Gladys Anderson Emerson (1903-1984)
A Biographical Sketch
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Gladys Anderson Emerson was born on July 1, 1903, in Caldwell, Kansas. She passed away at her home in Santa Monica, California, on January 18, 1984, after being bedridden for presumably less than one week. It is believed that she died of cancer, although there was neither a verified diagnosis nor an autopsy. The apparent absence of medical treatment and care during this terminal period of her life could have been influenced by the prior death from cancer of her long-time friend and professional associate, Grace Goldsmith, M.D. Grace had been so distressed over the side effects of cancer chemotherapy that she and Gladys had concluded that cancer chemotherapy too often only extended the agony of dying until the inevitable death. Although Gladys lived in Santa Monica and Grace, in New Orleans, they vacationed together, traveled to scientific meetings together and shared achievements of excellence in science and medicine because of their extraordinary intellectual competence and knowledge in fields of nutrition.

My memories of Gladys are divided between recollections of her personality and recollections of her research. Recollections of her personality and intellectual scope are so strong as to offer some competition in memory over her contributions in research on nutrition.

Gladys received both an A.B. and B.S. degree from the Oklahoma College for Women in 1925, an M.A. from Stanford University in 1926 and a Ph.D. in animal nutrition and biochemistry from the University of California (U.C.) at Berkeley in 1932. Gladys was always associated more with her educational background at Stanford and U.C. at Berkeley and with her career at the University of California at Los Angeles (UCLA) than she was with her birth in Kansas and her early academic education in Oklahoma. However, she was indeed proud to be elected to the Oklahoma Hall of Fame when she was only 39 years old.

After receiving her doctorate at Berkeley, under Professor Herbert Evans, Gladys and her husband, Oliver Emerson, went to the University of Goettingen in West Germany. They worked during 1932-1933 in the laboratory of Adolf Windaus. In his famous laboratory, Gladys became a lifelong friend of Adolf Butenandt, who was conducting his estrone research, which was later recognized by a Nobel prize.

In the laboratory of Professor Herbert Evans, at U.C. in Berkeley, both Gladys and Oliver had significantly contributed to the pioneering research of the discovery of vitamin E and reported its original isolation.

Professor Herbert Evans had an illustrious group of young co-workers, who in later years became internationally famous for their subsequent researches. In his article on the early history of vitamin E (1), Professor Evans wrote:

Our study of the literature had shown that the nonsaponifiable moiety of fats could form compounds with cyanic acid—the so-called alloxanates. They . . . had been employed by Windaus at Goettingen, whither went our Dr. and Mrs. Emerson in the fall of 1932. . . . The chemical contribution of the Emersons is primary in the whole vitamin E story . . . . I well remember their plea to me to suggest a proper name for their purified substance.

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when success crowned their efforts. I promptly invited George M. Calhoun, our professor of Greek, to luncheon in Berkeley in our small Faculty Club. 

“What does the substance do?” he asked. “It permits an animal to bear offspring,” I replied. “Well, ‘childbirth’ in Greek is *tocos*,” he said, “and if it confers or brings childbirth, we will next employ the Greek verb *phero*. You have also said that the term must have an ending consonant with its chemical—*ol*; it being an alcohol; your substance is ‘tocopherol’ . . . .”

The important publication on the isolation of pure α-tocopherol was by H. M. Evans, O. H. Emerson and G. A. Emerson, in the Journal of Biological Chemistry in 1936 (2). The allopophate of α-tocopherol precipitated from methanol on cooling and was purified by several recrystallizations to give pure α-tocopherol allopophate. This derivative was hydrolyzed in an inert atmosphere with methanolic potassium hydroxide. The reaction mixture was diluted with water, and α-tocopherol was extracted with peroxide-free ether. The pure α-tocopherol was obtained as a viscous oil. The structure of α-tocopherol was determined by E. Fernholz at Merck. Both Gladys and Oliver were briefly at Merck before they were amicably divorced in 1940.

During 1933–1942, she was a research associate in the Institute for Experimental Biology at U.C. Berkeley. In 1942, she was invited to join the staff of the Merck Institute for Therapeutic Research, Rahway, New Jersey, as head of the Department of Nutrition. As a pioneering contributor to the discovery of vitamin E, it was appropriate that she was responsible for the ongoing research with animals on a succession of vitamins, then under investigation at Merck. During that vitamin era, research at the Merck laboratories was almost dominated by work on vitamins until other fields of research strongly emerged.

A very important time in our cooperation (during the vitamin days) involved the synthesis of fragments of vitamin B-12 followed by animal growth assays, which Gladys conducted. The work and those days were exciting. 5,6-Dimethylbenzimidazole is a component of the molecule of vitamin B-12. Gladys not only tested this component, but she tested the isomers of this molecule that we synthesized. One of these isomers was surprisingly active, and that lead to cooperative research with Frank Horsfall and Igor Tamm at Rockefeller University in New York. During this era research on the chemotherapy of viral infections was not generally considered promising. However, this early research did significantly contribute to the momentum of later research.

Gladys not only conducted innumerable experiments on nutrition in rats, she had a colony of monkeys for research involving vitamin B-6. During this period, J. F. Rinehart and L. D. Greenberg (3, 4) aroused interest in animal and human nutrition by their research on degenerative vascular lesions in pyridoxine-deficient rhesus monkeys and the close similarity between the experimental lesions and those of arteriosclerosis in the human. In the monkey, vascular lesions developed about 5–6 months after deprivation of pyridoxine. An unusually high incidence of dental caries also occurred in the second dentition. Cirrhosis of the liver was another pathologic change frequently observed in these animals.

Gladys, in cooperation with Charlie Mushett (5, 6), extended the observations of Rinehart and Greenberg, and confirmed the vascular lesions and the dental caries in rhesus monkeys and observed similar results for dogs. In addition, they detected arteriosclerosis by microscopic examination of organs including the heart, kidney, testis, ovary, uterus, liver, adrenal and the lung. In the pyridoxine-deprived dogs, they observed arteriosclerosis to be predominantly in the lower abdominal aorta or in the ascending aorta or in both.

Even by 1985, these remarkable and pioneering observations of Drs. Rinehart and Emerson on the pyridoxine-deficient monkey and dog have never been elucidated. A reawakening of the importance of vitamin B-6 in human nutrition is widely needed.

In 1957, Gladys resigned from the Merck Institute for Therapeutic Research to become professor and chairman of home economics at UCLA. Professor Wendell Griffith helped persuade Gladys to leave Merck for
UCLA. She was a dominant faculty leader in the Departments of Nutrition and Home Economics and began her association with Marian Swendseid and Roslyn Alfin-Slater, and others. While at UCLA, Gladys had many students, and was extraordinarily active in nutrition at UCLA and elsewhere. Gladys became an emeritus professor in 1970.

Gladys was always an inspiration to her students and guided them in their careers after UCLA. For example, she sent Dr. Hiroe Kishi to my laboratory at the University of Texas at Austin. Later in Japan Dr. Kishi became very well known for her contributions to the study of parenteral nutrition. Gladys and Hiroe were devoted, almost like mother and daughter.

Recognition for her work and her professional participation in greatly diverse activities in nutrition over the years are exemplified by the following citations: visiting lecturer in pharmacology at the medical school, University of California, San Francisco, 1945; research associate, Sloan-Kettering Institute for Cancer Research, New York City, 1950–1953; Marie Curie lecturer, Pennsylvania State College, 1951; research lecturer, Iowa State College, 1952; head, Division of the School of Public Health, 1961–1969; visiting lecturer, biochemistry and nutrition, University of Nebraska, 1958; lecturer in Japan, 1964, 1965, 1967, 1970, 1975; member of the Liaison and Scientific Advisory Board; quartermaster, Food and Container Institute; member of the Food and Nutrition Research Committee, NRC; member of the Food and Nutrition Board of the National Research Council; member of the Committee on Dietary Allowances; member of the Executive Council, American Board of Nutrition; panelist, Rensselaer Polytechnic Institute Industrial Council; member of the U.S. National Committee, International Union of Nutritional Scientists; member of the organizing committee, 5th International Congress on Nutrition; vice-chairman, panel on new foods, White House Conference on Food, Nutrition and Health. These citations are perhaps less than half of the assignments and responsibilities she fulfilled up to the time of her declining health. All these citations are listed in Who's Who in America, 1978 (7).

At Merck, and later at UCLA, Gladys was always in demand as a lecturer on subjects of nutrition and as a member of committees involving health. The invitations were probably due to her enthusiastic personality, her broad and current information, and her entertaining manner of delivering lectures.

In an appraisal of any person's life and career, it can be difficult to decide what was the most important contribution. Perhaps for Gladys, the participation in many scientific and professional meetings of national and international nature, committees of local civic, university, state and federal nature, and other public affairs over so many years may outweigh the significance of her experimental research with animals in nutrition. Her laboratory experimentation over the years was also outstanding, particularly in the Merck laboratory, where it was a vital component of the multidisciplinary research on vitamins and nutrition.

Gladys was truly a pioneer among women scientists, and she received the Garvan Medal in 1952, which is restricted to women scientists. She was a warm and ebullient person who always exuded enthusiasm. She was positive in her approach, although she was never unaware of the negative aspects of a matter. Her never-ending acts of friendship toward her incredibly large number of friends, national and international, were truly remarkable. She entertained many friends in her home. She was greatly concerned about the lives of her countless friends and also their children.

Gladys and Tom Jukes were friends for years, from their Berkeley days. Tom remembered Gladys "as one who always cherished the basic conservative values of life. She was not sympathetic with what she considered the deterioration of standards of conduct."

Gladys was the opposite of a loner. She not only enjoyed collaborating in research but could even insist on collaboration; nevertheless, she was always welcome. She always seemed to know everyone in nutrition, and everyone seemed to know her and asked to be remembered to her.

I have endeavored to be reasonably formal in this biographical account of Gladys, but Tom Jukes has encouraged me to include something of my personal association with
Gladys and related reminiscences. I gladly accepted his suggestion to add these stories in fond memory of her.

Neither Gladys nor I had a brother or a sister; however, our age difference was just right for siblings. Like many sisters and brothers, we continually played jokes on each other, at any time of the year and for many years of our adult lives. I would arrange to send her a letter from a far off place, such as Laramie, Wyoming, praising her for her most recent brilliant publication in nutrition. Then I would wait to see how long it would take her to discern that I was the culprit. I mailed such letters several times over the years until the letters no longerfooled her, even though she commonly received true fan mail during that time.

As long as I knew her, Gladys always had a pet dog, because as she once said, “it was nice to return home and be enthusiastically welcomed.” The name of her favorite dog was “Chemie.” This German word definitely reflected her great interest in chemistry and her training in Germany. Gladys gave her dog more affection than discipline. One Sunday morning when she took Chemie for his walk without a leash, Chemie suddenly bounded through the open door of a church and yelped all the way down the aisle for reasons of his own. Although the minister was not amused, Gladys was, and she told the story many times with much laughter. Once, in a public place, Gladys observed that she and Chemie were approaching a woman who also had a dog. As Gladys neared the other woman, she cautioned that her dog, Chemie, was aggressive. No sooner had Gladys expressed her warning than Chemie noisily and vigorously attacked the other dog. Finally, the dogs were separated, without any significant injury to either dog. The other woman severely castigated Gladys and said that she would sue her. Gladys said, “Why do you wish to sue me, since your dog has not been injured?” The woman replied, “Your dog has broken the spirit of my dog!” The next day Gladys reported the dog fight to Jack Connor, who later became president of Merck, and inquired about such a suit. Mr. Connor smoothed the situation and unwittingly provided Gladys with an end to a dog story, which she enjoyed telling. No legal action followed.

The joke that was the most enjoyed by all in the Merck labs, which she took the most delight in repeatedly telling, began one night when I had to work late. I had just been approved for a garage at the company, which was particularly nice to have to keep snow off the car in the winter. I had probably expressed so much pride in being allowed to use the garage that Gladys took note. I recall that Gladys had not been assigned a garage. In any case, Gladys knew that I would be working late on that particular night, and so she obtained a parking ticket from the Merck security police and put it on the windshield of my car in my garage. When I went to my car after midnight and found the ticket, I was rather indignant and was not so alert that I was immediately suspicious of Gladys. However, by the time I reached my home, I had decided that Gladys was having some fun at my expense. At about 2 o’clock in the morning, I called her to accuse her of being a prankster. We both enjoyed that story for years, and she told it again and again and gained a better reputation than mine for joking.

One day, Gladys decided to name each of her monkeys for one of her friends and associates. She let it become known that to have a monkey named after one was an honor in the Merck labs, and some key directors noticed that Gladys did not name a monkey after them. These were rhesus monkeys, not noted for being docile. Gladys widely announced that, for the greatest honor, she had named the meanest one, “Karl.” Gladys must have wanted to renew her one-upmanship in our game. As she was giving a lecture to a woman’s group in Plainfield, NJ, where Selma and I lived, she spoke about the nutrition of the monkeys and showed the slide of the monkey, “Karl Folkers.” Although Selma was not in the audience, several of her friends were, and they soon phoned Selma for an explanation. Then, Selma phoned Gladys, and Gladys considered that she might have carried the joke too far.

These playful pranks went on for years. Gladys became very difficult to fool or to
mislead and it was a challenge for me to succeed. I was always a prime suspect. Frequently, she would call my wife, Selma, and by a series of discreet questions try to ascertain if I had been jesting with her.

Gladys was always in our home for Christmas, and she considered herself a member of the Folkers family, and the Folkers considered Gladys a family member. Late in 1962, Selma and I sent Gladys an invitation by telegram to join us for Christmas in our home in California. I knew that she had absolutely no information on my leaving Merck to accept the Presidency of the Stanford Research Institute (SRI). This telegram would cause her consternation; she could never admit that she had known nothing about such a move beforehand. Gladys phoned a succession of mutual friends, and finally had to phone me for an explanation. Thereafter, she was with the Folkers family at Christmas in Menlo Park and for the years I was at SRI. On trips from Texas, Selma and I would dine with Gladys in her home or at the Los Angeles airport. She was a guest in our homes in Texas and in New Hampshire.

The era of the pioneer woman scientist, as exemplified by Gladys Emerson, has passed. Gladys was an extraordinary person—magnetic and never to be forgotten. Selma and I loved her, countless friends loved her, and we treasure fond memories. Gladys was buried on January 24, 1984, in the El Reno Cemetery, El Reno, Oklahoma, next to her parents, Otis and Louise Anderson.

ACKNOWLEDGMENT

Dr. Thomas Jukes, biography editor, invited me to prepare this biographical account of Gladys, and to include some stories of the jokes between Gladys and me, which are perhaps a little unusual to include but which add to the characterization of this remarkable person. I thank Tom, who thought Gladys would have wanted me to write this account, for his background material and observations.

LITERATURE CITED


Footnote by Biographical Editor: In this delightful biographical sketch of a pioneer woman scientist who was his friend, Karl Folkers has inadvertently also told us a lot about himself. Most of us who know Karl know him as a rather serious and intent scientist, a member of the National Academy of Sciences, formerly a director of research at Merck, and formerly president of the Stanford Research Institute. We were not aware of him as, behind the scenes, a fun-loving prankster.

Gladys was unique and famous for her warmth and her joyous temperament. She probably knew more members of AIN than did anyone else in the “nutrition community.”

—Thomas H. Jukes