MOORE ON GENERAL ANALYSIS—I

General Analysis. Part I. *The Algebra of Matrices.* By Eliakim Hastings Moore with the cooperation of Raymond Walter Barnard. Memoirs of the American Philosophical Society, Philadelphia. Vol. I, 1935.

Eliakim Hastings Moore will always be counted among the heroic figures of American mathematics. His life was devoted to research and to the implanting of respect for research in the minds of others. As head of the department at the University of Chicago he came into contact at one time or another with a large proportion of the present generation of mathematicians in America, and many there are who derived from him an ambition to contribute something to the science. Professor Moore's personality was dominating. He was unusually careful in matters of rigor, very severe with students who were guilty of loose thinking, but quick to forgive and encourage.

Like Weierstrass and Lie, Moore published very little of his later work. This was partly because of the comprehensive nature of his problem, and the interdependence of its parts. It was also due to the extremely high standard which Moore set for himself, and his severe self-criticism. He was continually changing and polishing his work and was never willing to give it his final approval. But now his work is finished, and with the sympathetic and able assistance of Professor Barnard it is given to the world.

Moore's *General Analysis* will be published in four volumes of which this, *The Algebra of Matrices*, is the first. The other volumes will be *The Fundamental Notions of General Analysis*, *Generalized Fourier Series and Modular Spaces*, and *The Characteristic Value Problem in General Analysis.* This first volume contains a preface by G. A. Bliss and an introduction to the entire series by Barnard. In this introduction is a sketch of Moore's first General Analysis theory, and of the historical development of the second (present) theory. The reader is then taken into the author's confidence, the underlying ideas and motives of the General Analysis are explained, its triumphs and temporary failures analyzed, and the changes noted which had to be made to mold it into its final form.

One of the striking features of Moore's work is his extensive use of symbolism. His notation is founded upon that of Peano but it has been greatly modified and extended. To a person not familiar with it, it appears formidable, but actually the system is so consistent that it becomes clear after only a short study. To Moore it was not a system of shorthand, but a medium in which ideas could be expressed with greater clarity and rigor. By its use he was led to finer distinctions than most mathematicians are accustomed to make, and to a better realization of his underlying assumptions. Then, too, the careful statement of a theorem in symbolism often gave him a clue to a possible method of proof.

"*The existence of analogies between central features of various theories implies the existence of a general theory which underlies the particular theories and unifies them with respect to those central features.*" This quotation from Moore's New