The April Meeting of the Metropolitan New York Section

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by subdivision then its Burkill integral exists but may have the value $+\infty$. Theorem II: If f is a function of intervals (n-dimensional) which increases by subdivision and if a constant K exists such that for any interval I, $|f(I)| \leqq K|I|$, then the Burkill integral of f exists.

For precise definitions of the concepts involved, see Saks, *Theory of the Integral*, 2nd Ed., Chap. V, §3.

5. *The old and new methods in the theory of elasticity*, by Professor Tadeusz Leser, University of Kentucky.

After introducing the basic concepts and assumptions of the theory of elasticity, the author presented the tensor notation as compared with the scalar notation and also discussed the increasing use of conformal mapping for problems of twisting and bending.

6. *Inversion with respect to a cubic of the syzygetic pencil*, by Miss Elsie T. Church, University of Kentucky.

With base curve as a cubic of the pencil of syzygetic cubics,

$$F = x_1^3 + x_2^3 + x_3^3 - 3\lambda x_1x_2x_3 = 0,$$

an inversion analogous to quadric inversion was defined and the equations of the corresponding cubic transformation were derived. These equations are $x_1:x_2:x_3=f_1:f_2:f_3$, where

$$f_1 = \lambda x_1'^2 x_2' - x_1'x_3'^2, \qquad f_2 = \lambda x_1'x_2'^2 - x_2'x_3'^2, \qquad f_3 = x_1'^3 + x_2'^3 - 2\lambda x_1'x_2'x_3'.$$

The curves $f_1=0$, $f_2=0$, $f_3=0$, intersect in seven common points and thus the transformation sets up a (1, 2) correspondence. Attention was called to the interesting results obtained with these seven points when λ is assigned the values 1, ω, ω^2, respectively.

7. *The knight's move on an infinite chess board*, by Professor A. W. Goodman, University of Kentucky.

A sequence of moves of the knight is called a grand tour if the knight occupies each square once and only once. Kurschak has proved that a grand tour is possible on an infinite chess board, *Acta Szeged*, vol. 4, pp. 12–13. Let $[r, s]$ denote the move of a generalized knight, where $[2, 1]$ is the ordinary knight move. A necessary condition for a grand tour is obviously $(r, s)=1$ and $r+s$ odd. It is not known whether these conditions are sufficient.

AUGHTUM S. HOWARD, *Secretary*

THE APRIL MEETING OF THE METROPOLITAN NEW YORK SECTION

The tenth annual meeting of the Metropolitan New York Section of the Mathematical Association of America was held at Manhattan College in New York City, New York, on Saturday, April 7, 1951. Dr. I. A. Dodes, the High School Vice-Chairman, presided at the morning session; Brother Bernard Alfred, Chairman of the Section, presided at the business meeting which followed the morning session, and he and Professor James Singer, Collegiate Vice-Chairman, presided at the afternoon session.

One hundred and twelve persons attended the meeting, including the following sixty-four members of the Association:

Brother Bernard Alfred, A. A. Bennett, Samuel Borofsky, C. B. Boyer, A. B. Brown, J. H. Bushey, Jewell H. Bushey, A. J. Carlan, Charles Clos, L. W. Cohen, T. F. Cope, W. H. H. Cowles, P. H. Daus, I. A. Dodes, J. N. Eastham, W. H. Fagerstrom, William Feller, Edward Fleisher, R. M. Foster, Leona Freeman, Harriet Griffin, George Grossman, G. C. Helme, W. M. Hirsch,

J. H. Hlavaty, T. R. Humphreys, L. C. Hutchinson, H. S. Kieval, J. J. Kinsella, R. J. Kohlmeyer, David Kotler, H. C. Kranzer, Helen Kutman, Martin Maltenfort, D. May H. Maria, Audrey Michaels, Martin Milgram, F. H. Miller, A. J. Mortola, W. R. Murray, D. S. Nathan, M. A. Nordgaard, C. J. Oberist, Eugene Odin, Walter Prenowitz, Hymen Rensin, Moses Richardson, John Riordan, Rose Roll, H. D. Ruderman, J. P. Russell, Charles Salkind, Arthur Schach, Abraham Schwartz, Aaron Shapiro, E. I. Shapiro, L. G. Sigler, James Singer, C. G. Solky, Mildred M. Sullivan, R. L. Swain, P. M. Treuenfels, Alan Wayne, M. E. White.

The following officers were elected for the coming year: Chairman, James Singer, Brooklyn College; Collegiate Vice-Chairman, L. F. Ollmann, Hofstra College; High School Vice-Chairman, E. I. Shapiro, Abraham Lincoln High School; Secretary, H. S. Kieval, Brooklyn College; Treasurer, Aaron Shapiro, Midwood High School. A resolution was passed which provided that the bylaws of the Section be interpreted to include Junior and Community Colleges in the naming of a representative from each collegiate department of mathematics to the Executive Committee of the Section. A resolution, that a second meeting of the Section be held in the fall of each year to be devoted to short papers, was referred to the Executive Committee for further study. The eleventh annual meeting will be held in the Spring of 1952.

Brother Bonaventure Thomas, President of Manhattan College, welcomed the people at the meeting, and then the following papers were presented.

1. *A theory of distribution*, by Professor Claude Chevalley, Columbia University, introduced by the Secretary.

The main object of Schwarz's theory of distributions is to put on a rigorous and uniform mathematical footing certain types of computational methods which are in frequent use by the physicists, like, for instance, the Heaviside Calculus.

One of the most frequent sources of difficulty in trying to make simple and general statements in analysis is the fact that a given function, even if it is continuous, does not necessarily have a derivative. The distributions are a class of mathematical objects wider than the class of functions, and inside which the operation of derivation is possible without any restriction. Thus, in particular, a continuous function always has derivatives of all orders; these derivatives are of course not functions in general, but distributions.

In order to define the notion of distribution, one introduces first the set D of indefinitely differentiable functions which are zero outside bounded sets (the bounded set depending on the function). This set is a vector space: the sum of two functions in D is in D, and the product by a constant of a function in D is in D. The distributions are then defined to be the linear functionals on D which are continuous relatively to a suitable notion of convergence for functions in D. A function $f(x)$ is identified with the functional which assigns to every g in D the number $\int_{-\infty}^{\infty} f(x)g(x)dx$. The derivative of a distribution S assigns to every function g in D the number $-S(dg/dx)$.

2. *Changing philosophy and content in tenth year mathematics*, by Dr. J. H. Hlavaty, Bronx High School of Science.

In the prolonged attempt of American secondary schools to adapt the curriculum to fit the ever-broadening educational aims, the continuous transformations in the philosophy and content of instruction in plane geometry has been a particularly instructive sidelight. A study of the recommendations of authoritative national bodies in the field of general education and in the field of mathematical instruction and a study of recent representative texts in plane geometry indicate the following major attempts to reform instruction in demonstrative geometry: (1) Improving the methods of instruction; (2) Reformulating the aims of instruction; (3) Teaching geometry with a stress on practical applications; (4) Teaching geometry to develop the ability to think clearly; (5) The integrated mathematics movement; (6) The arithmetization of geometry; (7) Teaching geometry as an example of an empirical science.

However, it has proved impossible to rationalize the instruction in traditional demonstrative geometry either from the point of view of general education or from that of mathematical instruction. This failure is traceable to the fact that the reformers have in all cases retained traditional geometry or its method as the core of the mathematical instruction of the tenth year. It is suggested that there is a need for a course in general mathematics through the tenth year. In the tenth year the course should stress: (1) Methods of thinking (induction, deduction, statistical inference, "clear thinking"); (2) The uses of mathematics as a means of extending our understanding of the world (elementary statistics, trigonometry, spherical geometry); (3) The beginnings of these methods that lead to analytic geometry and the calculus.

3. *Changes in secondary school mathematics from 1900 to 1950*, by Mr. Joseph Orleans, George Washington High School, introduced by the Secretary.

At the beginning of the twentieth century the syllabi in mathematics in the American High Schools were determined largely by the requirements for entering the colleges. In 1902, a committee of the American Mathematical Society made recommendations for the content of the elementary algebra, the higher algebra, plane and solid geometry, and trigonometry. This report was described by David Eugene Smith as 'rather inclusive through its lack of precision.' It was to serve fairly well as starting point for reform.

In 1900 the College Entrance Examinations Board had come into being and gradually began through its examinations to exert its influence on syllabi.

In 1908 the work of the International Commission on the Teaching of Mathematics brought to the attention of teachers that other countries were ahead of us in the modernization of syllabi. In 1916, the National Committee on Mathematical Requirements began (the report appeared in 1923) with suggestions for the elimination of non-essentials, the retention of those things which should best meet the needs of pupils, and the introduction of such modern material as would strengthen the work without making it unreasonably difficult. In 1922, the College Entrance Examinations Board issued revised requirements which represented the combined judgment of the colleges and the secondary schools, and which set a new standard to eliminate much of the work for which no reasonable justification could be found. In the meantime the junior high school was developing with the introduction of informal geometry and the beginning of algebra earlier than the ninth year.

In 1930, one heard again the complaint that courses in secondary mathematics were still far from satisfactory. Recommendations were made for curriculum construction based on difficulties which pupils experience in the study of mathematics, and thus to eliminate the difficulties: (1) the introduction of arithmetic into the high school, (2) the teaching of algebra of a practical character in earlier years, (3) the stress on intuitional geometry.

Then came World War II with a wild scramble everywhere to stress the importance of mathematics for everybody with special courses—war courses—and refresher work in arithmetic, in basic mathematics, and related mathematics. In 1945, there was published the Report of the Commission on Post War Plans with the recommendations that the high school must come to grips with its dual responsibility, (1) to provide sound mathematical training for our future leaders in science, mathematics, and other learned fields, and (2) to insure mathematical competence for the ordinary affairs of life for all citizens as a part of a general education.

The questions that arise are, (1) What is the place of the able students in the present situation?, (2) What do schools do and what can they do to provide for these students?, (3) What is the effect upon their development and their preparation for work in higher institutions of learning?

4. *On chance fluctuations*, by Professor William Feller, Princeton University.

The speaker discussed fluctuations in waiting lines, queues, etc. He emphasized that the fluctuations are much larger than generally expected, and that they easily produce spurious effects resembling trends.

5. *Physical concepts in freshman mathematics*, by Professor A. A. Bennett, Brown University.

Texts and teachers currently use many terms dependent upon the human body, the solar system or clocks, in defining at freshman level, supposedly mathematical notions. On the other hand they often insist that only numbers (with their relations and operations) enter into equations. This view rejects the possible role of vectors in equations, and accepts scalars only when they are dimensionless or have been referred to arbitrarily specified units. It ignores all such rigorous studies as abstract group theory, topology, etc. But other views are possible. One may deal with "denominate numbers" either with or without reference to prior chosen units. There seems often great gain in so doing.

H. S. KIEVAL, *Secretary*

CALENDAR OF FUTURE MEETINGS

Thirty-third Summer Meeting, Michigan State College, East Lansing, Michigan, September 1–2, 1952.

The following is a list of the Sections of the Association with dates of future meetings so far as they have been reported to the Associate Secretary.

ALLEGHENY MOUNTAIN, Waynesburg College, Waynesburg, Pennsylvania, May 10, 1952.

ILLINOIS, Western Illinois State College, Macomb, May 9–10, 1952.

INDIANA, Indiana University, Bloomington, May 3, 1952.

IOWA, Coe College, Cedar Rapids, April 18–19, 1952.

KANSAS, Bethany College, Lindsborg, March 29, 1952.

KENTUCKY, University of Kentucky, Lexington, April 19, 1952.

LOUISIANA-MISSISSIPPI

MARYLAND-DISTRICT OF COLUMBIA-VIRGINIA, Virginia Military Institute, Lexington, April 26, 1952.

METROPOLITAN NEW YORK, Hofstra College, Hempstead, New York, April, 1952.

MICHIGAN, University of Michigan, Ann Arbor, April 12, 1952.

MINNESOTA, College of St. Catherine, St. Paul, May 10, 1952.

MISSOURI, Lindenwood College, St. Charles, May 2, 1952.

NEBRASKA, University of Nebraska, Lincoln, May 3, 1952.

NORTHERN CALIFORNIA

OHIO, Ohio State University, Columbus, April 19, 1952.

OKLAHOMA

PACIFIC NORTHWEST, University of Oregon, Eugene, June 20, 1952.

PHILADELPHIA

ROCKY MOUNTAIN, Western State College, Gunnison, Colorado, May 23–24, 1952.

SOUTHEASTERN, Georgia Institute of Technology and Agnes Scott College, Atlanta, March 21–22, 1952.

SOUTHERN CALIFORNIA, Occidental College, Los Angeles, March 8, 1952.

SOUTHWESTERN, University of Arizona, Tucson, April 11–12, 1952.

TEXAS, East Texas State Teachers College, Commerce, April 25–26, 1952.

UPPER NEW YORK STATE, Hobart and William Smith Colleges, Geneva, May 10, 1952.

WISCONSIN, Milwaukee, May 10, 1952.