



The April Meeting of the Rocky Mountain Section

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of d gives a set to go with k . Using the formula, $(n+d)^2 - n^2 = (2k)^2$, where $2k$ is any even integer, we see that d is an even divisor of $4k^2$, less than $2k$, and the quotient of $4k$ by d must also be even.

2. Professor Townes gave a geometric description of a problem in number theory. The integers were represented by the vertices of a lattice work.

3. In his paper Professor Heimann pointed out that the greatest problem facing colleges today is that of working out a closer correlation between high school and college mathematics, so that a student may be able to continue his mathematical training in college without any loss of time. College standards must be maintained by stating definitely where college mathematics should begin and by refusing to give credit for work below that level. Finally, the methods of teaching have changed as well as the emphasis on teaching skill.

4. Professor Johnson gave a historical sketch of the problem of constructing a square so each side should pass through a given point. All published solutions to this problem are essentially of two types. It was shown how to construct a particular one of the six solutions which this problem has in general. When there is an infinite number of solutions order may be so introduced into the problem that four of the solutions differ from the remainder, also the locus of the centers of the squares is a circle. Interesting properties of this circle were discussed. If the four given points constitute an orthocentric group the circle is the nine-point circle of the orthocentric group.

E. F. ALLEN, *Secretary*

THE APRIL MEETING OF THE ROCKY MOUNTAIN SECTION

The nineteenth regular meeting of the Rocky Mountain Section of the Mathematical Association of America was held at Colorado School of Mines, Golden, Colorado, Friday and Saturday, April 19 and 20, 1935.

There were three sessions, Professor J. C. Fitterer presiding at each. The attendance was fifty-two including the following twenty members of the Association: L. A. Aroian, C. F. Barr, Jack Britton, J. R. Everett, J. C. Fitterer, G. W. Gorrell, I. L. Hebel, Louise Johnson, A. J. Kempner, Claribel Kendall, A. J. Lewis, W. V. Lovitt, S. L. Macdonald, A. S. McMaster, W. K. Nelson, Greta Neubauer, E. D. Rainville, O. H. Rechard, A. W. Recht, C. H. Sisam.

Professor A. W. Recht of the University of Denver was elected chairman for next year. The next meeting was scheduled for some time in April 1936 at the University of Denver. Members and friends of the Association were guests of the School of Mines at a banquet held the evening of April 19. The following eight papers were read:

1. "Teaching science in mathematics" by Professor J. C. Stearns, University of Denver, introduced by Professor Lewis.

2. "The Pearsonian system of frequency curves" by Professor L. A. Aroian, Colorado State College.

3. "Remarks on a boundary value problem of the heat equation" by E. D. Rainville, Junior Engineer, U. S. Bureau of Reclamation.

4. "The use of convergent series in the evaluation of integrals with infinite limits" by Professor J. R. Everett, Colorado School of Mines.

5. "Greatest integers" by Professor W. K. Nelson, University of Colorado.

6. "A graphic solution of complex roots" by Professor C. F. Barr, University of Wyoming.

7. "Conformal mapping in hydrodynamics" by Professor C. A. Hutchinson; University of Colorado.

8. "Waring's problem and Diophantine equations with inequality conditions" by Professor A. J. Kempner, University of Colorado.

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

2. Professor Aroian developed the differential equation of the Pearsonian system on the usual assumptions. The main types were discussed and examples of them from actual practise were given.

4. Mr. Rainville's paper discussed two distinct functions, apparently both of them solutions to the same mixed boundary value problem of the one dimensional heat equation. The need for a careful definition of what is meant by a solution to such a problem was noted. A tentative definition was adopted, without, however, any existence or uniqueness theorems to substantiate the conjecture.

5. Professor Nelson discussed greatest integers of bracketed numbers with regard to the interchanging of the operation of applying the bracket with the operations of adding, multiplying and raising to integral powers. The definite integral of a function of x and the definite integral of the bracket of the same function of x were compared. Formulas in terms of greatest integers were given for the Colorado sales tax and for service charges for checking accounts in Denver banks.

6. A brief section of Professor Barr's paper presented a circle method for representing the complex roots of a quadratic equation. Its purpose was to extend the construction given in Dickson's Theory of Equations to include complex roots. The body of the paper was devoted to a graphic construction for the complex roots of cubic equations with but one real root. The method involved only the graph of the cubic and the drawing of two straight lines. One of these lines was a properly selected member of the pencil of lines through the intersection of the curve with the x -axis. The other was the vertical locus of the mid-points of the chord formed by the curve and its other real intersections with the lines of this pencil. The real part of the complex roots is given by the x -position of this vertical line, and the coefficient of the imaginary part by the horizontal distance from this line to the intersection of the curve with this selected line of the pencil. The selection of the line is made by doubling the slope of the tangent to the curve from its real x -intercept.

The major part of the Saturday morning session was given over to a sym-

posium on "The secondary mathematics situation." Professor C. A. Hutchinson of the University of Colorado acted as chairman for the symposium. The leaders were Professor C. H. Sisam, Colorado College; Professor A. E. Mallory, Colorado State College of Education, by invitation; and Mr. H. W. Charlesworth, East High School, Denver, by invitation.

A. J. LEWIS, *Secretary*

THE ANNUAL MEETING OF THE TEXAS SECTION

The annual meeting of the Texas Section was held at the Texas Technological College, Lubbock, Texas, on April 20, 1935.

Among the forty persons attending the meeting were the following twenty-two members of the Association: J. H. Binney, E. O. Box, H. E. Bray, J. E. Burnam, Nat Edmonson, E. L. Harp, Jr., J. A. Hurry, Roy MacKay, Lida B. May, J. N. Michie, E. D. Mouzon, Jr., C. A. Murray, W. L. Porter, P. K. Rees, C. R. Sherer, F. W. Sparks, Ruth W. Stokes, Jennie L. Tate, E. L. Thompson, F. E. Ulrich, R. S. Underwood, C. N. Wunder.

At noon those attending the meeting were, jointly with the Texas Section of the Society for the Promotion of Engineering Education, the guests of the Lubbock Chamber of Commerce at an old-fashioned barbecue. The Texas Technological College entertained those attending the meeting at a dinner in the evening following the meeting. President Bradford Knapp of the College was the principal speaker.

At the business session following the presentation of papers the following officers were elected for the coming year: Chairman, F. W. Sparks, Texas Technological College; Vice-Chairman, L. R. Ford, Rice Institute; and it was voted to make the office of Secretary-Treasurer a permanent one, with Nat Edmonson, Agricultural and Mechanical College of Texas, continuing in the office. It was also voted to hold the 1936 meeting of the Section at the A. and M. College, College Station, in conjunction with the meeting of the Texas Section of the S.P.E.E.

The following papers were read:

1. "Non-unique solutions of ordinary differential equations" by O. H. Hamilton, San Antonio Junior College, introduced by Professor Sparks.
2. "An expansion for an n -dimensional determinant" by Professor F. W. Sparks, Texas Technological College.
3. "Roots of the derivative of a polynomial" by Professor H. E. Bray, Rice Institute.
4. "Generalized Vandermonde determinants," second paper, by E. R. Heine-man, Texas Technological College, introduced by Professor Porter.
5. "Symbolic cubic forms in six variables" by Professor Ruth W. Stokes, North Texas State Teachers College.
6. "Rational fractions" by W. L. Scott, Rice Institute, introduced by Professor Bray.