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October Meeting of the Indiana Section

P. M. Pepper (Secretary)

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matics and Electronic Computer Branch, Office of the Comptroller, United States Air Forces.

Assistant Professor L. W. Swanson of Coe College has been promoted to an associate professorship.

Professor John L. Synge has been appointed to a Senior Professorship in the School of Theoretical Physics at the Dublin Institute for Advanced Studies. He is resigning from his present position as Head of the Department of Mathematics at Carnegie Institute of Technology as of the end of the academic year, and will take up his duties in Dublin on September 1.

Assistant Professor Leo Zippin of Queens College has been promoted to an associate professorship.

The University of Michigan announces the appointment of S. W. Hahn as instructor.

Mr. A. L. McCarty, formerly of City College of San Francisco, died on June 20, 1947. Mr. McCarty, a charter member of the Association, was one of the organizers of the Northern California section.

Professor Emeritus A. B. Turner of the College of the City of New York died on February 5, 1948 at the age of seventy-five years. He was a charter member of the Association.

Professor G. E. Wahlin of the University of Missouri died on February 11, 1948. He was a charter member of the Association.

THE MATHEMATICAL ASSOCIATION OF AMERICA

Official Reports and Communications

OCTOBER MEETING OF THE INDIANA SECTION

The fall joint meeting of the Indiana Section of the Mathematical Association of America and the Mathematics Section of the Indiana Academy of Science was held at Ball State Teachers College, Muncie, Indiana on October 17, 1947.

Sixty-four persons attended the meeting, including the following twenty-one members of the Association: W. L. Ayres, Juna L. Beal, G. E. Carscallen, K. W. Crain, Olive M. Draper, P. D. Edwards, E. L. Godfrey, G. H. Graves, H. F. S. Jonah, M. W. Keller, F. C. Leone, P. M. Pepper, J. C. Polley, D. H. Porter, C. K. Robbins, A. E. Ross, L. S. Shively, W. O. Shriner, Florence A. Wirsching.

Announcement of the 1948 national meeting of the National Council of Teachers of Mathematics to be held in Indianapolis on April 2-3, 1948, was made by M. H. Ahrendt, of Anderson College.

No business meeting was held. The time and place of the spring meeting for 1948 was to be arranged by the officers of the Section.

The following papers were presented.

1. *Pythagorean triangles*, by John Funderburg and G. A. Jackson, introduced by the Secretary.

In the euclidean plane, an assemblage of points representing Pythagorean triangles is shown to consist of a parabolic lattice set and sets that are multiples of this set. A subset contains all primitive triangles. It is demonstrated that this assemblage of points can be located on systems of hyperbolas, circles, and straight lines. The approximate values of certain constants (including roots of prime numbers, transcendental e and π) are shown to be obtained by the use of convergent or oscillatory series, of which the members are represented by points included in this assemblage of points.

2. *Some special sums of cotangents*, by H. F. S. Jonah, Purdue University.

The speaker illustrated a method for summing certain finite sums of cotangents. The original sums arose in a research project in electrical engineering.

3. *Mathematics teacher training in relation to the proper teaching of undergraduate algebra*, by A. E. Ross, University of Notre Dame.

The speaker discussed a fundamental approach to the teaching of algebra in college, as well as the problems of training teachers to carry out such a program of instruction successfully.

4. *A study of factors related to engineering mathematics at Purdue University*, by Paul Irick, Purdue University, introduced by the Secretary.

The speaker showed the relation between grades in mathematics and various factors such as position of student in graduating class, average grade in high school mathematics, number of high school units in mathematics, and grades on different tests given during orientation period. The study followed the students through the first two years of college mathematics.

5. *A mathematical theory of religion*, by G. H. Graves, Purdue University.

Due to the studies of Whitehead, Russell, Keyser, and others, it is now generally recognized that mathematics has no particular subject matter but is concerned with constructing logical systems on postulates suggested by any field of interest. Religion is a promising field in this connection, for in religion, we constantly observe conclusions and decisions, and hence conduct and character, resulting from postulates held as convictions by an individual or by a society. Just as geometry, for instance, has gained greatly in clearness and in range by a study of its foundations and the recognition of incompatible systems which are nevertheless consistent individually, so it may be expected that different religions can gain in clearness and in tolerance by studying their fundamental postulates with a view to eliminating contradictions and non-essentials, and to tracing the connections of the characteristics of individuals or societies with their fundamental postulates.

6. *A reduced set of postulates for hyperbolic geometry*, by Rev. H. F. DeBaggis, C.S.C., University of Notre Dame, introduced by the Secretary.

The speaker presented a minimal set of postulates for hyperbolic geometry. Independence examples were given for all of the postulates.

7. *The postulates of a tri-operational algebra*, by Rev. F. L. Brown, C.S.C. University of Notre Dame, introduced by the Secretary.

In this paper the speaker presented a set of postulates for a tri-operational algebra, showing the independence of each of the postulates. He presented the minimal set satisfying these postulates and derived a few elementary consequences. (These consequences are among those published by the author in the *Reports of a Mathematical Colloquium*, Issue 5-6, Issue 7, Notre Dame, Indiana.)

8. *Functional representation of partially ordered additive groups*, by Ky Fan, University of Notre Dame, introduced by the Secretary.

For any compact Hausdorff space Ω , the totality $C(\Omega)$ of all real continuous functions defined on Ω may be considered as a partially ordered additive group (p.o.a.g.). Any subgroup G of $C(\Omega)$ which contains all constant functions is obviously a p.o.a.g. with the following three properties: (1) G contains a sub-group R which is group-order-isomorphic to the totally ordered additive group of all real numbers; (2) The sub-group R contains an element e such that for any element f of G , the relation $ne \geq f$ holds for some natural number n ; (3) If for some pair of elements f, g of G , $nf + g \geq 0$ holds for all natural numbers n , then $f \geq 0$. Conversely, for any abstract p.o.a.g. G with properties (1), (2), (3), there exists a compact Hausdorff space Ω such that G is group-order-isomorphic to a sub-group G' of the p.o.a.g. $C(\Omega)$ formed by all real continuous functions on Ω , where G' contains all constant functions.

9. *Geometric illustrations of abstract complexes*, by Charles Brumfiel, Ball State Teachers College, introduced by the Secretary.

The speaker gave two and three dimensional examples of abstract topological complexes. The incidence matrices of an n -complex completely determine its topology. Methods were explained for calculating topological invariants, Betti numbers, and torsion coefficients, by means of the incidence matrices.

P. M. PEPPER, *Secretary*

CALENDAR OF FUTURE MEETINGS

Thirtieth Summer Meeting, Madison, Wisconsin, September 6-7, 1948.

Thirty-second Annual Meeting, Columbus, Ohio, December 31, 1948.

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 Secretary.

ALLEGHENY MOUNTAIN
ILLINOIS, Illinois Institute of Technology,
Chicago, May 14-15, 1948
INDIANA
IOWA
KANSAS
KENTUCKY, Berea, May, 1948
LOUISIANA-MISSISSIPPI
MARYLAND-DISTRICT OF COLUMBIA-VIR-
GINIA
METROPOLITAN NEW YORK
MICHIGAN
MINNESOTA
MISSOURI
NEBRASKA

NORTHERN CALIFORNIA, San Francisco,
January 29, 1949
OHIO
OKLAHOMA
PACIFIC NORTHWEST
PHILADELPHIA, Philadelphia, November
27, 1948
ROCKY MOUNTAIN
SOUTHEASTERN
SOUTHERN CALIFORNIA
SOUTHWESTERN
TEXAS
UPPER NEW YORK STATE
WISCONSIN