The May Meeting of the Indiana Section

J. C. Polley (Secretary)

TADAO SHINGU, B.S. (Kyoto, Japan) Asst. Professor, Shimane Agricultural College, Japan.

PETER SIKORYAK, Student, Hobart College.

FRANCIS E. SIWIEC, Student, Carteret School, W. Orange, New Jersey.

RALSTON J. SMITH, Student, Eastern Kentucky State College.

SAMUEL SOBEL, B.S. (C.C.N.Y.) Reliability Engineer, Sperry Gyroscope Co., New York.

HAROLD S. SPRAKER, M.Ed. (Virginia) Grad. Student, University of Virginia.

HENRY E. STERN, B.E. (Tulane) Asso. Scientist, Lockheed Aircraft Corp., Marietta, Georgia.

JOHN E. STROUT, B.S. (Illinois) Grad. Asst., University of Illinois.

ROBERT L. STURGEON, Student, University of British Columbia.

DONALD H. TARANTO, B.S. (C.C.N.Y.) Applied Science Rep., I.B.M., New York.

MRS. DINA G. S. THOMAS, M.A. (Utah) Instr., University of Colorado.

JOHN A. THORPE, Student, Massachusetts Institute of Technology.

CARL L. TIBERY, B.S. (Bates) Asst. Instr., University of Maryland.

GEORGE G. TOWN, M.S. (Wisconsin) Boeing Research Asso., Oregon State College.

BENJAMIN A. TRIMBLE, Decatur, Georgia.

HWA TSANG, Student, University of Chicago.

OSCAR VALDIVIA G., B.S. (San Marcos, Peru) Asso. Professor, Universidad de Trujillo, Peru.

WILLIAM A. VEECH, Student, Dartmouth College.

GUY E. WEBBER, JR., B.S. (Emory & Henry) Teacher, Edgewood, Maryland.

RUSSELL A. WELKER, M.S. (Illinois) Grad. Asst., University of Illinois.

ALAN J. WESTCOTT, Student, University of California.

BRANDON W. WHEELER, Student, Sacramento State College.

ALTON L. WILKINSON, Student, A. & M. College of Texas.

JAMES P. WILLIAMS, Student, University of Detroit.

FLOYD D. WILDER, Student, Central State College.

ALAN WILSON, Ph.D. (Rice Institute) Houston, Texas.

GERALD WOHL, B.A. (Syracuse) Field Engineer, General Electric Co., San Francisco, California.

JOHN E. WOOD, M.A. (Longwood) Instr., Hampden Sydney College.

ROY E. WORTH, Student, University of Georgia.

JOHN W. WYMAN, Student, Olivet Nazarene College.

EDWARD G. ZDINAK, M.S. (Pittsburgh) Grad. Student, University of Pittsburgh.

THE MAY MEETING OF THE INDIANA SECTION

The thirty-fifth annual meeting of the Indiana Section of The Mathematical Association of America was held at Ball State Teachers College, Muncie, Indiana, on Saturday, May 3, 1958. Professor C. B. Gass of DePauw University, Chairman of the Section, presided at both morning and afternoon sessions. There were 52 in attendance, including 39 members of the Association.

The following officers were elected: Chairman, Professor G. N. Wollan of Purdue University; Vice-Chairman, Professor K. H. Carlson of Valparaiso University; Secretary-Treasurer, Professor C. F. Brumfiel of Ball State Teachers College.

Professor Edwards, chairman of the Committee on Awards, announced that four Association Medals had been awarded this year to high school seniors exhibiting high mathematical achievement in the Indiana Science Talent Search program. The following motions were carried: (1) That the Section adopt the policy of holding a fall meeting in joint session with the Mathematics Division of the Indiana Academy of Science. (2) That the Section sponsor the administration in Indiana of the Annual High School Mathematics Contest which is sponsored nationally by the M.A.A. and the Society of Actuaries. (3) That a committee be appointed by the chairman to work with the Indiana Council of Teachers of Mathematics to lay down a plan for securing support for local institutes on the teaching of mathematics.

Professor R. M. Thrall of the University of Michigan gave the invited hour address on the topic, "Applications of Mathematics in the Social Sciences."

The following short papers were presented:

1. *Some remarks on the teaching of elementary algebra*, by Professor A. M. Yaqub, Purdue University.

In attempting to strengthen our undergraduate mathematics courses, the author proposed to combine *understanding* with techniques in the teaching of elementary algebra. In algebra, as in high school geometry, one would naturally begin with the axioms which the real numbers are supposed to satisfy, and from which the theorems are to be derived. These axioms include the usual axioms for a field. On the basis of these one could derive the familiar laws of signs. By assuming a few additional axioms one could then derive the laws of inequalities and the laws of exponents. This modest start would immediately indicate to the student the spirit of the axiomatic approach, and no doubt show him that algebra is every bit as suitable for axiomatic treatment as geometry. Moreover, this method allows the teaching of algebra as a *science* rather than as a collection of recipes together with some mystical laws.

2. *Dexinal gauges*, by Mr. Aaron Miller, 1415 W. 28th Street, Indianapolis, Indiana.

The stop to which the base 2 must be raised to produce a number k is called the dexinal gauge of k. Two numbers are dexinated by adding their gauges and are sindexinated by subtracting their gauges. A dexratio (dexine of a ratio) is the dexnum (dexine of the numerator) sindexed by the dexdenom (dexine of the denominator). A dexratio is reduced by taking the ratio of the logarithms to the base 2 of the dexnum and dexdenom. The equality of the two dexratios is called a poise and is the analogue of a proportion. The mean poisal is the analogue of the mean proportional. Employing these definitions, the author developed some theorems and presented several interesting applications in numerical computations.

3. *The seventeen ornamental groups*, by Professor H. W. Alexander, Earlham College.

The seventeen ornamental groups were discussed from the standpoint of (a) the classification of an actual design under one of these groups and (b) the representation of the groups by means of matrices. Other designs were examined.

4. *The sum of a particular series and the corresponding integral*, by Professor L. W. Stark, Butler University.

The analytic solution of the heat conduction equation is obtained by use of the Laplace transform and the convolution integral. One term in the solution is the cosine series

$$\sum_{n=1}^{\infty} \left[(-1)^{n-1} \cos (2n - 1)y/(2n - 1)^{2p-1} \right]$$

$p \geq 1$. Beginning with the result given by Bromwich for $p = 1$, the method for obtaining the result for $p = 2$ was given in detail and results were then stated for $p = 3, 4, 5$. It was also established that the summations evaluated at $y = 0$ are multiples of corresponding Euler numbers.

5. *A progress report on experimental work at Ball State Teachers College*, by Professor C. F. Brumfiel, Ball State Teachers College.

For the last three years an experimental geometry and algebra program has been tested in the Ball State laboratory school. Tenth grade geometry is treated rigorously in a course based upon a modified version of the Hilbert postulates. The algebra is a mild postulational treatment that covers most of the conventional topics of ninth grade algebra. During the past year teachers from Eastern Indiana schools, enrolled at Ball State in a National Science Foundation In-Service Institute, have taught the geometry experimentally. Under a continuation of this grant the experimental program will be continued and expanded to include the algebra in 1958–59.

6. *It's all in your mind,* by Professors J. E. Forbes and W. R. Fuller of Purdue University, presented by Professor Forbes.

This was a preliminary report on an experiment in commercial television in a series of weekly broadcasts of topics in mathematics. Many interesting points concerning the preparation and presentation of the programs and the methods used to enlist and maintain the interest of listeners were discussed.

7. *A report on the 1957 Summer Institute on Mathematics in the Social Sciences at Stanford University,* by Professors J. C. Polley, Wabash College, G. N. Wollan, Purdue University, and K. H. Carlson, Valparaiso University.

The subject was introduced by Mr. Polley with general remarks on the nature, the staff, and the organization of the institute. He stated that the institute had been sponsored by and financed by a grant from the Social Science Research Council for the purpose of acquainting college teachers of mathematics with the current applications of mathematics in the field of the social sciences. Attending members represented colleges of various types widely distributed over the country.

Drawing on the eight-weeks experience, Mr. Wollan emphasized the values of such institutes. He urged that efforts be made to promote setting some up on the local level.

In conclusion, Mr. Carlson discussed in some detail the conduct of the institute and the material presented by the various members of the staff.

J. C. POLLEY, *Secretary*

THE MAY MEETING OF THE MINNESOTA SECTION

The annual spring meeting of the Minnesota Section of the Mathematical Association of America was held on May 17, 1958 at St. John's University, Collegeville, Minnesota. Reverend Walbert Kalinowski, O.S.B., of St. John's University presided at the morning session. The section chairman, Professor O. E. Stanaitis of St. Olaf College, presided at the afternoon session. There were 53 persons registered, of whom 39 were members of the Association.

The following officers were elected to serve for the academic year 1958–1959: Chairman, Reverend Walbert Kalinowski, O.S.B., of St. John's University; Secretary, Professor F. L. Wolf of Carleton College; Members of the Executive Committee, Professor O. E. Stanaitis of St. Olaf College, Professor David Lewis of Hamline University and Remington-Rand Univac, and Professor James Serrin of the University of Minnesota.

At the business meeting, Professor J. M. H. Olmsted reported on the High School Mathematics Contest which was sponsored by the section in Minnesota this year. In this, the first year that the contest was given in Minnesota, it was very successful. The section owes many thanks to Professor G. K. Kalisch of the University of Minnesota and to the members of his High School Contest Committee for this success. Professor Leon Green of the University of Minnesota was appointed chairman of the High School Contest Committee for 1958–1959.

Professor F. L. Wolf reported for the Committee on High School-College Relations. Several proposals for the improvement of high school-college relations were made by the committee and motions from the floor were passed instructing the committee to proceed with implementation or further study of these.

The following papers were presented:

1. *Equations with trigonometric values as roots,* by Professor K. W. Wegner, Carleton College.

Sixty-four equations were presented, along with illustrations of their use in the classroom, as the only irreducible polynomial equations with integral coefficients and of degree two through seven whose roots are of the form $\pm \sin y$, $\pm \cos y$, $\pm \tan y$, $\pm \cot y$, $\pm \sec y$, or $\pm \csc y$, where y is a rational number of degrees.