures available that would permit valid behavioral testing.

In order to produce marasmus and kwashiorkor in baby pigs, Dick obtained the collaboration of Wilson Pond, who had broad experience with nutritional studies in swine. Behavioral tests for use with the pigs were newly developed by Ulric Moore, whose experience was in psychological techniques, and later David Levitsky, who was also trained as an experimental psychologist and worked with Dick to develop sensitive tests that indicated change in the exploratory activity of young rats that had been malnourished.

Important findings were that the effects of early malnutrition resembled those of environmental isolation and that animals that have been malnourished are less accessible to training. Evidence was also obtained that environmental stimulation may reverse or diminish the adverse effects of early malnutrition on behavioral development.

Although most widely recognized for his research, Dick became interested in the 1970s in nutrition policy and the translation of scientific studies into public policy. His work on various committees, including the Food and Nutrition Board of the National Academy of Sciences National Research Council, and his consulting work reflected these new interests.

From 1959 to 1969 Dick was editor of the Journal of Nutrition, and the editorial office was in Savage Hall.

Dick made outstanding contributions to a number of professional organizations. He was chairman of the Division of Biological Chemistry of the American Chemical Society from 1951 to 1953. During 1968-69 he was president of the American Institute of Nutrition, and during 1973-74 he was president of the American Societies for Experimental Biology.

Honors conferred upon him included the Borden Award of the American Institute of Nutrition in 1967 and the Conrad Elvehjem Award for Public Service to the American Institute of Nutrition in 1975. Also in 1975, a special symposium was held in Dick's honor at Cornell, at which outstanding investigators in the field of malnutrition and mental development were brought together.

Dick maintained a deep interest in his graduate students and kept up a lively correspondence with many of them after they completed their studies at Cornell.

His wonderful family life was an inspiration to all of us who visited him in his home. He died on November 16, 1978, after an extended illness most bravely borne. He is survived by his devoted wife, Marjorie, their three daughters, Kyle, Anne, and Lisa, and four grandchildren.

Michael C. Latham, Donald B. McCormick, Daphne A. Roe

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Lemuel Dary Wright (March 1, 1913–May 12, 1995)

March 1, 1913–May 12, 1995

The period from 1940 to the mid 1950s was one of the most exciting eras in nutritional science. New growth factors were discovered, several were established as vitamins, their structures were determined, and synthetic pathways were developed. As metabolic pathways were discovered, the central role of vitamins in intermediary metabolism became known. Research groups put together by many of the major pharmaceutical companies were central to these discoveries, as they engaged in a race to discover these important compounds and to gain the benefits of potential patents and markets that would develop. Researchers at these companies, such as Thomas Jukes, Karl Folkers, Bob Stokstad, Harry Broquist, and Lemuel D. Wright, along with others, were central in adding so much to our present knowledge of vitamins and their metabolic roles. As the era of vitamin discovery wound down, these industrial laboratories turned to new pursuits, and many of these scientists continued their metabolic studies in an academic setting. Lem Wright was one of these scientists who contributed so much to this golden era of discovery.

Lemuel Dary Wright, Lem to his friends, was born in Nashua, New, Hampshire, on March 1, 1913, to Clarence Herman Wright and Avis Caroline Wright. His father was an accountant who had his own firm and his mother was an accomplished amateur artist who painted landscapes of lovely New England scenes. Lem attended public elementary school and high school in Nashua. Lem was the oldest of four children. His two brothers became zoology professors and eventually department heads. In fact, Lem was the eldest of a group of nine cousins who became accomplished academics or professionals – five became college professors, one a medical doctor, another a nurse.

Lem received a B.S. degree in 1935 and an M.S. degree in 1936 in chemistry at the University of New Hampshire. He spent a year at Pennsylvania State University in 1936-37 as a graduate assistant in agricultural biochemistry, but he completed his graduate work at Oregon State College, where he received his Ph.D. in 1940. His Ph.D. thesis was entitled "The Role of Cystine and Methionine in Lactation." With a Rockefeller Foundation fellowship, Lem was a postdoctoral fellow at the University of Texas under R. J. Williams and Esmond Snell. This period at Texas had a major influence on his future research interest in the B-vitamins and an even greater influence on his personal life. While in Austin, he met and married Ernestine Quarles, who was technical assistant to R. J. Williams. Lem and Ernestine had five daughters, Carolyn, Martha, Priscilla, Barbara, and Nancy. The extended family eventually included 10 grandchildren. Ernestine became a highly respected mathematics and science teacher in the Ithaca City School System.

It was at Texas where Lem Wright began his work on micronutrients that are needed for the growth of yeast and bacteria. This research approach was important in the eventual isolation and characterization of many of the B-complex vitamins. With E. E. Snell, he published a microbiological assay for nicotinic acid as the topic of his first paper in the *Journal of Biological Chemistry* (Snell and Wright 1941). His first academic appointment was in the Department of Microbiology at the Medical School of the University of West Virginia in Morgantown. In recalling his days at West Virginia, he would describe the frustrations of beginning a research program around a single shared autoclave, which led to his accepting an appointment at Sharpe and Dohme laboratories in Glenolden, Pennsylvania, in 1942. He held positions of biochemist, director of microbiological research, and assistant director of pharmaceutical research while at Sharpe and Dohme.

He worked at Sharpe and Dohme during an exciting and extremely competitive period of identification, characterization, and synthesis of microbiological growth factors, many of which were identified as essential vitamins for animals and humans. He published extensively during his days at Sharpe and Dohme on folic acid, pantothenic acid, biotin, ρ-amino benzoic acid, and orotic acid. He also published several papers on the renal clearance of amino acids by rats, again using his microbiological methods for amino acid analysis.

In 1951, he and his Sharpe and Dohme colleagues published a paper in Science (Wright et al. 1951) describing biocytin (ε-N-biotonyl-L-lysine), which was later found by Harlan Woods and others to be the turnover product of carboxylases, that contained covalently bound biotin. Lem and his coworkers later described the isolation of

biocytin from yeast extract and carried out studies on its biological activity. He carried out extensive studies on biotin metabolism, along with work on biocytin.

In the mid 1950s Lem and his colleagues at Sharpe and Dohme began to characterize a new acetate-replacing factor which eventually led to the discovery of mevalonic acid (Wright et al. 1956), a critical derivative in sterol biosynthesis.

In 1956, Lem's boss at Sharpe and Dohme, Dr. Richard H. Barnes, moved to Cornell to become dean of the graduate school of nutrition, replacing L. A. Maynard. Lem moved to Cornell with Dr. Barnes to become professor of biochemistry and nutrition. In recognition of his highly productive career, he was awarded a research career award from the National Institutes of Health, that supported his position until he retired from Cornell in 1978. At Cornell, Lem became part of a biochemistry group in the graduate school of nutrition that included two young biochemists beginning their academic careers, Donald McCormick and James Gaylor. Later Donald Zilversmit also joined the group of biochemists in the school. The graduate school of nutrition was incorporated into the Division of Nutritional Sciences at Cornell in 1974.

At Cornell, Lem continued his work on mevalonic acid, and he became interested in aspects of cholesterol biosynthesis. He also carried out studies of cholesterol solubility in model systems. Along with Don McCormick, he continued his work on biotin metabolism in animals and microorganisms. He directed the work of a number of graduate students at Cornell. In addition to the students he advised as major professor, he advised many minors in biochemistry from numerous fields on the campus. He spent a sabbatical leave from Cornell in 1968 at the Max Planck Institute in Munich, Germany.

He published more than 200 papers during his active research career, and he contributed extensively to reviews dealing with microbiological methods and vitamin determination in a number of edited volumes in this area. Along with Don McCormick, Lem edited the first 6 of 12 volumes of "Vitamins and Coenzymes" in the series Methods in Enzymology. He was active in many societies including the American Society of Biological Chemists, The American Institute of Nutrition, and The Society for Experimental Biology and Medicine and was a Fellow of the New York Academy of Sciences and the American Association for the Advancement of Science. He served on many editorial boards of journals and on study sections of the National Institutes of Health.

In 1958, Lem received the Borden Award from the American Institute of Nutrition. The award was for his outstanding studies in microbiological chemistry, including his studies on biocytin, on microbiological assay procedures, and for the discovery and synthesis of mevalonic acid as an important intermediate in cholesterol biosynthesis. He received the Outstanding Achievement Award from the College of Technology of the University of New Hampshire in 1969, and an Alumni Association Certificate of Recognition from Cornell's College of Agriculture and Life Sciences in 1978. He was elected a fellow of the American Institute of Nutrition in 1983.

Upon his retirement in 1978, Lem was elected an emeritus professor of nutritional biochemistry at Cornell. He obtained a certificate in clinical chemistry from the American Board of Clinical Chemistry in 1980, and he spent some time working in the laboratory of the Tompkins County Hospital. Upon retirement, his most important activity was his election as graduate faculty representative for the graduate field of nutrition at Cornell. In this position he managed the graduate student admissions process for the field. This responsibility gave Lem a great deal of satisfaction, as he loved the contact with graduate students, and he took great pride in the students that were admitted. He not only managed the admissions process, but he was also active in recruiting students and encouraging them to come to Cornell after they had been accepted to the graduate program. In spite of his normally reserved manner, he gave advice to graduate students freely and often provided a sympathetic ear to their problems. He was not overly sympathetic; however, he had a "crying towel" in his office that he offered to students who had complaints he thought were not well-justified. A cohort of former graduate students at Cornell has fond memories of Lem Wright as an important figure in their graduate student days. He became ill and had a stroke in 1985 that impaired his ability to carry on his work with graduate students. His family indicates that this loss of ability to carry on this work was to him one of the most devastating effects of his illness.

Lem was in many ways the quintessential New Englander, with his rock-solid integrity, dry wit and taciturn ways. For the younger faculty who often tried to penetrate his Yankee reserve with pranks, he was a fun colleague. He loved apples and would eat them core, seeds and all. He also loved pickles, and one day his colleagues added an enormous amount of salt to his plate of pickles when Lem was looking elsewhere. To the amazement of his luncheon partners, he ate the pickles without a word or change in expression. His New England common sense and reserve also were stabilizing influences on his younger colleagues during the difficult years of student unrest at Cornell in the late 1960s.

Lem enjoyed skiing, especially on Mount Hood when he was a student at Oregon State, and he loved climbing in the New Hampshire Mountains. He played a baritone in a National Guard band in his early years, and he later played the flute in a community band. He was also an accomplished photographer who used his laboratory skills to develop and print his own pictures. His most important hobby, however, was ham radio. During the Vietnam War, he was a member of the Navy Military Affiliate Radio System, that relayed messages to servicemen in Vietnam through a telephone patch to his radio. In 1972, he spent more than a week in Elmira, New York, during a major flood to help coordinate emergency services.

He was a major contributor to nutritional science at a time of great excitement when the identification of essential nutrients was the central theme of research. His work as a microbiologist and as a nutritional biochemist made him one of the major figures of the field. He was admired for his unselfishness and scientific integrity. He insisted on high academic standards. His qualities as a scientist, family man, and thoughtful advisor made him an admired colleague and friend who enriched the nutritional science community.

Acknowledgment

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Malden C. Nesheim and Donald B. McCormick

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Milton Leonard Scott (1915–2001)

February 21, 1915–July 11, 2001

The discovery of the essential vitamins and inorganic elements marked an exciting, and productive, period in the history of nutritional science. Nowhere was the application of these discoveries more rapid than in the field of poultry husbandry. The rise of the modern poultry industry closely parallels the discovery of essential nutrients that allowed the intensive raising of chickens, turkeys and ducks, as well as the intensification of egg production. Milton L. Scott was one of the chief scientists of this era, who not only contributed to the application of nutrition knowledge, but also participated in the generation of basic nutrition information important to the field of nutrition.

Milton Leonard Scott was born in Tempe, Arizona, on Feb. 21, 1915, to Ione Greenleaf Scott and Squire Milton Scott. His mother was a school teacher and his father was somewhat of a jack-of-all-trades who moved frequently following available employment. For this reason he attended secondary schools in Tacoma, Washington, Glendale, Arizona, and Colton, California, before he graduated from Riverside High School in Riverside, California, in 1932. He then attended Riverside Junior College before enrolling in the University of California at Berkeley, where he received a BA degree in chemistry in 1937. Upon graduation from Berkeley, his parents gave him a suitcase and ten dollars, and he hitchhiked across the country to Buffalo, New York, to begin a new job as a chemist with the farmers' cooperative, Grange League Federation (GLF). He was first employed as a routine analyst, but soon was assigned to work on the vitamin content of feeds. In this capacity he developed improved methods for the analysis of riboflavin and thiamin. This work brought him in contact with Leo C. Norris, a Professor in the department of Poultry Husbandry at Cornell University, who was involved in research on the vitamin and mineral needs of young chickens. Norris was so impressed with Scott's enthusiasm and abilities that he invited him to become a graduate student at Cornell and he arranged to finance his graduate work. Scott enrolled as a graduate student at Cornell in 1942 and received his PhD degree in 1945. Part of his work during wartime was to examine the nutritional value of army K rations. His PhD thesis was entitled, "Studies of organic factors required for prevention of anemia in the chicken." The search for new nutritional factors was a theme of his research at Cornell for many years.

Scott was appointed research associate in the Department of Poultry Husbandry in 1945, assistant professor in 1946, associate professor in 1948, and professor in 1953. He spent the rest of his academic career at Cornell, retiring in 1979. The faculty of the nutrition division in the Department of Poultry Husbandry at Cornell in the 1940s and 1950s consisted of L. C. Norris, G. F. Heuser, M. L. Scott, and F. W. Hill. This was an exceptionally productive group who contributed much to knowledge of basic nutrients and to the application of nutritional knowledge to the production of poultry. Scott was particularly interested in identifying constituents of natural feedstuffs that could prevent nutritional disorders in poultry. Young, rapidly growing chicks and turkeys are especially susceptible to nutritional deficiencies when fed semipurified diets.

In the 1930s, Norris had discovered the requirement of manganese and riboflavin for growing chicks. The organic factors required for anemia prevention in chicks turned out to be folic acid and Scott, along with Norris and his colleagues, studied the folic acid needs of chickens in detail. The Cornell group was also actively pursuing identification of vitamin B12 (animal protein factor) prior to isolation of the vitamin by the Merck Sharpe and Dohme Laboratories in the United States and the Glaxo Laboratories in England.

Scott was one of the early investigators to study the nutritional needs of turkeys. He determined that niacin and vitamin E were important in the prevention of an enlarged hock disorder that was severely limiting intensive large-scale production of turkeys. He found that duck rations required additional niacin to prevent a bowed leg disorder that was limiting commercial production. His nutritional studies with ducks were critical to the growth of the Long Island duck industry. Similarly, he carried out studies with pheasants at the New York State game farm in Ithaca that led to recommendations for nutrient content of rations for raising game birds throughout the US. He also was knowledgeable about the nutrition of fish and he provided guidance to many in the developing fish farming industry.

In the mid 1950s, Scott began to study a vitamin E-like activity found in brewers yeast. He showed that brewers yeast would prevent an edema (exudative diathesis) in chicks fed diets containing large amounts of torula yeast. This condition was also prevented by dietary vitamin E. His group also found that under certain conditions, chicks would show clinical signs of encephalomalacia, exudative diathesis and muscular dystrophy in response to vitamin E deficiency, but brewers yeast would prevent the exudative diathesis and methionine could prevent the muscular dystrophy. Several antioxidants were also effective in preventing encephalomalacia but were less effective against other vitamin E deficiency signs. Vitamin E would protect against all three conditions. Scott began a collaboration with Klaus Schwartz at the National Institutes of Health who was working to isolate a factor (factor 3) found in brewers yeast that prevented liver necrosis in rats. The liver necrosis was also prevented by vitamin E. Schwartz would send Scott concentrates of factor 3 for study with chicks and they were effective against exudative diathesis. Eventually Schwartz sent Scott three vials of tiny amounts of material, which when tested, prevented the exudative diathesis in chicks. The vials contained sodium selenite, selenomethionine and elemental selenium (1). This discovery was carried out at about the same time that Patterson and Stockstad (2) found, using a completely different approach, that selenium would prevent exudative diathesis in chicks.

The discovery of the nutritional importance of selenium led to a series of studies by Scott and his students on selenium requirements of chickens and turkeys under a variety of conditions. He studied the accumulation of selenium in tissues and in eggs when supplied in a variety of chemical forms. He investigated the availability of selenium from various feedstuffs. He helped show that selenium deficiency occurred in field conditions of commercial poultry production, when feed ingredients came from areas where soils were low in selenium. Scott and his students helped sort out the complex relationship between selenium, vitamin E, antioxidants and the sulfur amino acids, methionine and cystine. His work was responsible for gaining FDA approval of selenium additions to commercial poultry rations.

In 1969 Scott and his students were able to produce a selenium deficiency under conditions in which vitamin E was not effective, thus confirming its status as a nutrient in its own right (3). Following the reports that selenium was a component of glutathione peroxidase, his laboratory examined the level of this enzyme in the tissues of chicks that were fed diets deficient or adequate in selenium. They studied the relationship of diet composition to selenium and vitamin E requirements and showed that levels of unsaturated fatty acids in the diet had a major influence on vitamin E and selenium requirements.

Scott and his students examined a wide variety of other problems that influenced the production of poultry. The concern of the potential effects of DDT and PCBs on egg shells of wild birds led to studies on the effect of these environmental pollutants on egg shell formation in laying hens. Scott examined various forms of calcium as they affected egg shell strength in hens. He found that calcium fed in particulate form as opposed to powdered limestone would allow sufficient consumption of calcium to allow good egg shell formation. This practice is still followed in the poultry industry. He spent several months in the Philippines as part of a Cornell program to aid the graduate program of the College of Agriculture at Los Banos. This experience helped him gain appreciation of the international challenges in poultry production.

Probably no other person was in as much demand to provide advice to the poultry industry worldwide, as was Milton Scott prior to and for many years after his retirement. He and his wife Dorothy traveled throughout the world, consulting, participating in conferences and seminars, or advising international agencies. His enthusiasm and warmth enlivened his lectures and presentations.

Scott worked on virtually all of the various nutrients at one time or another in his active research career. He published over 200 peer-reviewed papers or book chapters and numerous abstracts of papers presented at scientific meetings. He was a prolific contributor to trade publications associated with the poultry industry. In 1969 he published, along with M. C. Nesheim and R. J. Young, Nutrition of the Chicken which became the basic text and reference book for poultry nutrition for the next 25 years. Two more editions of the book were published in 1976 and in 1982.

After his formal retirement from Cornell, he wrote Nutrition of the Turkey in 1987 and Nutrition and Management of Duck with William F. Dean in 1991. These books were published and distributed by his own publishing company. He also used his experience in comparative nutrition to publish The Nutrition of Humans and Selected Animal Species in 1986. This book makes suggestions as to principles for use in formulating diets for many species of captive animals. Scott spent some time in the 1970s working with the San Diego zoo on nutrition problems of exotic mammals and birds.

Scott received an impressive variety of honors in recognition of his work. He received the American Feed Manufacturers Award, the National Turkey Federation Award, the Distillers Feed Research Council Award, the New York Farmers Award for Contributions to Applied Animal Nutrition, the Borden Award from both the Poultry Science association and the American Institute of Nutrition, and the Commemorative Medal for trace mineral research. He was elected a Fellow of the American Society of Nutritional Sciences in 1986. Cornell University awarded him a Jacob Gould Schurman Chair, a distinguished chair named for Cornell's third president. He served as chair of the Department of Poultry Science for three years before his retirement from Cornell in 1979.

He was an advisor to more than 35 graduate students, many of whom became leaders in areas of research, not only in animal nutrition but also in other fields. He was a stimulating research advisor who kept challenging his students with ideas. His students were free to explore their ideas and approaches to a research problem. He taught a graduate course in vitamins and minerals for the nutrition students across campus. It was enlivened by his first-hand knowledge of the excitement of the discovery of the essentiality of these nutrients and the competition between laboratories for identification and structure determination.

Along with his impressive professional achievements, Milton Scott had a full and active personal life. His warm and friendly personality made him extremely well liked. He was an accomplished bridge player, he played golf, and he loved fishing. He would take many fishing trips with his colleagues and students and usually ended up with the most fish. He enjoyed teaching his students the art of fishing. He brought his scientific background to the testing of various fishing lures. His innate optimism made him believe that the next cast would catch the "big one," even after a long day of unproductive fishing. This optimism carried over into all aspects of his life. Dorothy and Milt made their home a warm and friendly place to entertain students and campus visitors. He enjoyed the travel associated with his consulting activities and he used these trips to explore many parts of the world. He was an accomplished photographer and he loved to talk about his trips and show his slides of the things he had seen.

He met his wife, Dorothy Jaeger, at a company picnic while he was working for the GLF laboratories in Buffalo. They had two daughters, Grace Saroka and June Kopald. He doted on his seven grandchildren and eight great grandchildren and he shared his love of travel and fishing with them. He was handicapped by illness the last few years of his life, but he kept active and continued to write. He died on July 11, 2001, after a long battle with cancer. With his passing, the nutrition community lost another link to the golden age of nutrient discovery.

Acknowledgments

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Daphne Anderson Roe (1923–1993)
January 4, 1923–September 22, 1993

Daphne Roe was one of the nutrition community's unique personalities. Her broad interests and life experiences enriched her subject, her colleagues, and her students. She was a physician, a nutritionist and a practicing dermatologist as well as a researcher, teacher, historian, and staunch advocate for the elderly. Although she had retired from Cornell University in 1993, she was embarking on a new career when an accident cut short her productive and full life.

Daphne Sophie Anne Anderson was born in London, England, on January 4, 1923. She entered the London School of Medicine for Women (Royal Free Hospital) in 1940, just prior to her 18th birthday, and became qualified as a physician in 1945. She obtained her medical degree (M.B., B.S.) from the University of London in 1946 and a diploma in child health. In the next 4 years she qualified as a Member of the Royal College of Physicians and obtained her M.D. degree. Her medical training began as London was in the midst of the air war of World War II. She spent nights on fire watch on the roof of her hospital during the incendiary and V-2 attacks on London. Those who knew her can appreciate the enthusiasm and vigor with which she carried out these duties.

During her last year of medical school, she was chosen as an assistant to Lucy Wills, who was known for her studies of the anemia of pregnancy. The "Wills factor" was eventually identified as folic acid. During Daphne's study in her laboratory, Dr. Wills was responsible for overseeing the nutrition intervention for a group of New Zealand prisoners of war who had been sent to England after being in labor camps. Daphne continued to work with Dr. Wills after completing an internship at the Royal Free Hospital, when she became the A.M. Bird scholar in pathology. She worked on nutritional megaloblastic anemias and the management of extracellular fluid volumes of women with toxemia of pregnancy. She clearly admired Dr. Wills and later wrote a biography of her for The Journal of Nutrition.

However, characteristically, Daphne found pathology too divorced from patient-oriented clinical medicine, and she undertook postgraduate study in dermatology at the Institute of Dermatology of the University of London. She was awarded the Chesterfield Medal in Dermatology for outstanding performance, and was the first Royal Free Medical School graduate to enter this specialty. Daphne also took two years of training in applied physics and radiation therapy in dermatology, and received a diploma in Medical Radiotherapy (D.M.R.T. London) in 1952. She was then appointed first assistant in dermatology and radiotherapy at St. Johns Hospital for diseases of the skin.

In 1953, Daphne obtained a fellowship from the Royal Society of Medicine and became a research fellow in dermatology at the Massachusetts General Hospital where she worked with Irvin Blank. This fellowship period eventually changed the course of her life and her career. When she was returning to England from study in Boston, she met Albert (Shad) Roe on the airplane. He was an art historian who had received his Ph.D. from Harvard in 1950 and was just beginning his academic career. They were married in 1954 and she began to make her career in the United States. Her husband held academic appointments at several colleges during the period from 1954 to 1961, and Daphne followed him with short-term appointments at Vassar College in the department of physiology, the Memorial Hospital in Wilmington, Delaware, and then as a research associate in dermatology at the University of Pennsylvania.

Daphne came to Cornell following her husband's appointment as professor and chairman of the Department of History of Art at Cornell in 1961, where he stayed for the remainder of his academic career. She was first appointed a research associate without salary in the Graduate School of Nutrition and soon after became part of a research project that paid her a salary. She worked with Leo Lutwoik, who was responsible for a clinical research unit in Cornell's student infirmary (Sage Hospital). For the remainder of her career she became more focused on issues of nutrition. Her appointment was changed to clinical assistant professor in 1963 as she volunteered to participate in the teaching program of the Graduate School of Nutrition. She was made associate professor with tenure in 1970 and later promoted to full professor in 1976.

She kept her association with medicine by having an appointment in the Department of Medicine at Cornell Medical College in New York City, and she was an adjunct professor at the State University of New York Upstate Medical Center in Syracuse, New York. She would give lectures there regularly during her Cornell years. During the time Daphne was a Cornell faculty member, she also maintained a private dermatology practice in Ithaca, spending two half days a week maintaining her contact with patients whom she valued so much. Daphne was family physician to her faculty colleagues and graduate students, as she was often consulted on some health concern her associates would have. She would prescribe appropriate medication or refer her colleagues to other medical providers.

Daphne Roe's research career progressed through a series of stages, still very much related to her training in medicine and dermatology. Her early papers dealt with diseases of the skin and arose from studies begun in London at St. John's Hospital and then further developed during her research fellowship at Massachusetts General Hospital and at the Dahring Laboratories at the University of Pennsylvania. Of particular interest were cutaneous diseases associated with abnormal keratinization. She published a large number of papers dealing with psoriasis, and while at Cornell she investigated the relationship of taurine and dietary sulfur containing amino acids to psoriasis. Patients with active psoriasis showed sensitivity to dietary taurine, and Daphne developed analytical methods for taurine in food and carried out taurine balance studies in subjects with psoriasis and with controls. She became interested in factors influencing the availability of sulfate for detoxification of some phenolic compounds, particularly indole. She was able to show that indole toxicity in protein-deficient rats could be overcome by additional dietary methionine and/or inorganic sulfate. This line of investigation stimulated her interest in drug nutrient interactions that was to occupy her writings and investigations over the next several years.

The ideas she developed led to her book Drug Induced Nutritional Deficiencies published in 1976. The book was primarily directed to physicians. She called attention to the fact that widely used medications such as anticonvulsants, antimalarials, antituberculosis drugs, and oral contraceptives can cause vitamin deficiencies. Mechanisms such as impaired absorption, increased excretion or decreased nutrient utilization were described for drug-induced nutritional deficiencies. The types of drugs and the mechanisms whereby the drug affected nutrient requirements were described in the book, which was well referenced. Daphne published an expanded and revised edition of the book in 1985.

Daphne also published several papers on nutrition and alcohol relationships. With her students, she showed that alcohol ingestion would induce riboflavin deficiency in hamsters, when dietary riboflavin was marginal. She became interested in fetal alcohol syndrome and published on aspects of prenatal alcohol exposure and development of gluconeogenic enzymes. With her student D. E. McLain, she developed a model for study of fetal alcohol syndrome in ferrets, carrying out several studies dealing with the use of ferrets as an animal model in biomedical research. Typically, Daphne extended her studies of alcohol by writing several general articles on alcohol and nutrition for dietitians and physicians, and she published a book in 1980 entitled Alcohol and the Diet.

In the late 1970s, the Division of Nutritional Sciences at Cornell refurbished a metabolic unit for outpatient dietary studies with human subjects. Daphne was named director of the Frances Johnston-Charlotte Young Human Nutrition Unit and she conducted a number of collaborative human studies in the unit over the next few years. She served as the unit's physician and carried out all the screening and monitoring of the subjects herself. She enjoyed this work immensely and spent considerable time with the subjects of her studies, as well as with the graduate students involved. Projects in the metabolic unit involved investigations of dietary fiber on colonic function and effects of exercise on riboflavin requirement of young women. She became interested in photodegradation of carotenoids in human subjects and the influence of ultraviolet light exposure on plasma carotenoid levels of individuals. She also collaborated in studies of human energy expenditure carried out in the unit.

By the mid-1980s, Daphne began to develop a major interest in work with the elderly. Her strong interest in drug-nutrient interactions and the use of prescription and nonprescription drugs by elderly patients seemed to naturally lead to her interest in nutrition problems of the elderly. She carried out a major evaluation of a home delivered meals program for the frail elderly of New York State. This was done in association with the New York State Department of Health and the New York State Office of the Aging. She developed a strong interest in nutri-

tion surveillance of the elderly, and she and her students were concerned with methods for developing indicators of nutritional health of the elderly. She was interested in programs that provided home services to the elderly so that they were not cared for in institutions. Working closely with service providers at the state and local level, Daphne helped to design programs to maintain the independence of elderly individuals who experienced health and mobility problems.

Daphne also had an interest in nutrition and health of poor nations. This arose from her close contact with graduate students from developing countries. She made several visits to countries in the Caribbean to work with graduate students. She also spent a sabbatical leave in Kenya as a visiting faculty member at the University of Nairobi. There she taught in a new course for master of science students, but also delighted her students by conducting clinical visits in the field.

Daphne Roe's research and teaching were highly integrated, and she involved her graduate students intimately in all aspects of her research program. She was a sought after graduate advisor. Her research programs involving human subjects, and emphasis on issues of clinical significance were attractive to nutrition graduate students. Daphne was also a sympathetic and supportive graduate advisor. During her time at Cornell, Daphne was chairperson of the graduate committee for more than 75 students, about one third of which were Ph.D. students. She was also an active undergraduate advisor.

She loved to teach and regularly taught courses in geriatric nutrition, clinical and public health nutrition, nutrition and the chemical environment and human metabolic studies. When a new course was considered, Daphne would often volunteer to teach it, even when she already carried a substantial teaching load. She was a faithful attender of departmental and student seminars. Almost invariably she asked the first question after a presentation.

When Daphne was asked to write a paragraph on her philosophy of teaching, she wrote

> Central to my philosophy of individual, seminar, and classroom teaching is the deeply rooted conviction that I should always treat teaching as an adventure on which I accompany my students.... Treating teaching as a path of adventure also requires that I demonstrate my enthusiasm for the subject and impart this enthusiasm to the class.... In general, I abhor use of rehashed class materials from year to year. Instead, I redesign my courses each time I give them.

Following her death, many of her former students returned to Cornell in June 1994, for a symposium honoring their former mentor and teacher.

Daphne was a prolific writer and synthesizer. She published more than 200 papers, many of them in medical or dietetic journals, where she attempted to provide advice for practitioners on a wide variety of nutrition issues. She wrote more than 60 book chapters on a broad range of subjects, and published nine books as sole author. One of her books, Geriatric Nutrition, went through three editions. She edited a new journal, Diet-Nutrient Interactions, for several years, was a reviewer for a broad range of journals, and was a contributing editor for Nutrition Reviews. When she first came to Cornell, she edited a regular section of the New York State Journal of Medicine entitled "Nutrition Excerpts." The production of so much written and review material is even more impressive, given that Daphne suffered from extreme near-sightedness and had significant problems with her eyes throughout her career.

Daphne also was in great demand from various community groups throughout New York State for public talks on nutrition and health issues. She regularly worked on programs with Cornell Cooperative Extension, and she frequently spoke to senior citizen groups, dietetic organizations and local medical groups. She was always willing to work with these groups as she was a strong believer in providing nutrition information to the public in useful and understandable ways. Her medical background gave her great credibility in these endeavors.

Daphne and her husband had many friends among historians and she, perhaps through these associations, developed a strong interest in nutrition history. Her first book, A Plague of Corn: The Social History of Pellagra, was published in 1973. In the preface, Daphne described her long interest in medical bibliography and how she had seen pellagra in a group of elderly women during a visit to Pavia, Italy, in 1951. The book describes not only the

social history of pellagra, but also gives detailed accounts of how the disease originated and how, through human and animal studies, its cause was eventually understood. She also interviewed a number of individuals who had been involved in work on pellagra when it had been endemic in the United States. She was a frequent contributor of biographies of nutritional scientists to The Journal of Nutrition and was active in the History of Nutrition Committee of the American Institute of Nutrition.

Professional honors came to Daphne as she received the Lederle Award for Human Nutrition Research from the American Institute of Nutrition in 1986 and the Joseph B. Goldberger Award in Clinical Nutrition from the American Medical Association in 1987. She was a Fellow of the Royal College of Physicians, London, and of the American Institute of Nutrition. Cited in her awards were her writing on drug-nutrient interactions, a subject on which she became a principal authority.

The achievements of her life outlined here can only hint at the enormous energy that those who knew Daphne Roe recognized. She was a little more than 5 feet tall and weighed less than 100 pounds, but had a booming voice that carried through Savage Hall as she lectured or spoke with her colleagues. She seemed to be tireless, working long hours seeing patients or on a research project, carrying an enormous pile of journals home at night to use as she worked on her book manuscripts, or spending time with her students. She and her husband, Shad, ran a welcoming home, had house guests, and gave informal dinners for colleagues, visitors, and students. To her colleagues, it seemed as if she never slept.

She and Shad raised three children, David, Laura and Adrian. Shad died in 1988, and, in the years following his death, Daphne seemed to raise her level of activity even higher. She was active in the community, the local medical society, and particularly, the Episcopal Church on the Cornell campus. During her last sabbatical leave from Cornell in 1991, she studied at the Harvard Divinity School and following her retirement from Cornell on June 30, 1993, she was planning to attend the University of Rochester Divinity School with the aim of being ordained as an Episcopal priest and undertaking a ministry to the elderly.

She died on September 22, 1993, from injuries suffered in an automobile accident near Ovid, New York. Her life was unfortunately cut short while she still had unbounded energy and plans for a future new career. She had great influence on nutrition at Cornell, and she enriched the lives of her students and colleagues.

Note by biographical editor

Dr. Daphne Roe was truly indefatigable. She wrote several biographical sketches for The Journal of Nutrition. Probably most exciting was her biography (The Journal of Nutrition, 1978) of Lucy Wills, who discovered folic acid.

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Malden C. Nesheim

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Additional Biographies

The following are references to additional biographies of Cornell faculty published in the *Journal of Nutrition*, for which permission to reproduce them here was not obtained. However, they can be viewed online at the Journal's website:

http://jn.nutrition.org/contents-by-date.0.shtml

Richard Henry Barnes (1911-1978): a biographical sketch
Daphne A. Roe. J Nutrition. 1979;109:1509-14.

Vincent du Vigneaud (1901-1978): a biographical sketch
Franklin Bing. J Nutrition. 1982;112:1463-73.

Leonard Amby Maynard (1887-1972): a biographical sketch
H. H. Williams. J Nutrition. 1974;104:1-11.

André Gerard van Veen (1903-1986): biographical article
Daphne A. Roe. J Nutrition. 1988;118:281-3.

Harold Henderson Williams (1907-1991): biographical article
William Sansalone. J Nutrition. 1999;129:591-5.

Appendix 2
Notes on the Early History of Nutritional Science at Cornell

by L. A. Maynard

Notes on the Early History of Nutritional Science at Cornell[1]

L. A. Maynard

Nutrition research at Cornell began with farm animal experiments because Cornell, as a Land Grant Institution, was required to give instruction in agriculture. Roberts was appointed Professor of Agriculture in 1874 and thus instruction began in 1888 when the College of Agriculture was established.

Formal research began earlier, namely in 1879 with the establishment of the Cornell Experiment Station with George Caldwell as Director (Caldwell Hall). Caldwell was one of the first four professors chosen by Andrew D. White (in 1868 even before the University opened); he was a German-trained chemist who was appointed Professor of Agricultural Chemistry, and became Head of the Chemistry Department when it was established. Later. "President White regarded the primary work of an Agriculture School to be research and experimentation" (Bishop), hence his interest in the Experiment Station. This was the fourth such Station after the first one set up at Wesleyan University in 1875 with Atwater as Director.

In the first report of the Station (1880) Caldwell described a study with dairy cows on the influence of the protein and fat content of rations and feeds on the percentage of these nutrients in the milk, with the conclusion that there was no influence. In the following years of the existence of the Station, there were a few other brief reports in the field of animal nutrition.

From the date of the establishment of the College of Agriculture it included a Department of Animal Husbandry with H. H. Wing as Head. He began instruction and research in the feeding of various classes of farm animals. The instruction had practical objectives in view (production courses), but in 1909 Wing gave a course in animal nutrition based on Armsby's *Principles of Animal Nutrition*, a very sophisticated book.

The research in the Animal Husbandry Department during its first 15 years dealt primarily with feeding trials, which produced results of much practical value, but the scientific knowledge resulting was limited because, for the most part, the feeds were evaluated only in terms of protein and energy values as indicated by T. D. N. (based on average composition tables), and the product in terms of body gain, milk produced and its fat content.

Home Economics education began at Cornell in 1900 as a Reading Course for farmer's wives, as a part of the extension program of the College of Agriculture. In the winter course of the College in 1906-07 Flora Rose, then a graduate student with H. C. Sherman of Columbia, taught food and nutrition for two weeks. She later joined the staff of the College and gave a survey course in 1910, entitled Foods and Nutrition, which inaugurated instruction in this field in the newly established Department of Home Economics. Professor Rose was primarily responsible for the beginnings and later developments in both instruction and research in human nutrition. She served as joint head of the Department and later the College (Wing of Martha Van Rensselaer Hall).

My association with nutrition at Cornell began in 1913 when, as a graduate student in the Department of Chemistry, Professor Savage of the Department of Animal Husbandry asked me to help plan and equip space for studying the chemistry of feeds and excreta in its building under construction, Wing Hall (now houses biochemistry). In 1915 after I received my degree in chemistry I joined the Department of Animal Husbandry to make use of these facilities (Department of Chemistry objected, Animal Husbandry not happy either). So began the first research program at Cornell in which chemical and physiological studies were integrated into feeding experiments, and it was among the first in the country. This was a fortunate time to enter the nutrition research field because of the opportunity to contribute to the development of what McCollum later called "The Newer Knowledge of Nutrition." The existence of three vitamins had been established and it seemed clear that there were others. Differences in protein quality, based on amino acid content, had become recognized. (Osborne and Mendel, 1914). Certain "trace mineral elements" were also being investigated.

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[1] Rare and Manuscript Collection #29/1/292 Box 9, "Prepared 1969 for possible School of Nutrition Seminar."

Professor Savage was primarily responsible for initiating this pioneer development in the Department of Animal Husbandry and for actively supporting it in its early years. He had become impressed with the importance of the chemical approach to animal nutrition by the accomplishments of Armsby at the Pennsylvania State Institute of Animal Nutrition and of Hart in the Department of Agricultural Chemistry at Wisconsin. In recognition of his service in the establishment of the first experimental nutrition laboratory at Cornell, the building built for the School in 1946-47 was named Savage Hall (plaque and picture).

In 1916 a rat colony was established in the nutrition laboratory and used for basic studies and for pilot experiments on farm animal problems.

With our entry into World War I the program of the laboratory largely came to a halt, though the animal colony was maintained. (L. A. M. was in the Army from September 1917 to August 1919.)

The resumption of research began in the fall of 1919 and shortly thereafter the Graduate School approved animal nutrition as a major for the Ph.D. and M.S. degrees. The first Ph.D. degree was awarded to L. C. Norris in 1924. (Later animal nutrition became the graduate field for students in poultry nutrition as well.)

In 1921 L. A. M. inaugurated a course in animal nutrition for undergraduates and graduates, dealing with the biochemical and physiological bases of nutrition, and their applications to feeding practice – later taught by Dr. J. K. Loosli.

When Norris received his degree he was asked to organize in the Department of Poultry Husbandry a poultry nutrition program patterned after the one in Animal Husbandry. So began an outstanding teaching and research center and the training of more graduate students in poultry nutrition than has taken place at any other institution.

When the School of Nutrition was established in 1941, Dr. Norris received a joint appointment as a member of its Faculty, served from the beginning as its secretary and played a primary role in the development of its teaching program. Hence his picture is on our walls.

In 1927, the resources of the Laboratory of Animal Nutrition in the Department of Animal Husbandry (as the unit came to be designated) was greatly strengthened by the appointment of Clive McCay, a physiological chemist. He became an outstanding teacher and investigator, notably in the influence of nutrition on aging – a career which was brought to an untimely end by a long illness, followed by death in 1967. By a joint appointment he was a member of the Faculty of the School from its founding, hence his picture is on our walls.

In 1927 a seminar for graduate students in animal nutrition was established. Around 1930 it was expanded to a seminar in the general field of Nutrition under the joint leadership of Maynard, McCay and Norris. It drew graduate students from many departments of the University, 20 to 35 annually. Its flourishing condition in 1941 when it was listed as a seminar of the School is indicated by the picture on our walls.

The teaching of human nutrition in the Department (later College) of Home Economics was gradually developed from 1910 on. In 1922 the Department received Federal (Purnell) funds for vitamin research and an important program was initiated by Dr. Adelaide Spohn (rats in Martha Van Rensselaer).

In 1932 Dr. Hazel Hauck joined the staff of the Department of Foods and Nutrition of the College of Home Economics and for some 10 years had a distinguished career as a teacher of both undergraduates and graduates and as a researcher. She inaugurated in 1932 the first course for graduate students in human nutrition (a seminar). Her experiments with human subjects on vitamin C requirements and metabolism constituted pioneer work which helped establish the first N. R. C. dietary allowances. She was a joint member of the first Faculty of the School, hence her picture on our walls.

The establishment in 1941 of the School of Nutrition, detailed in the pamphlet "Early Years of the Graduate School of Nutrition at Cornell," was a milestone in the development of the broad field of nutrition. The story is there in the pamphlet for anyone who cares to read it. It should be emphasized that the School came into being primarily

because of the dedicated efforts of Mr. H. E. Babcock, then Chairman of the Board of Trustees, whose primary concern was better nutrition through a better food supply. His picture is on our walls.

With the beginning of the School, an important objective was to inaugurate teaching and research in the field of medical nutrition, a field which was receiving no attention on the Ithaca campus. The pioneer in this development was Dr. Norman Moore, Chairman of the University Health Services, who as a joint member of the Faculty of the School promoted both teaching and research and established the School's contacts with physicians on a statewide basis. His picture is therefore on our walls.

The picture of the most distinguished member of our Faculty, which is on our walls, is that of Dr. J. B. Sumner, a Nobel prize winner, who as Professor of Biochemistry held a joint appointment in the Faculty of the School.

Early Cornell Developments in Nutrition Other Than at Ithaca

Graham Lusk, after posts in medical schools elsewhere became Professor of Physiology at the Cornell University Medical College in 1909. In 1906 he had published the first edition of his book, *The Science of Nutrition*, the fourth in 1928. His outstanding contributions in teaching and research and the training of future leaders in the field should be well known to today's students.

W. H. Jordan, a one-time assistant to Atwater, later assistant in chemistry at Cornell, became Director of the N.Y. Experiment Station at Geneva where he promoted animal nutrition studies. He wrote two books, *The Feeding of Animals*, 1901; and *Principles of Human Nutrition*, 1912, reflecting the broad interests he acquired from working with Atwater.

Research and Training Centers in U.S.A. Established Before 1910

Sheffield Scientific School, Yale. Samuel Johnson, Professor of Agricultural Chemistry, beginning in 1857. Trained Atwater, Chittenden, Osborne, Armsby. Chittenden, Professor of Physiological Chemistry, 1882.

Lawrence Scientific School, Harvard. Trained chemists who later became interested in nutrition, Caldwell.

Wesleyan University. Atwater, Professor of Chemistry, beginning in 1873. Trained Benedict Sherman, many others.

Wisconsin University. Babcock, Professor of Agricultural Chemistry, 1888; Hart, 1906; McCollum, 1907.

Pennsylvania State University. Armsby, Director of Experiment Station, 1887; Institute of Animal Nutrition, 1907.

Department of Physiological Chemistry, Yale Medical School. Mendel, initially an Assistant Professor in Chittenden's Laboratory, 1896.

Connecticut Agricultural Experiment Station (New Haven). Johnson, Director; Osborne beginning in 1886.

Bellevue Hospital Medical College, Luske, 1898; Cornell Medical College, Lusk, 1909.

Appendix 3
Louis Livingston Seaman

Louis Livingston Seaman

As I was researching in the Cornell Archives while writing this history, I was contacted by Colonel David Schnakenberg, who was writing a history of military nutrition research. Colonel Schnakenberg called my attention to a bequest to Cornell in 1933 by a Major Louis Livingston Seaman of $112,000 for food research. The bequest was to be used to "ascertain the value of various foods for the American soldier in peace or war." In 1933, this was a substantial sum, probably worth about $1.8 million in today's dollars. Unfortunately I was unable to find out what Cornell did with Major Seaman's gift, but in looking into Colonel Schnakenberg's request, I found out that Major Seaman had a very interesting history and was a distinguished Cornell alum. The bequest to Cornell suggests that Seaman was aware of the expertise in food and nutrition on the Cornell campus at that time. Louis Livingston Seaman graduated from Cornell in 1872, in the first four-year class since Cornell's founding. He obtained his MD degree from Jefferson Medical College in Philadelphia in 1876. After finishing his medical training he traveled to India, China, Japan and Siberia, to study infectious diseases. A biography of Seaman, in the class of 1872 archives,[1] indicates that Seaman was addressing a Cornell alumni gathering when news of the sinking of the battleship Maine reached the meeting. This action triggered the outbreak of the Spanish-American War. Seaman immediately left the meeting to volunteer to serve in the Army and spent time as a military surgeon in Cuba, Puerto Rico, and later in the Philippines. While in Cuba he observed appalling conditions for the American soldiers where disease killed far more men than enemy bullets. After the war he was involved as an observer in wars of the British in South Africa and the Germans in East Africa. He also accompanied the Japanese army in their campaign in Manchuria. In World War I he was with the Serbian army in the Balkans in 1914 and went to England soon after the outbreak of war in Western Europe. He resigned his US Army commission and worked with the Red Cross in Belgium, France and England. He served with the Anglo-American Ambulance service in 1914-1916.

His interest in improving army food persisted throughout his medical career. He established two annual prizes at Cornell, of $100 and $200, for essays about the best army ration for peace and war. He wrote to Cornell President Livingston Farrand about the prizes in a letter dated November 24, 1924:

> *My Dear President Farrand*
>
> *Many, many thanks for your "proposed method of administrating the Seaman Prizes." I am more than delighted with your action. I have served in nine wars, and in every continent in the World (except Australia) and I have seen in several of them, more than twenty men die from improper rationing or improper cooking than from battle casualties. In the army, the old adage – "The Lord makes the food – but the devil makes the cooks" is generally a truism. Even in the Spanish-American fiasco, the mortality from preventable causes – mostly by improper cooking – resulted in a death rate that was criminal; and the vast majority of those who never reached the front – or smelled powder, returned home almost physical wrecks – with an average loss of weight of nearly 30 pounds. Half baked beans and fermenting canned tomatoes caused the deaths of more than twice as many as the bullets of the enemy. Thank you for your interest.*
>
> *Sincerely, Louis L. Seaman*

Seaman died in 1934 and his will left the $112,000 to Cornell, along with various trophies, porcelains, jades, tapestries and other gifts. He also left $32,000 to the New York Academy of Medicine, and $10,000 to the Safety Institute of America to support a prize for the best essay on safety and sanitation.[2]

The money left to Cornell was to be used for "experiments to ascertain the value of various foods as rations in peace and at war." This was a large sum of money at the time but I have been unable to determine how the money was used. One could speculate that the money went to the College of Home Economics where most of the human nutrition research was carried out. Martha van Rensselaer had been with the United States Food Administration in WW I and was involved in recommending wartime diets for the American people. However, the Food and Nutrition and Institution Management department archives of that time have no mention of Seaman's money or of research on military rations. In WW II, Clive McCay, directed research on food and nutrition for the United States

1 History of the Class of 1872, Cornell University, the first through class, historical and biographical records with chapters on various aspects of Cornell History and development by members of the class. Cornell University Archives.

2 $194,176 in Estate of Major Seaman. In NY Times, Feb. 8, 1933, p.26

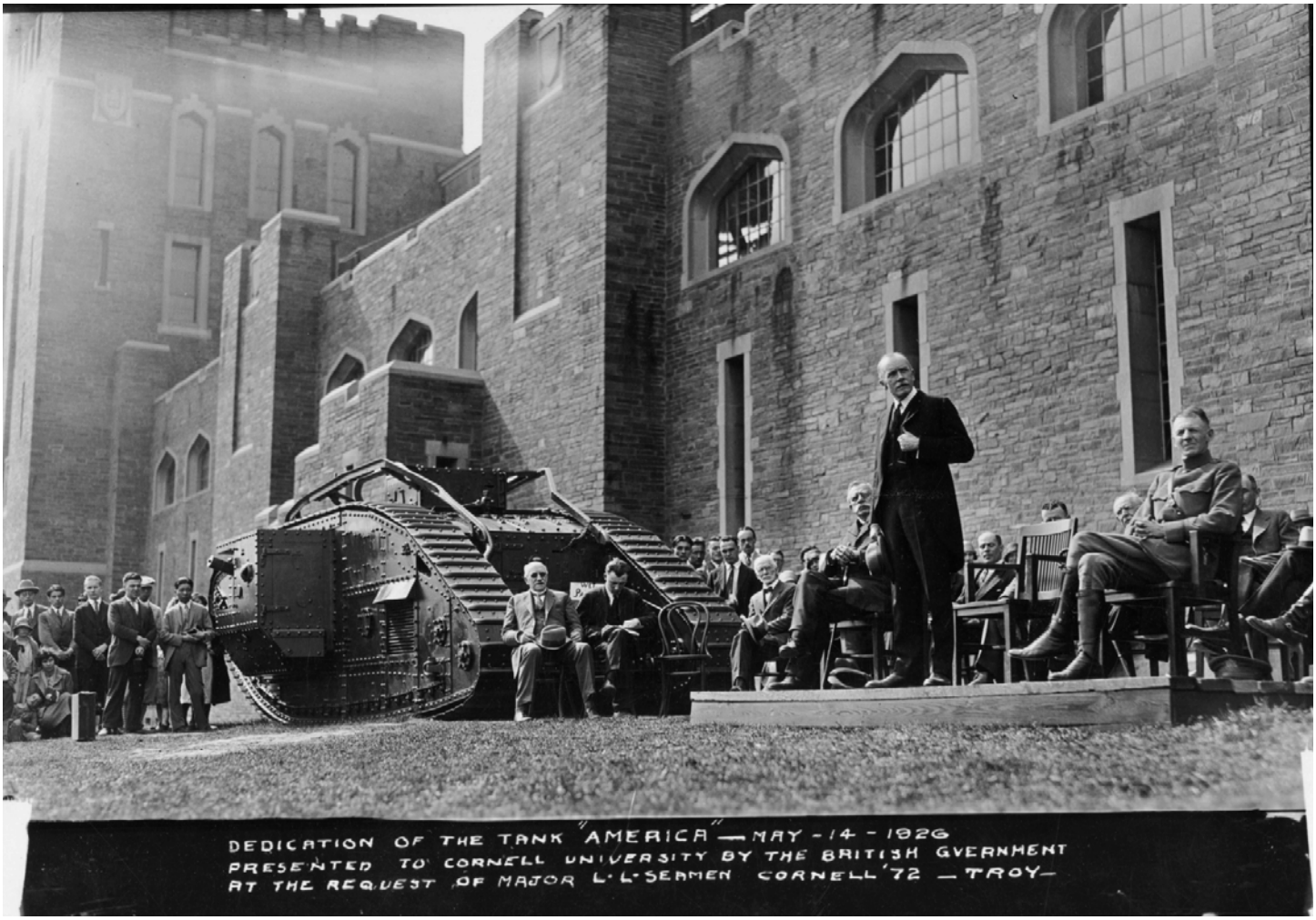
Navy, but I have found no reference to his being involved in military research prior to that. The Medical School was still on the Ithaca campus at that time and could have been the recipient, given Seaman's medical background, although the early history written by Maynard and others makes little mention of the Medical School relative to nutrition. Given that the United States was in the midst of a severe depression, Seaman's gift would have been a major windfall to support a program on the campus.

Major Seaman was also very involved with the WW I war memorial at Cornell, and he pointed out in his biography the exceptional service Cornellians had given to their country in WWI. He arranged for a gift to Cornell of the war tank, America, from the British government in the 1920s as well as the gift of two German Krupp guns from the Belgian government that had seen service in the battle of Antwerp. The tank has an interesting history since it was originally financed by a gift of $15,000 to the British War Relief Association by a "wealthy woman."[3] Seaman was President of the Association at the time. The tank saw action in the war. The photo here shows the tank at its dedication on May 14, 1926, sitting beside Barton Hall. The tank along with the German guns seems to have vanished without a trace, perhaps victims of a scrap iron drive during WWII. A bronze plaque commemorating the gift is on the wall atop the stairs at the western entrance to Barton Hall, the headquarters of the ROTC on the campus, and seems to be the only remaining trace of the tank and guns.

The inscription reads:

This Tablet Has Been Erected
As A Memorial By The
Class of 1872
The First Through Class at Cornell
In Honor of the
Cornell Men Who Gave Their Lives
In The World War and In Commemoration
Of The Gift To Cornell University
By The British And Belgian Governments
Of The War Tank America And Two
Krupp Guns From The Bombardment
Of Antwerp Through
Major Louis Livingston Seaman
President Class of 1872

[3] Fighting Tank America. Letter to the NY Times, dated April 7, 1926, from a "Son of Harvard" published April 18, 1926, page X16.



Dedication ceremony of the tank "America" on May 14, 1926, next to Barton Hall on the Cornell campus. Photo from Cornell University Archives

Given the long history of nutrition research at Cornell, it is perhaps not surprising that Major Seaman gave the substantial sum for food research. Perhaps one day a researcher more skilled than I am will uncover what happened to the bequest.

Major Louis Livingston Seaman

Appendix 4
Savage Hall dedication on the cover of *Science*

Science magazine

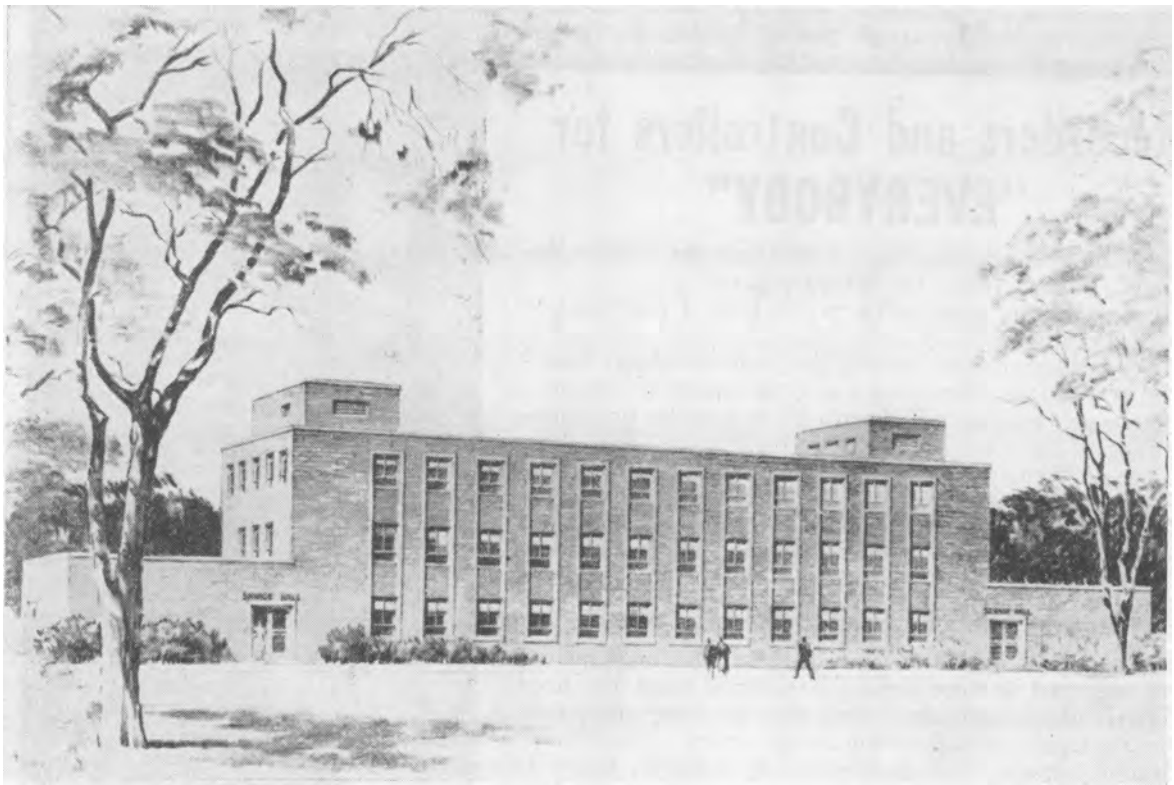
Vol. 106
No. 2754

Pages 331–354

October 10, 1947

Science

THE SCIENTISTS NEWSWEEKLY



Savage Hall, new headquarters of Cornell University's School of Nutrition, being dedicated today at a convocation entitled "Nutrition—A Key to Human Welfare." The new $500,000 structure, named in honor of the late Elmer Seth Savage, a pioneer in nutrition at Cornell and a member of its faculty for 35 years, was financed by farmers of the Northeast; the equipment was provided by the State of New York.

Published by the AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Genetic Effects of the Atomic Bombs in Hiroshima and Nagasaki

From *Science* Vol. 106, no. 2754, 10 October 1947. Reprinted with permission from AAAS.
http://www.sciencemag.org/content/vol106/issue2754/index.dtl

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