A. H. Hersh, Geneticist

Amos Henry Hersh was born on 2 November 1891 in Quarryville, Pennsylvania, a village near Lancaster. In the latter town, he attended the Boys' High School and, later, Franklin and Marshall College, where he was graduated with an A.B. degree in 1914. He remained in Lancaster another year and attained the M.A. degree in 1915.

His interest in developmental zoology attracted him to Edwin Conklin, whose assistant he became in 1915. Thus began his teaching and research career. From 1916 to 1918, he held an instructorship at Kansas State College and, the following year, a similar appointment at Marquette University.

A new phase in his scientific career began with his appointment as fellow in zoology at the University of Illinois in 1919. Again, development was the attraction, and Charles Zeleny, embryologist and geneticist, gladly accepted him as a graduate student in the promising field of genetics. Zeleny had the gift of opening the eyes of students to genetics, then the infant child of the biological sciences. Hersh came to the University of Illinois during the exciting years when "Uncle" Henry B. Ward was head of the zoology department, Victor Shelford was pioneering in ecology, H. B. Lewis in biochemistry, Harley van Cleave in invertebrate zoology, Kudo in parasitology, and John Sterling Kingsley, a creative morphologist, was rounding out a life of teaching and research in comparative anatomy. This was the exciting environment in which Amos Hersh found himself during his 3-year association with the zoology department of the university.

His studies culminated in a Ph.D. degree, awarded in 1922. Here too, he met his future wife, Roselle Karrer, also a graduate student in Zeleny's laboratory, whom he married in 1922. Two sons were born to them.

Except for 1 year at the University of Michigan (1923), Dr. Hersh spent the remainder of his life in teaching and research at Western Reserve University, where he was advanced in due course from assistant professor to full professor. From the very beginning of this association, he carried on intensive research studies. In his 32-year tenure he published more than 50 papers, beginning with *Drosophila* studies and expanding into allometric growth and human heredity problems.

His contributions to genetics, in a sense, are threefold: determination of rates of facet-formation in relation to temperature in the bar-eyed series in *Drosophila*, a study instigated by Zeleny and his group; application of the allometric growth formula to developmental problems, including contributions to theoretical genetics; and a series of studies on human heredity, together with Robert M. Stecher and others. Each of these approaches yielded fruit. His desire to reduce biological processes to simple quantitative mathematical relationships was outstanding. This is evident throughout all his work. His early work on the application of the relative growth equation to evolutionary processes is but a single example of this mathematical unification.

This phase resulted in an unusual and frequently quoted study, *Evolutionary Relative Growth in the Titanotheres* (1934), in which Hersh "tested in an admirable way" [Goldschmidt, *Physiological Genetics* (McGraw-Hill, New York, 1938), p. 211] the phylogenetic significance of the theory that form was a type of automatic pattern formation, that "something connected with growth produced at a definite time and place and in a definite quantity sets the pace for the working of differential growth by fixing the numerical value of the constants in the formula." Later he extended this concept to the antero-posterior gradient studies in the *Notonecta*. After this, he ingeniously demonstrated that this growth function could be applied to the study of the development effects of genes. This was the work on the bar-eyed mosaics in *Drosophila*, in which one of us (F. DeM.) was fortunate to have a share.

More recently, he turned from theoretical genetics to human genetics. In this phase, he worked with another keen student of human heredity, Stecher. With Hersh's theoretical knowledge and Stecher's long clinical background, along with the assistance of several others, the two formed the core for investigations in the young field of human genetics. This friendly association led to the study of numerous problems, such as gout, the heredity of ankylosing spondylitis, genetics of rheumatoid arthritis, Heberden's nodes, hyperuricemia, and the inheritance and development clinodactyly. Just prior to his death on 28 August 1955, he published with O. P. Kimball a paper on the genetics of epilepsy. Three other papers in this general field have appeared posthumously in various journals.

Our association with Hersh spanned almost 26 years. We are happy to state that after our frequent conferences with Hersh, often quite brief, we were invariably the gainers. Some observation, an explanation, a witticism sometimes incisive, bespoke the clarity of his thought. His undergraduate students at times could not understand him; he assumed intelligence on their part and his expositions might omit steps, that they, in the throes of learning to think, felt necessary. At the graduate level students began to appreciate more fully his clarity, accuracy, and logic as well as the implications of his observations. He became recognized as one of the best minds on the campus. His Alma Mater, Franklin and Marshall College, in recognition of his attainments, awarded him an honorary D.Sc. degree in 1946.

Seemingly without ambition for preferment or honors, he nevertheless gave evidence of a quiet inner driving force that did not desert him even in the last 2 or 3 years of his life, when, in spite of failing health, he remained alert and active in his teaching and in his researches.

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