In Memoriam

Leonor Michaelis: 1875–1949

SCIENCE lost a remarkable character in the death of Leonor Michaelis on October 8, 1949. In the early years of his academic career he contributed to embryology and histology and in the closing years he was applying magnetochemistry to his studies of semiquinones. In the interval he pioneered in the application of the theory of acid-base equilibria to biological problems, he propounded that theory of the competitive action of inhibitors which governs a large sector of this field of enzymology, he contributed invaluable data on semipermeable membranes, and he developed by means of numerous specific cases his theory of single electron exchange in oxidation-reduction systems.

These are but a few of the many topics which might be cited to show the range of his interests. But no citation of a mere bibliography would suffice to convey the flavor of his writing. Dr. Michaelis seems to have had a passion for seeking the broad generalization, yet this was always tempered by the realization that each investigation must be so restricted as to be amenable to quantitative study and so can cover but a small sector of the field. Thus the readers of each of his many papers must have said to themselves: Here is something that is good in itself and has broad implications.

Born in Berlin, Michaelis became cosmopolitan in science, art and the world. An embryologist under Hertwig, a histologist under Paul Ehrlich, a bacteriologist in Rona's laboratory, Michaelis himself inclined toward the application of physicochemical principles to biological and biochemical problems. So it was that as the years passed he became an author of texts on applied mathematics, hydrogen ions, and oxidation-reduction, and of articles on potentiometry and magnetochemistry. Withal, he found time to indulge his love of music and characteristically he carried on to original composition and to the entertainment of his friends with charming improvisations on the piano. The year 1922 found him in Japan studying semipermeable membranes and the effects of electrolytes on colloids. Four years later he displayed his broad knowledge in consulting with members of the Department of Medicine at Hopkins. Thence he went to the Rockefeller Institute for Medical Research, where he became a member. It was there that Michaelis developed his theory of semiquinones and isolated and characterized ferritin. He became an American citizen and a member of the National Academy of Sciences.

After age had forced his formal retirement, Dr. Michaelis remained the enthusiastic investigator and displayed his eagerness to be helpful. At a conference there arose for the moment a question regarding bond energies which he undertook to explain. When the questioners swung to the more elementary matters Dr. Michaelis offered to organize a class on the application of quantum mechanics to valence problems.

There is a passage in a translation of *The book of the courtier* by the Rennaissance author, Castiglione, that reads: "That therefore which is the principall matter and necessarie for a Courtier to speake and write well I believe is knowledge. For he that hath not knowledge and the thing in his mind that deserveth to bee understood can neither speake nor write well." Leonor Michaelis always knew of what he spoke and this shows and shines in his writings. We in America did not know him as a teacher in a teaching post. But whether in casual conversation, in a conference where he was at the fore in preserving perspective, or in his books, we knew him as a great teacher. He had the thing in mind that deserveth to be understood and frequently it was a subject new at the time to biologist or biochemist and that should be understood as prerequisite to the next advance.

As one whose work occasionally overlapped that of Dr. Michaelis, I wish to say that he taught me much and that true to the instincts of a good teacher he generously ignored the fact that I had had an opportunity to find what he later discovered. I am sure I speak for a host of friends in saying that we shall miss his sprightly manner and keen remarks at meetings and that for a long time to come we shall be studying several of his scientific papers.

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Alfred Lee Franklin: 1919–1949

ALFRED FRANKLIN, biochemist, died of nephritis in the Cedars of Lebanon Hospital, Los Angeles, on March 25 at the age of 29. He was born in Los Angeles and was graduated from the University of California, where he received the degrees of A.B. in 1942 and Ph.D. in 1946.

During his short but brilliant scientific career he published several important findings. He reported the effect of goitrogens on the utilization of iodine by the thyroid gland. He observed that an antagonist of folic acid would reduce the white blood cell count of rats to extremely low levels. This observation was made the basis of a proposal that folic acid antagonists should be used to control certain blood dyscrasias. He studied the metabolism of folic acid and its conjugates, the effects of thiouracil when used in fattening pigs and chickens, and the amino acid composition of the pituitary growth hormone. He collaborated in investigations of the animal protein factor and in the assay of the antipernicious anemia factor. He was a member of the Society for Experimental Biology and Medicine and the American Chemical Society. His personality was vigorous, forthright, and engaging, and his life showed great promise.

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Ralph R. Parker: 1888–1949

THE LIFE of Ralph Robinson Parker was closely associated with the long history of the study of Rocky Mountain spotted fever and the development of the Rocky Mountain Laboratory, a story which in some respects is unique in medical history.

Parker, born in Malden, Massachusetts, was educated in entomology at the Massachusetts Agricultural College (now the University of Massachusetts). His father was a physician and was at one time in charge of a leprosarium maintained by the city of Boston. While a graduate student, Parker conducted a study on the possible relationship of flies to transmission of leprosy, which was the subject of his first recorded publication, in May 1914.

While working for his doctorate in 1914, Parker was invited to come to Montana by Robert E. Cooley, who had been state entomologist since 1903, and who was one of the pioneer figures in the study of Rocky Mountain spotted fever. Among Cooley's many responsibilities was investigating the possible relationship of flies to typhoid fever, which was widespread in Montana, and young Parker spent the summer of 1914 studying flies in the Yellowstone Valley. In 1915 Rocky Mountain spotted fever was recognized for the first time in eastern Montana, and Cooley assigned Parker to make preliminary studies on tick infestation on the Powder River. The next year, having received his Ph.D., Parker returned to Montana, this time permanently, with his bride. They lived in a log cabin on the Powder River, and Mrs. Parker spent the spring and summer assisting her husband in collecting ticks from a wide variety of animals which he shot and trapped.

After a year studying ticks on the Musselshell River, Parker was assigned to the spotted fever work in the Bitter Root Valley and in 1918 set up his laboratory in a woodshed at the town of Victor. By that time, the natural history of Rocky Mountain spotted fever had come to be fairly well understood. Known in the Bitter Root Valley since 1873, the disease was greatly feared because of its high mortality. Earle Strain, of Great Falls, had suggested in 1902 that ticks might be the vector of spotted fever, which up to that time was believed to be caused by the drinking of melted snow water. L. B. Wilson and W. M. Chowning, of the University of Minnesota, had gone to the Bitter Root Valley in 1902 at the suggestion of A. F. Longeway, the Montana state health officer, and after several years of study they became convinced that ticks were responsible for the transmission of the disease, but it remained for H. T. Ricketts, of the University of Chicago, to make the actual demonstration in 1906. (Drs. McCalla and Brereton in Idaho had earlier allowed a tick from a spotted fever patient to bite a volunteer, who subsequently developed the disease, but their experiment was not published.)

At the time of Dr. Parker's move to Victor, the problem of Rocky Mountain spotted fever had become largely one of how to develop existing knowledge in order to bring about a reduction in the extent of infection. Parker devoted his efforts to extending the areas of control, systematizing methods of decreasing the tick population, and learning more about the factors influencing the propagation of the infection in ticks. Methods of control then in use did not prove satisfactory, and the death from spotted fever of a prominent Missoula citizen and his wife in 1921 led to an appeal to the U. S. Public Health Service to reenter the spotted fever studies, from which it had withdrawn in 1917 after an active part in the earlier investigations in the Bitter Root. As a result of this appeal, Thomas Parran, who was later to become surgeon general of the Public Health Service, was sent by the then surgeon general, Hugh S. Cumming, to the Bitter Root in 1921. Parran recommended that the Public Health Service renew the studies on spotted fever, and as a result Parker was appointed as a special expert, and a new laboratory was established in an abandoned school building west of Hamilton. This marked the actual birth of the Rocky Mountain Laboratory, as it is known today. Parker was designated as officer in temporary charge at the time of the opening of the laboratory in 1921, and from then on, until the time of his death 28 years later, he was either in actual charge of operations of the laboratory or taking a leading part in them.

In 1922, R. R. Spencer, of the Public Health Service, was assigned to take charge of the Rocky Mountain Laboratory, and for six years he and Parker collaborated in a wide variety of studies on spotted fever and other diseases. This collaboration is most