THE MATHEMATICAL ASSOCIATION OF AMERICA

THE ANNUAL MEETING OF THE METROPOLITAN NEW YORK SECTION

The third annual meeting of the Metropolitan New York Section of the Mathematical Association of America was held at New York University, Washington Square, New York City, on Saturday, April 22, 1944. Professor R. M. Foster, Chairman of the Section, presided at the morning session and at the business meeting. Mr. Max Peters, Vice-Chairman of the Section, presided at the afternoon session.

The attendance was one hundred and two, including the following forty-seven members of the Association: Claire F. Adler, R. G. Archibald, I. L. Battin, Brother Bernard Alfred (Welch), Frank Boehm, C. B. Boyer, A. B. Brown, Jewell Hughes Bushey, Ruth T. Coleman, H. R. Cooley, T. F. Cope, W. H. H. Cowles, D. R. Davis, J. E. Eaton, W. H. Fagerstrom, J. M. Feld, Edward Fleisher, R. M. Foster, P. H. Graham, Marion C. Gray, Mary W. Gray, Harriet M. Griffin, C. C. Grove, C. E. Heilman, J. H. Hlavaty, Joseph Jablonower, Nathan Lazar, C. H. Lehmann, H. F. Mac Neish, May Hickey Maria, Joseph Milkman, F. H. Miller, M. A. Nordgaard, Max Peters, Mina S. Rees, Moses Richardson, S. G. Roth, Charles Salkind, A. A. Schwartz, James Singer, E. R. Stabler, H. E. Wahlert, Israel Wallach, Alan Wayne, John Williamson, Jack Wolfe, R. C. Yates.

At the beginning of the morning session Dean Charles M. McConn of the Washington Square College of New York University welcomed the Section to New York University. At the business meeting the following officers were elected for the coming year: Chairman, Jewell Hughes Bushey, Hunter College; Vice-Chairman, Nathan Lazar, Midwood High School; Secretary, H. E. Wahlert, New York University; Treasurer, F. H. Miller, Cooper Union.

The following program was presented:

1. *Elementary mathematical theory of exterior ballistics*, by Professor H. F. Mac Neish, Brooklyn College.

Three aspects of the subject were considered. First, the parabolic trajectory in the ideal case in which there is no resistance. Many interesting geometric properties of the parabolic trajectory were considered. Second, the computation of the path of a projectile by the method of differences (due to F. R. Moulton), which takes into account the most important types of resistance. Third, the computation of the path of a projectile by a new procedure called the functional method. This method requires no knowledge of the method of differences, and is comparatively simple both in theory and in practice.

2. *Applications of mathematics in aerodynamics*, by Professor R. Paul Harrington, Polytechnic Institute of Brooklyn, introduced by Professor R. M. Foster.

Two mathematical procedures which may be used in the solution of certain aerodynamic problems were discussed. The first dealt with the use of conjugate functions to represent certain physical characteristics of fluid flow. These flows were later transformed into curves (in another plane) representing airfoil cross-sections. The second dealt with the mathematical representation of a fuselage in an airstream, and the calculation of the effects upon the angle of attack of the propeller blades. The fuselage was represented by an ellipsoid of revolution, and the problem resolved iself into the determination of the coefficients in a series representing the velocity potential. The series was found to be composed of Legendre and associated Legendre functions so chosen that the surface of the fuselage became a stream line of the flow. The theoretical effects were certain velocity changes of such a nature as to alter the angle of attack of the blade by two or three degrees. This might result in torsional and bending vibrations of the blades.

3. *Combinatorial statistics*, by Dr. Jacob Wolfowitz, Columbia University, introduced by Professor Jewell Hughes Bushey.

The speaker remarked that the control of quality in articles produced by mass production offers an important field for the application of combinatorial statistics. He pointed out that sampling methods are in order whenever the cost of inspection makes complete inspection uneconomical or prohibitive. The Dodge-Romig sampling method was discussed from the viewpoint of modern statistical theory. The Shewhart method of runs for control of quality during manufacture was also described. A brief description of the theory of runs above and below the median, and runs up and down, was given. The asymptotic normality of the distribution of runs up and down will be proved by the speaker in a forthcoming article.

4. *A guiding philosophy for teaching demonstrative geometry*, by Mr. Morris Hertzig, Forest Hills High School, introduced by Mr. Max Peters.

Mr. Hertzig stated that the high school geometry course cannot be successfully taught as an abstract mathematical science. If taught as an empirical science of space, the following objectives can be realized: (1) the student has an opportunity to engage in experimental inquiries and to study the logic of sound experimental procedure; (2) he learns that an induction obtained as a generalization from several observations is insufficient to give scientific knowledge of the principle observed; (3) the student is given his only opportunity to study the complete scientific method (because high school courses are not organized with this objective in mind); (4) through a study of the deductive aspect of the scientific method the student develops understanding of an important device for extending the limits of knowledge.

5. *Mathematics and empirical science*, by Professor C. G. Hempel, Queens College, introduced by Professor T. F. Cope.

The speaker examined the significance of geometric theories as they pertain

to our knowledge of physical space. Two meanings of the term "geometry" were recognized, namely, pure geometry and physical geometry. A pure geometry, euclidean or non-euclidean, is an uninterpreted deductive system. It does not concern physical space, and the mathematical certainty of its theorems is due to the fact that each theorem simply re-asserts part of the content of the postulates. A system of physical geometry is obtained by assigning to each primitive of pure geometry its customary physical meaning. This transforms the postulates and theorems into physical hypotheses which may be said to concern the structure of physical space. When combined with the nongeometric part of physics, a physical geometry can be tested empirically. Recent physical findings appear to support the hypothesis, developed in connection with the general theory of relativity, that the geometric structure of the universe at large is of a certain non-euclidean type.

H. E. WAHLERT, *Secretary*

THE ANNUAL MEETING OF THE MINNESOTA SECTION

The annual meeting of the Minnesota section of the Mathematical Association of America was held at Macalester College in St. Paul, Minnesota, on Saturday, May 6, 1944. Sessions were held in the forenoon, at luncheon, and in the afternoon. Professor C. H. Gingrich, Chairman of the Section, presided.

Forty-five persons attended the meeting, including the following twenty-one members of the Association: R. W. Brink, W. E. Brooke, L. E. Bush, W. H. Bussey, E. J. Camp, C. S. Carlson, R. W. Erickson, I. C. Fischer, Gladys Gibbens, C. H. Gingrich, W. L. Hart, Dunham Jackson, C. M. Jensen, W. R. McEwen, Helen K. Milleson, J. M. H. Olmsted, Abraham Spitzbart, F. J. Taylor, H. L. Turrittin, A. L. Underhill, G. L. Winkelmann, and Sister Thomas à Kempis (institutional representative).

At the business meeting the following officers were elected for the coming year: Chairman, L. E. Bush, College of St. Thomas; Secretary, A. L. Underhill, University of Minnesota; Executive Committee, E. J. Camp, Macalester College, C. S. Carlson, St. Olaf College, H. L. Turrittin, University of Minnesota, K. W. Wegner, Carleton College.

The following seven papers were presented:

1. *Sophus Lie*, by Professor C. S. Carlson, St. Olaf College.

This paper was devoted to a biographical sketch of Sophus Lie. Particular attention was directed to his early childhood, his education, and the first few years following the completion of his education. An attempt was made to show how he came to enter upon his mathematical studies, and his mathematical career was summarized briefly.

2. *A note on the evaluation of* $\int_0^\infty \cos mx\,(1+x^2)^{-1}dx$, by Professor E. J. Camp, Macalester College.

The function $u(m, \beta)$ was defined by the equation