



# The American Mathematical Monthly

ISSN: 0002-9890 (Print) 1930-0972 (Online) Journal homepage: <https://maa.tandfonline.com/loi/uamm20>

## The Fifth Meeting of the Indiana Section

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To cite this article: H. T. Davis (Secretary) (1928) The Fifth Meeting of the Indiana Section, The American Mathematical Monthly, 35:7, 334-336, DOI: [10.1080/00029890.1928.11986847](https://doi.org/10.1080/00029890.1928.11986847)

To link to this article: <https://doi.org/10.1080/00029890.1928.11986847>



Published online: 06 Mar 2018.



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vidual life has profited by basic training in appreciation of beauty and by a realization of the exactness and order of the Universe.

PHILIP FITCH, *Secretary*

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### THE FIFTH MEETING OF THE INDIANA SECTION

The fifth meeting of the Indiana Section of the Mathematical Association of America was held May 11, 12, 1928 at Butler University, Indianapolis, Indiana.

There were sixty-one present at the meeting including the following thirty-one members of the Association: R. J. Aley, W. C. Arnold, Gladys L. Banes, Stanley Bolks, G. E. Carscallen, P. T. Copp, H. T. Davis, S. C. Davisson, J. E. Dotterer, W. E. Edington, P. D. Edwards, E. D. Grant, H. E. H. Greenleaf, Laurence Hadley, Cora B. Hennel, F. H. Hodge, E. N. Johnson, Kathryn M. Kennedy, Florence Long, Juna M. Lutz, T. E. Mason, H. R. Mathias, R. E. Peterson, C. K. Robbins, D. A. Rothrock, J. R. K. Stauffer, C. E. Stout, K. P. Williams, H. E. Wolfe, W. A. Zehring, and H. A. Zinszer.

On Friday evening at 6:30 a banquet was held at the Claypool Hotel which was attended by members of the Association and their guests. President Aley of Butler University presided.

At eight o'clock a public lecture under the auspices of Butler University was given by President D. W. MOOREHOUSE of Drake University, Des Moines, Iowa, on the subject: "The Milky Way." President Moorehouse, by means of lantern slides, traced the ever interesting history of man's expanding knowledge of the universe. The speaker called special attention to the perplexing problem presented by the presence of black patches in the midst of brilliant star clouds and showed how the evidence points to the existence of great dark nebulous masses in the milky way.

At the session on Saturday morning on the Butler campus, presided over by Professor J. E. Dotterer, Manchester college, chairman, the following officers were elected: Professor H. E. H. GREENLEAF, De Pauw University, chairman; Professor H. A. ZINSZER, Hanover College, vice-chairman; Professor H. T. DAVIS, Indiana University, secretary-treasurer.

A chairman's address was made by Professor J. E. DOTTERER on the subject: "The Mathematician as a Salesman." Professor Dotterer pointed out the duty incumbent upon the teacher, in addition to his actual instruction, of showing the fundamental connection between mathematics and actual living. He urged the need of exhibiting mathematics not only as a tool used in solving and explaining the universe in which we live, but also as a discipline, a cultural subject and an art.

Professor R. H. COON of the Latin Department of Indiana University fur-

nished a pleasing variation to the program with a translation of Tycho Brahe's: "The Science of Mathematics and Astronomy," a public lecture given in the year 1574. The translation was prefaced by a summary of the life and achievements of the famous astronomer.

The morning program concluded with a pageant: "Pictures from the Pages of Mathematical History," which was presented by the department of mathematics of Butler University under the direction of Miss Gladys Baner, Professor E. N. Johnson, and Miss Juna Lutz. The words were written by Miss Lutz. The pageant comprised a survey of mathematical history from the time of Fuh-hi, 2852 B.C. to Henri Poincaré, and was especially noteworthy in the accuracy with which the various mathematicians had been reconstructed from their pictures.

The afternoon program consisted of the following papers:

1. "A generalization of the construction of the ellipse," by Professor F. H. HODGE, Purdue University.

2. "Some remarks concerning the exponential function," by Professor K. P. WILLIAMS, Indiana University.

3. "The teaching of analytic geometry," by Professor T. E. MASON, Purdue University.

4. "Function theoretic determination of the law of sines and the law of cosines for any plane triangle," by Mr. L. R. KELLAM, Indiana University. (Introduced by Professor Williams.)

5. "Some new formulas in curve fitting by least squares," by Mr. V. V. LATSHAW, Indiana University. (Introduced by Professor S. C. Davisson.)

6. "The place of statistics in the mathematics curriculum," by Professor H. T. DAVIS, Indiana University.

7. "On Fresnel's theory of diffraction," by Professor H. A. ZINSZER, Hanover college.

Abstracts of the papers follow, the numbers corresponding to the numbers in the list of titles:

1. This paper generalized the method of constructing an ellipse by means of two concentric circles and the eccentric angle. One circle is taken with center at the origin and the second with center at  $(h, 0)$ . The locus of the point whose  $x$  and  $y$  intercepts are determined by the respective intersections of a straight line drawn from the origin through the two circles is found to be a cubic, some of whose properties were studied.

2. It is customary in books on the calculus to give only an incomplete discussion of  $\lim_{n \rightarrow \infty} (1 + zn^{-1})^n$ , leaving the problem to the theory of functions. On the other hand, books on function theory are likely to regard the problem as disposed of in the calculus. Professor Williams spoke on some of the details

necessary for a systematic treatment. Attention was also directed to certain generalizations that throw some light upon the exponential function.

3. Analytic geometry, according to Professor Mason, should be taught in such a manner as to give three things to the student: (1) A certain facility in drawing approximate graphs of functions; (2) ability to put into the form of an equation a description of a locus; (3) ability to interpret results. The learning of specific facts about particular curves is only incidental.

4. This paper showed how the law of sines and the law of cosines for any plane triangle may be determined from function theoretic properties. A simple list of these fundamental properties with specific application to one or two special cases for the determination of constants was used in obtaining the desired expressions.

5. Karl Pearson has indicated the desirability of computing the coefficients of polynomials fitted to data by the method of least squares where the values of the abscissa are assumed to be the integers from 1 to  $p$ . This paper gave these coefficients for the straight line, the parabola and the cubic. Coefficients were also computed for the quartic in the case where the number of points is odd.

6. It was pointed out in this paper that there seems to be a new movement toward the emphasis of statistics as a mathematical course. The theory of probability, which deals primarily with *a priori* probabilities, is admittedly a mathematical subject. Statistics which deals, on the other hand, with *a posteriori* probabilities obtained from empirical data, must not be approached with an aversion inherited from mathematical training in more subjective theories. The progress of this work in the mathematics department at Indiana University was explained.

7. The speaker gave a resumé of the Fresnel theory of diffraction with special reference to diffraction through a narrow slit bounded by parallel edges. The application of Cornu's spiral was explained.

At the conclusion of the meeting a vote of appreciation was extended to the department of mathematics of Butler University. The time and place of the next meeting were left in the hands of the executive committee.

H. T. DAVIS, *Secretary*