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LEONARD AMBY MAYNARD

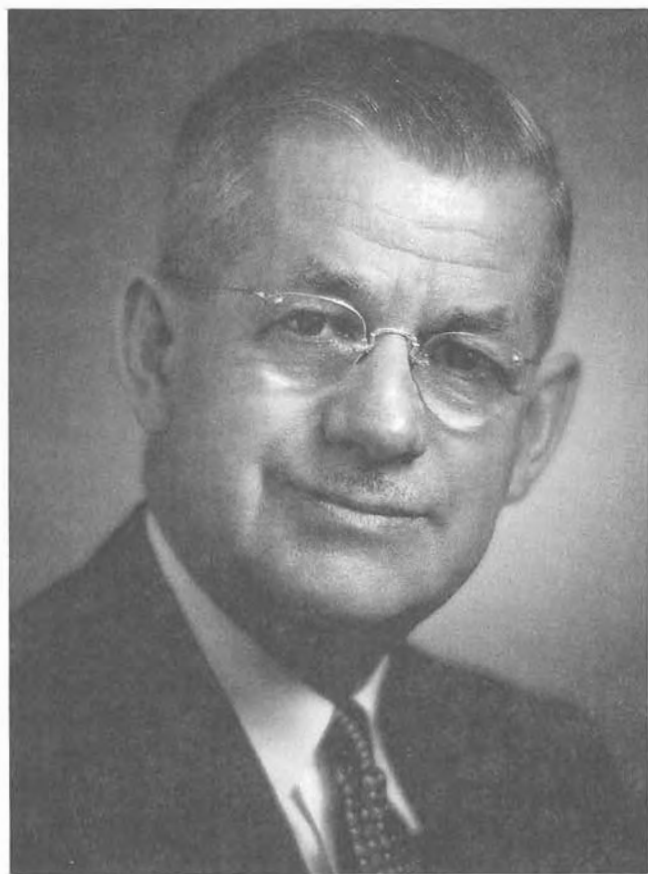
1887—1972

A Biographical Memoir by
DAPHNE A. ROE

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Biographical Memoir

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L. A. Maynard

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BY DAPHNE A. ROE

EARLY LIFE AND FORMATIVE YEARS

LEONARD AMBY MAYNARD was born on a farm in the Township of Hartford, New York. It was on this farm and also in the nearby village, where his family moved when he was eight, that he acquired an appreciation of plant and animal life. He was also exposed early to books on agricultural science, which were owned by the family and used in a practical manner for their farm activities.

At the age of five he started school in a one-room red schoolhouse near the farm, and later he attended the elementary school in Hartford village, where he remained until he reached eighth grade. At this time his parents sent him to the Troy Conference Academy, a coeducational boarding school in Poultney, Vermont. Here he received an excellent education in a limited range of subjects, including language skills, literature, and mathematics, but training in the sciences other than mathematics was not provided. While still at this school, he took examinations which enabled him to teach in a New York State district school, and for a year he taught in the same school where he had begun his own education.

In 1907, he entered Wesleyan University in Middletown, Connecticut. As a freshman, he continued to take courses

in the subjects he had learned in prep school, but he also took courses in physical, biological, and social sciences. His first course in chemistry determined his future career interests. Chemistry was indeed an exciting discipline at Wesleyan at that time; it was there that Professor W. O. Atwater had recently shown how a knowledge of chemistry could be applied to enormously increase knowledge of human and animal metabolism. Although Atwater had died the year before Maynard entered Wesleyan, Atwater's pupil, Professor W. P. Bradley, gave him his first exposure to chemical knowledge and explained in the Atwater tradition how this knowledge could be applied both to animal and human nutrition as well as to agriculture. Maynard received his A.B. degree from Wesleyan in 1911 cum laude and was elected to Phi Beta Kappa.

After graduation, he was assistant in chemistry for a year at the Iowa Experiment Station. During that year he pursued part-time graduate study, which he also did during the following year when he was assistant chemist at the Rhode Island Experiment Station.

In 1913 he came to Cornell as a graduate student in the chemistry department, and in 1915 he received his Ph.D. in chemistry. During his two years of graduate work at Cornell, he was most academically stimulated by Dr. Wilder D. Bancroft, who greatly widened Maynard's knowledge of chemistry literature and initiated many of his later research interests (1972,2). However, his later concern for dissemination of nutrition knowledge to the public may have arisen not only from his earlier work in agricultural experiment stations in Iowa and Rhode Island but also from his exposure at Cornell to faculty and students who were studying physiological influences on the nutritional need of farm animals. During the period that Maynard was a graduate student at Cornell, the extension activities of the university

were being established. These endeavors may also have shaped his future concern with nutrition education of farmers and their families (1940).

Maynard's academic career was interrupted by his period of military service. He served with the American Expeditionary Force in France in 1917 and continued with the World War I armed forces until 1919 when he was discharged, having served as a major in the Chemical Warfare Service (1972,2).

FIRST CONTRIBUTIONS TO THE NUTRITION PROGRAM
AT CORNELL UNIVERSITY

Maynard obtained his first academic position at Cornell University in 1915, immediately after obtaining his Ph.D. It was then that Professor Elmer Seth Savage invited him to establish a laboratory for the study of nutrition in small animals. At that time Maynard also received an appointment as assistant professor of animal nutrition in the Department of Animal Husbandry in the New York State College of Agriculture. In 1920, after his discharge from the armed forces, he was promoted to a full professorship.

In 1926, he took sabbatical leave and carried out studies at Yale University with Professor Lafayette Mendel. It was there that he met Clive McCay, who subsequently became his scientific collaborator at Cornell. Maynard's exposure to Mendel's method of teaching graduate students (by making them report on published scientific papers in biochemistry and nutrition) influenced his decision to employ this method in his own teaching at Cornell. In both institutions, the students had immediate feedback from the professor on their performance, which encouraged them to do the necessary homework thoroughly. This system of instruction is still used in Cornell's Division of Nutritional Sciences; indeed, these seminar performances

are the only stipulated efforts for students in that graduate program.

LEADERSHIP IN ESTABLISHING CORNELL AS A CENTER
FOR HUMAN NUTRITION RESEARCH AND TEACHING

Maynard accepted a personally imposed challenge to establish a program at Cornell in which graduate students would be prepared for careers in human nutrition research and teaching. His genius was in knowing that in developing such a program, it would be necessary to broaden currently held definitions of what should be termed "human nutrition." He also knew that he would have to work with a multidisciplinary faculty to accomplish his goals.

A unique feature in his building of this program was the manner in which he formed linkages between the different units at Cornell, units that were then carrying out nutrition research with goals dictated by their separate leadership and allegiancé. Maynard's intent was to bring about a necessary unification of the different programs, at least to the extent that the different units would all have concern for studies which provided insight into the nutritional needs of human beings. In certain instances, this unification came about because he initiated the research endeavors; in other cases, he was successful in persuading his colleagues to focus their work on the solution of human nutrition problems.

In 1939 the Agricultural Research Service of the U.S. Department of Agriculture established the U.S. Plant, Soil and Nutrition Laboratory on the Cornell campus, and Maynard became its first director, serving in this capacity until 1945. During his years of leadership of the Laboratory, the focus was on research which better defined methods of food production to meet the needs of the public.

In 1941 he was appointed the first director of the Graduate School of Nutrition. In this new unit of the university,

he collaborated with Dr. Norman Moore, director of health services for students at Cornell, to establish a program in which effects of both environmental and dietary factors on human nutritional requirements could be investigated. For this purpose, Dr. Moore set aside ten beds in the students' inpatient unit to be used for metabolic studies. Further, he provide the medical coverage and expertise which made such studies possible.

Another undertaking, encouraged by Maynard and for which he provided technical support, was a nutrition survey of a nearby township which was later to be involved in follow-up studies. Both the survey and the studies in the metabolic unit were actually carried out by Charlotte Young, one of Maynard's most distinguished proteges.

He also forged relationships in the Department of Poultry Husbandry, where Leo Norris had assumed leadership. In pursuing this research linkage, Maynard was able to harness the knowledge of poultry scientists to focus on meeting human dietary needs with their products and also on using chickens as animal models for human nutritional diseases.

In the years 1940-45, when the war effort necessitated outstanding collaboration to improve the availability of the domestic food supply, Maynard brought the resources of many different units at Cornell together to solve the problems of food preservation by freezing. These units included not only those already involved in nutrition research, such as the College of Agriculture and the College of Home Economics, but also the College of Engineering and the Agricultural Experiment Station in Geneva, New York. He also worked with the major food companies, food freezer manufacturers, and utility companies to bring the food freezing endeavors at Cornell to practical use.

RESEARCH ACCOMPLISHMENTS

Much of Maynard's research concerned effects of diet on lactation. In 1929, he and Clive McCay reported that the removal of lipids from a grain mixture fed to milking cows and the replacement of these lipids with an isocaloric amount of starch resulted in a marked loss of milk yield (1929). Those results were later confirmed by Maynard and colleagues in additional experiments involving cows and goats (1939, 1941). Later he investigated whether these findings of the effect of reducing dietary fat content on lactational yield would apply to animals that were not herbivores. For example, in 1942 he and a colleague examined the effect of reducing dietary fat on lactational performance in rats (1942). They showed that the young from mothers on a high-fat diet grew better than those on a low-fat diet.

PUBLIC SERVICE DURING WORLD WAR II
AND IN THE POSTWAR YEARS

Maynard served as commissioner for nutrition of the Emergency Food Commission beginning in 1943. He also served as United States nutrition expert on Inter-Allied Food Missions to London from 1943 to 1945 and to Germany in 1945. Following the war, he was a liaison member of the New York State Food Commission until its termination in 1948.

It was during World War II that he began to shape major national food policies. This he accomplished as a member of the Food and Nutrition Board, which was particularly powerful at that time. He served as chairman of the Board from 1951 until 1955. His first concern with the Board, in which he gave outstanding leadership during the war years, was promotion of the consumption of dairy products as

milk rather than as butter or cream. He also initiated the Board's investigations of the uses of dairy by-products such as whey and buttermilk (1943).

After the war, he served as consultant in nutrition to various national and international agencies, including FAO, WHO, and UNICEF.

INTERPRETATION OF IMPORTANT ADVANCES AND
RELEVANT ISSUES IN NUTRITION FOR POLICY MAKERS

Maynard's ability to comprehend and utilize complex data on nutrient metabolism derived from both animal and human studies, and to point out the relevance of findings to other nutritionists and to those in the agricultural sector and health care fields, indicates that he had an unusual facility for productive literature analysis outside his own field of research (1947,2). He could write equally clearly for audiences of legislators or others making decisions about foods and feeding of the U.S. population (1944,2). He could use language understood by economists to explain to them the reasons for diet-related nutritional deficiencies existing in the United States in war years, and he suggested practical means for combating such deficiencies (1947,1). He could also point out that differences in the mode of calculation of food energy requirements that existed in the 1940s between the United Kingdom and the United States imposed barriers to the international decision-making process with regard to desirable calorie levels of diets. To overcome this lack of understanding, he wrote an extensive account of the Atwater system for the calculation of the energy value of diets, which was then published as an editorial review in the *Journal of Nutrition*.

Maynard was ahead of his time in pressing for an international system for determining not only the food energy but also the nutrient content of diets. Indeed, as early as

1946 he recognized that such a system would greatly facilitate the work of the United Nations Food and Agriculture Organization in developing food policy for the Far East as well as for other parts of the world.

ENCOURAGEMENT OF FACULTY COLLEAGUES

Examples of his relationships with colleagues provide explanations for his success as the head of a major department of nutrition. He had a facility for demonstrating his confidence in junior faculty such that it improved their performance, but also in making the necessary liaison for them so that they could more easily start new programs. For example, he assisted Professor Charlotte Young in starting a "diet table" for students at Cornell by negotiating a formal arrangement with the director of the University Health Services, Dr. Norman Moore, so that Dr. Young would have an appointment at the clinic and would have responsibility for students with nutritional and metabolic problems. This diet table subsequently served as a model for similar programs set up in other institutions.

As previously indicated, Maynard was able to bring the work of his colleagues to the attention of top officials in government agencies making food policy, as well as to food manufacturers interested in developing new products based on new findings in nutrition. Further, he recognized the genius of those around him and often knew when his colleagues had made fundamental contributions to biology which were not yet understood by others. As an example of the value of this quality, it is important to cite his acclaim of Clive McCay, Maynard's colleague at Cornell for 40 years. In his biographical sketch of McCay, published as a posthumous introduction to McCay's *Notes on the History of Nutrition Research* (1973), Maynard emphasized McCay's extraordinary contributions to the field of geron-

tology. Effects of diet on aging had not previously been studied, and the fact that McCay's findings in rats of a beneficial effect of food restriction in retarding aging and age-related diseases was, as Maynard pointed out, fundamental.

HONORS

In 1944 Maynard was elected to the National Academy of Sciences in recognition of his distinguished achievement in nutrition research. In 1947 he received the Borden Award from the American Institute of Nutrition, again for his outstanding research in nutrition. In 1952 he received the Award of Distinction from the Grocery Manufacturers of America, and in 1954 the American Institute of Nutrition honored him with the Osborne and Mendel award. This award, which is given in recognition of outstanding basic research accomplishments in the science of nutrition, was given to Maynard also for his other achievements. Indeed, the citation at the time the award was made read ". . . [given for] investigations on biochemical and nutritional aspects of metabolism and lactation and for his contributions as a teacher, administrator and public servant in the field of nutrition" (1978).

In 1957 his extraordinary contributions to the furtherance of home economics were recognized by two awards: he was chosen a National Honorary Member of Omicron Nu (and it was indeed a rare honor for a male to become a member of a women's honor society!). That year he was also elected an honorary member of the American Dietetic Association. In 1958 he received an honorary degree from the University of Rhode Island. In the following year his outstanding contributions to international nutrition were recognized when he was elected to the Order Rodolfo Robles by the Republic of Guatemala and was also pre-

sented with an honorary degree of doctor of science. In 1960 he became a Fellow of the American Institute of Nutrition.

THE HOME AS AN ENVIRONMENT FOR DISCUSSION OF
NUTRITION-RELATED INITIATIVES

Maynard's wife and life companion was Helen Hunt Jackson Maynard. She ensured that their home was always open to her husband's students and to his colleagues, who, even when junior, know that they would feel at ease there. It was in this setting that new research, teaching, and public service endeavors could be planned. Later, when Maynard was retired, it was in his home that he felt comfortable in giving advice to the newer nutrition faculty of his old department. He took the wise approach that it was better to impart the gems of his own experience in this informal setting rather than at faculty meetings.

MAJOR ACHIEVEMENTS IN CHANGING PUBLIC AWARENESS
OF NUTRITIONAL ISSUES AND IN PROMOTING
THE TEACHING OF NUTRITION

In retrospect, Maynard's major achievements were in advancing the teaching of nutrition and in making nutritional issues relevant to those who plan programs at the international, national, and local levels. He also increased linkages between the fields of biochemistry, animal husbandry, home economics, and human nutrition. Indeed, through his encouragement of women trained in schools of home economics to become distinguished nutritional scientists, and his acknowledged respect for contributions of people working in the area of extension, he brought about a great change in the public image of women as nutritionists and in the attitude of farmers toward extension teaching. He also improved the linkages between in-

dustry and academe in that he brought to the attention of the food industry the fact that advances in product development could best be made with advice from those in nutrition who were knowledgeable about nutrient requirements and how these requirements could best be met to avoid not only deficiencies but also nutrient excesses and imbalances.

However, to those who knew Leonard Maynard well, he will best be remembered (as he was described in the citation when he was given honorary membership in The American Dietetic Association) as "a tireless public servant concerned with utilization of scientific knowledge of food and nutrition for the promotion of human welfare."

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