



The April Meeting of the Metropolitan New York Section

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will face when considerable numbers of high school graduates enroll with preparation in the new mathematics.

HELEN KRIEGSMAN, *Secretary*

THE APRIL MEETING OF THE METROPOLITAN NEW YORK SECTION

The eighteenth annual meeting of the Metropolitan New York Section of the Mathematical Association of America was held at Polytechnic Institute of Brooklyn on April 18, 1959. Dr. Ernst Webber, President of Polytechnic Institute of Brooklyn gave the address of welcome and discussed *The impact of mathematics on engineering education*. Professor Azelle B. Waltcher, Collegiate Vice-Chairman of the Section, presided at the morning session and Dr. R. N. Walter, High School Vice-Chairman, presided at the afternoon session which was a panel discussion on *The role of geometry in secondary and higher education*. There were 144 persons in attendance, including 79 members of the Association.

Professor James Eastham, Chairman of the Section, presided at the business meeting. Reports were given by Professor Eastham on the Speaker's Bureau; by the Governor, Professor Jewell H. Bushey; the Secretary, Professor June Jensen; and Professor Charles Salkind, for the Committee on Contests and Awards. The following officers were elected: Chairman, Professor Azelle B. Waltcher, Hofstra College; Vice-Chairmen, Professor Jules Russell, Polytechnic Institute of Brooklyn, and Mr. George Grossman, William Howard Taft High School; Secretary, Professor Mary Dolciani, Hunter College; and Treasurer, Mr. Aaron Shapiro, Brooklyn College.

The following papers were presented at the meeting:

1. *Some topics in set theory*, by Professor Smbat Abian, Queens College.

Set theory is found to be essential in formulating the basic concepts of almost every mathematical discipline. The axiom system Z , which is Fraenkel von Neumann's modification of Zermelo's axiom system is described here. The chief motivation in formulating the axioms of system Z is the elimination of set theoretical antinomies. Although Z is sufficient for developing classical set theory, one weakness is that its axioms of subsets and substitution are not proper axioms, but axiom schemas. Also Z imposes some undesirable restrictions on the set concept. The more recent formulations by von Neumann, Bernays and Gödel, of the axiomatization of set theory have been attempts to overcome these shortcomings.

2. *Matrix theorems with application to the rate behavior of metabolic systems*, by Dr. J. Z. Hearon, Office of Mathematical Research, National Institute of Arthritis and Metabolic Diseases, introduced by the Secretary.

For a linear physical system with rate matrix K , the principle of detailed balance insures the existence of a positive definite diagonal matrix A such that KA is symmetric. This implies that K is similar to a symmetric matrix. The consequence of these properties are discussed in terms of symmetry properties of the matrix of principle solutions and certain boundary value problems. For a nonlinear system the corresponding properties of the Jacobian matrix are established and discussed in terms of "relaxation time analysis" of systems close to equilibrium.

3. Panel Discussion by Mr. E. C. Douglas, Taft School, representing the Commission on Mathematics.

'Since the Commission firmly believes that the study of geometry should continue to be the basis of a full year's work in secondary school mathematics, it has formulated a program for the tenth grade which is directed to the study of geometry. The following are objectives: (1) the acquisition of information about geometric figures in two as well as three dimensions; (2) the development of a better understanding of the deductive system as a way of thinking and acquiring further skill in applying this method to problems in mathematics; (3) the exposure to opportunities for creative and original thinking. The Commission firmly believes that these objectives can be

met by incorporating with plane geometry some coordinate geometry, and essentials of solid geometry and space perception.

4. Panel Discussion by Professor R. J. Walker, Cornell University, representing the School Mathematics Study Group.

Training in clear thinking, precise language, and logical reasoning should appear somewhere in the high school program. Geometry still seems to be the best vehicle to which to attach such training, having more motivation, in its close contact with simple properties of the physical world, than algebra or any non-mathematical subject. Of the several known rigorous developments of Euclidean geometry, the one proposed by G. D. Birkhoff has the advantages of leading rapidly to the more interesting theorems and of making use of the students' knowledge of algebra. Using a modification of the approach, coordinate geometry can be introduced quickly; but the analytic techniques, being largely mechanical in their application are not over-stressed. The two- and three-dimensional aspects of geometry are closely interwoven.

5. Panel Discussion by Professor Walter Prenowitz, Brooklyn College, speaking on *Geometry in the college curriculum*.

JUNE R. JENSEN, *Secretary*

THE APRIL MEETING OF THE MINNESOTA SECTION

The annual spring meeting of the Minnesota Section of the Mathematical Association of America was held on April 25, 1959, at the University of Minnesota in Minneapolis. The meeting was a joint one with the Minnesota Council of Teachers of Mathematics. Professor J. M. H. Olmsted of the University of Minnesota presided at the morning session. The Rev. W. C. Kalinowski, O.S.B., of St. John's University presided at the afternoon session. There were 114 persons in attendance, including 74 members of the Association.

At the business meeting Professor Leon Green of the University of Minnesota reported for the High School Contest Committee on another successful year in giving the Association's high school mathematics contest.

Professor Warren Loud, chairman of the Section's Nominating Committee, nominated the following slate of section officers who were subsequently elected: Chairman, Professor Gerald Heuer of Concordia College; Secretary, Professor F. L. Wolf of Carleton College; Members of the Executive Committee, Professor John Hafstrom of the University of Minnesota, Duluth Branch, Rev. W. C. Kalinowski and Professor James Serrin of the University of Minnesota.

The following papers were presented:

1. *Evaluation of achievement in mathematics*, by Professor P. C. Rosenbloom, University of Minnesota and the Minnesota State Department of Education.

The evaluation of new curricular material is a vast research problem, requiring the cooperation of mathematicians, psychologists, and educators. Existing achievement tests measure only rote mastery of skills. New tests will have to be devised to measure understanding of concepts, powers of generalization and abstraction, interest, attitudes, and appreciations. The organization of the Minnesota National Laboratory for the Improvement of Secondary School Mathematics as an agency of the Minnesota State Department of Education was described.

2. *Panel discussion on introducing "modern" mathematics into the curriculum*, by Professors B. R. Gelbaum, University of Minnesota, Seymour Schuster and R. W. Sloan, Carleton College.

3. *Motivation of secondary school mathematics courses through the modern electronic computer*, by Dr. R. E. Smith, Control Data Corporation.

The essentials of computer programming can be taught to secondary school students. Used