Obituary

Fred Conrad Koch
1876-1948

Fred Conrad Koch, Distinguished Service Professor Emeritus of Biochemistry at The University of Chicago and director of Biochemical Research, Armour & Company, died suddenly on January 26, 1948. Dr. Koch was an internationally known biochemist and one of the most highly esteemed scientists of the Chicago area.

Born in Chicago, May 16, 1876, he spent most of his childhood in Elmhurst, Illinois. After graduation from Oak Park High School, he attended the University of Illinois, where he received the B.S. degree in 1899 and remained as instructor in chemistry for two years. In 1902 he accepted and held for 7 years a position as research chemist at Armour & Company in Chicago. Feeling the need of more fundamental training, he applied for a graduate fellowship at The University of Chicago in 1909. A. J. Carlson has reminisced about the hesitation of certain members of the faculty committee in awarding a fellowship to an applicant who was 33 years old. Their wisdom in making the award has been borne out by subsequent events. Working in the Department of Physiological Chemistry under the direction of A. P. Mathews, Koch received the Ph.D. in 1912 and then remained in the Department, first as instructor, later as professor, and finally as Frank P. Hixon Distinguished Service Professor of Biochemistry. He served as acting chairman after Dr. Mathews left the University in 1919 and was named chairman of the Department in 1926.

Although he reached the age of retirement from the University in 1941, his active mind and body were in no way ready for rest. Rejoining the staff of Armour & Company, and free from the duties of teaching and administering a department, he continued his researches with unprecedented vigor and enthusiasm. When, after a heart attack in 1946, he was advised by his physicians to relax, he tried to put in fewer hours each day and managed to take longer and more repeated excursions to his summer home in Wisconsin; but it was difficult for a man with his vitality and enthusiasm to slacken his pace. While recuperating at home during his last week, he had conferences with his research associates. He died "with his boots on."

Dr. Koch's research interests cover a wide range of subjects chiefly in the fields of hormones, vitamins, enzymes, and quantitative analytical methods. His work on the male sex hormone is probably the most spectacular and best known of his achievements. In 1926, with L. C. McGee, he first demonstrated male hormone activity in extracts of bulls' testicles; later he developed methods for extracting the hormone from human urine. With T. F. Gallagher he developed a quantitative method for the assay of the male hormone, based on the increased size of the capon's comb, which was widely used and which finally led to the isolation and synthesis of androsterone by Butenandt in 1931, and later also of testosterone and other androgens. In collaborative studies with zoologists and physicians he guided many studies on the physiology and clinical use of the male hormones. Other research interests have included secretin and other gastrointestinal hormones, thyroid and pituitary hormones, pepsin, rennin, trypsinogen activation, and vitamin D's. In collaboration with his wife Elizabeth Miller Koch, the conversion of heat-treated cholesterol into provitamin D was orginally observed in 1925. Among his widely used inventions are the Koch pipette, a stopcock pipette with reservoir, and a modified form of the volumetric amino nitrogen apparatus. In the field of blood and urine analysis his micro-Kjeldahl method for total N estimation and his enzymatic uric acid method are best known. He is author of a valuable teaching manual, *Practical methods in biochemistry,* which has appeared in 5 editions.

Dr. Koch's greatest influence was as a teacher and trainer of biochemists. Many of the 40 Doctors of Philosophy and 20 Masters of Science who earned their degrees under his direction occupy places of responsibility and distinction in leading educational and research institutions of this country. Hundreds of medical and other science students have profited by his clear exposition, his conservative thinking, and his insistence on the quantitative approach to biological questions. The excellent arrangement of the physical facilities of the Department of Biochemistry in Abbott Hall is due largely to his planning, and many of his ideas were adopted by other departments and institutions in the construction of their new laboratories. The annual departmental teas, held each autumn in the Kochs' apartment at 1534 East 59th Street, were, for returning and current students and staff, an occasion of friendliness and charm, to be cherished and long remembered. In 1939, students and friends contributed toward a bust of Dr. Koch, which was presented to the University and which stands in the biochemistry lecture room in Abbott Hall, a symbol of respect and affection.

His long record of distinguished service was recognized by the award of many honors, both at home and abroad. He had been Harvey Society lecturer, Julius Stieglitz Memorial lecturer, president of the Association for the Study of Internal Secretions, councilor and secretary of the American Society of Biological Chemists, general chairman of the September 1946 National Meeting of the American Chemical Society, and, for the Chicago Section, Willard Gibbs juror, vice-chairman and director. In 1935 he was chosen one of this country's delegates to the League of Nations Conference on Standardization of Sex Hormones. At the invitation of the Uruguayan government in 1941, he was this country's representative at the Pan-American Congress on Endocrinology. In 1942 he received the Squibb Award of the American Association for the Study of Internal Secretions; in 1943, the annual award of the Chicago Chapter of the American Institute of Chemists. He was an editor of the *Archives of Biochemistry*. In 1947 he was elected vice-president of the Institute of Medicine of Chicago.

A devoted companion in his scientific as well as his personal life was his charming wife, also a chemist and Ph.D., who collaborated with him in several scientific studies. Both were interested in symphonic music and were trailer and camera enthusiasts. They traveled the length and breadth of the land by automobile and often entertained friends with pictures of their wide travels. In recent years they were increasingly attached to a summer home in Wisconsin, the development of which, although delayed by building restrictions, provided much joy and relaxation.

Fred Koch was outstandingly orderly and punctual. Throughout his laboratory, his office, and his home, systematic planning and efficient arrangement were in evidence. Although he was ready for most radical development in his scientific research, in his social and political thinking, and in his teaching methods, he was conservative. His unselfish devotion to the problems of others, often at the expense of his own interests, has left a great feeling of debt and appreciation among those who sought his advice and help. His exemplary speech and conduct, his good humor, his refinement and good taste, and his wide interests, won for him a host of friends and admirers. He will probably be remembered best for his scientific accomplishments, for his self-sacrificing and energetic devotion to his work and to his students, and, most of all, for his personal and scientific integrity.

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