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The Thirteenth Meeting of the Indiana Section

P. D. Edwards (Secretary)

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The Trustees voted to accept the invitation of the Pennsylvania State College to meet there in September 1937.

The Trustees approved the organization of a Southwestern Section of the Association and the By-Laws submitted by the temporary officers. The membership of the Section is to comprise the members of the Association resident in Arizona and New Mexico; in addition individual members resident in areas immediately adjacent to these states may affiliate as individual members.

Informal reports were given by the President and the Secretary on current activities not ready for formal reports.

W. D. CAIRNS, *Secretary-Treasurer*

THE THIRTEENTH MEETING OF THE INDIANA SECTION

The thirteenth annual meeting of the Indiana Section of the Mathematical Association of America was held Friday and Saturday, May 1 and 2, 1936, at Manchester College, North Manchester, Indiana.

Approximately two hundred attended the public lecture on Friday evening and forty registered at the sessions on Saturday, including the following twenty-three members of the Association: W. C. Arnold, J. H. Butchart, H. T. Davis, J. E. Dotterer, W. E. Edington, P. D. Edwards, C. H. Frick, G. H. Graves, H. E. H. Greenleaf, F. H. Hodge, Florence Long, Juna M. Lutz, T. E. Mason, H. A. Meyer, F. R. Moulton, Mary S. Paxton, D. H. Porter, J. A. Reising, C. K. Robbins, L. S. Shively, W. O. Shriner, Anna K. Suter, K. P. Williams.

At the business session on Saturday the following officers were elected for next year: Chairman, W. E. Edington, DePauw University; Vice-Chairman, W. O. Shriner, Indiana State Teachers College; Secretary, P. D. Edwards, Ball State Teachers College. The fourteenth annual meeting will be held at DePauw University, Greencastle, Indiana, in May 1937.

Professor K. P. Williams made a report for the committee appointed to en-

courage and recognize superior preparation for the teaching of secondary mathematics. On the basis of an examination conducted April 18, 1936, a Certificate of Merit was awarded by the Indiana Section to each of three students who completed their requirements this year.

Following the annual dinner on Friday evening the members of the Association were guests at a public lecture in the college chapel. Dr. Moulton, director of the Utilities Power and Light Corporation of Chicago, gave an illustrated lecture on astronomy.

At the sessions on Saturday the following program was presented.

1. "Some examples in mathematics" by Professor H. A. Meyer, Hanover College, retiring chairman.

2. "Mathematics and social phenomena" by Professor H. T. Davis, Indiana University.

3. "An investigation of attitudes of high school students toward mathematics" by Helen Darley, Manchester College, introduced by Professor J. E. Dotterer.

4. "Arithmetic three hundred years ago and now" by Professor T. E. Mason, Purdue University.

5. "Mascheroni's *Geometry of the Compasses*" by Professor L. S. Shively, Ball State Teachers College.

6. "Note on Bieberbach's trisection of an angle" by E. L. Godfrey, Indiana University, introduced by Professor K. P. Williams.

7. "A simple recursion method for solving a system of linear equations" by Professor Cornelius Lanczos, Purdue University, introduced by Professor C. K. Robbins.

8. "Synthetic treatment of cycloids" by Professor J. H. Butchart, Butler University.

9. "A system of equations connected with a comet orbit" by Professor K. P. Williams, Indiana University.

10. "A problem in infinite quadratic forms" by R. L. Deputy, Indiana University, introduced by Professor H. T. Davis.

Abstracts of the papers follow:

1. Professor Meyer discussed some examples from various fields of mathematics which have been constructed to correct certain fallacies of current thinking.

2. In this paper, Professor Davis discussed the general problems of econometrics. and indicated the type of mathematical disciplines most useful in the study of mathematical economics. The paper concluded with a discussion of the problems presented by economic time series. The speaker used lantern slides in the presentation of his paper.

3. Miss Darley recently completed an investigation concerning the attitudes of high-school students toward mathematics. This investigation was conducted by the use of questionnaires which were filled out by 1000 students from four high schools. The conclusions arrived at from these questionnaires included

the fact that 59% of the students do like mathematics. With regard to mathematical magazines and articles, it was found that only 19% of the students had been reading them, the majority of the remainder not being aware of their existence. Some of the suggestions of the students were that the teacher should be better prepared in the subject matter; that the teacher should be more interested and enthusiastic about the subject; and that the classroom work should be varied by the teacher's reading articles concerning the origin and history of mathematics.

4. Professor Mason compared and contrasted, as to contents and methods of presentation, four arithmetics printed in the years 1585, 1631, 1880 and 1925, respectively.

5. Mascheroni published in 1797 his *Geometry of the Compasses* in which he showed the possibilities of compasses alone as an instrument for making geometrical constructions. By means of three "fixed compasses" whose radii are 1, $\sqrt{3}$ and $\sqrt{2}$, he showed how to divide a circle into 2, 3, 4, 6, 8, 12 and 24 equal parts. By the use of two additional fixed compasses the division into 5, 10, 15, 20, 48 and 120 equal parts can be made. Constructions with compasses only were also given for the bisection of an arc, the fourth proportional to three given lines, the intersection of two given lines and of a given line with a given circle. Upon these fundamental constructions rests a proof that any construction which may be made with the ruler and compasses, may be made with the compasses alone. In this paper Professor Shively exhibited these constructions.

6. Mr. Godfrey presented a simple way of showing the connection between the limaçon and Bieberbach's method for trisecting an angle. An exposition of this method was published in *Scripta Mathematica*, vol. 3, 1935, page 326.

7. A new recursion method for the solution of systems of linear equations was discussed by Professor Lanczos. The method of determinants for the solution of linear equations is only of theoretical interest if the number of equations is large. The customary elimination method which reduces successively the order of the system from n to $n-1$, and so on, involves laborious calculations. The method presented builds up a transformation matrix, the elements of which are obtained by successive recursions from the matrix elements of the given system. With the help of this matrix the solution of the system can be obtained by successive recursions. The resulting scheme is analogous to the scheme of the elimination method but the result is obtained in a different sequence and by a much smaller number of operations.

8. Properties of the cycloid, epicycloid and hypocycloid are easily obtained by a purely geometrical treatment. The evolute is generated by a rolling circle homothetic to that which generates the primary curve with respect to the center of the given fixed circle. Professor Butchart obtained relations between the generating circles which lead to expressions for the length of arc of the curve and the area between the curve and the fixed circle.

9. In this paper Professor Williams dealt with the peculiarities of the equations that concern the distance of Encke's comet during its appearance in 1931.

10. Mr. Deputy gave a short treatment of a problem of Hilbert in infinite quadratic forms, approaching it through direct analysis by a new and distinct method. He obtained a solution for a form having a continuous spectrum by the use of the reciprocal of the characteristic matrix of the form.

P. D. EDWARDS, *Secretary*

THE MAY MEETING OF THE ILLINOIS SECTION

The Seventeenth Annual Meeting of the Illinois Section of the Mathematical Association of America was held Friday and Saturday, May 8 and 9, 1936, at Illinois State Normal University, Normal, Illinois.

A total of fifty-three persons registered from fifteen colleges and eleven high schools including the following twenty-six members of the Association: Edith I. Atkin, O. K. Bower, Laura E. Christman, C. E. Comstock, J. J. Corliss, H. B. Curtis, D. R. Curtiss, W. M. Davis, Sister Mariola Dobbin, Elinor B. Flagg, R. E. Gadske, A. E. Gault, R. M. Ginnings, M. C. Hartley, Mildred Hunt, E. C. Kiefer, W. C. Krathwohl, A. H. Larsen, J. R. Mayor, H. J. Miles, E. B. Miller, C. N. Mills, G. E. Moore, H. A. Simmons, Norma K. Stelford, E. H. Taylor.

Professor E. C. Kiefer of James Millikin University had charge of the arrangement of the program and presided at the meetings.

At the business session the following officers were elected for next year: C. N. Mills, Illinois State Normal University, Chairman; W. B. Storm, State Teachers College, De Kalb, Vice-Chairman; and Edith I. Atkin, Illinois State Normal University, Secretary-Treasurer. It was decided to hold the next meeting at De Kalb.

An important item of business was the passing of the following resolution submitted by W. C. Krathwohl, E. H. Taylor and H. B. Curtis:

> *Whereas*, the report of the National Committee on the Reorganization of Mathematics in Secondary Education has been of such great value in improving the curriculum and the instruction in secondary mathematics, and
>
> *Whereas*, there exists a need for a similar report on mathematics in the elementary schools by persons competent to conduct such an investigation, therefore be it
>
> *Resolved*, that the Illinois Section of the Mathematical Association of America urge the Mathematical Association of America to join with the National Council of Teachers of Mathematics in an effort to obtain the appointment of a national commission on mathematics in the elementary schools and to obtain means for its financial support.

It was voted to ask the secretary to send letters to two beloved members who are suffering from prolonged illnesses: Professor H. E. Slaught of the University of Chicago, and Professor E. B. Lytle of the University of Illinois.

At the dinner held in Fell Hall the guests were welcomed by President Fair-