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