of introductory matter, 72 pages of free translation and commentary, and 85 pages of a very elaborate and critical bibliography of Egyptian mathematics contributed by Professor Archibald and including references to the literature of over fifty documents dating from 3500 B.C. to about 1000 A.D. This bibliography is further supplemented in the second volume especially in the light of recent remarkable discoveries in the field of Babylonian mathematics.

THE APRIL MEETING OF THE ROCKY MOUNTAIN SECTION

The thirteenth regular meeting of the Rocky Mountain Section of the Mathematical Association was held at the State Teachers College, Greeley, Colorado on April 12–13, 1929. There were three sessions, at which Prof. G. W. Finley acted as chairman.

The attendance was thirty-five including the following twenty-three members of the association: C. F. Barr, A. S. Clark, J. R. Everett, G. W. Finley, J. C. Fitterer, G. W. Gorrell, C. A. Hutchinson, H. Karnow, A. J. Kempner, Miss Claribel Kendall, A. J. Lewis, W. V. Lovitt, S. L. Macdonald, A. S. McMaster, J. Q. McNatt, R. R. Middlemiss, W. K. Nelson, E. D. Rainville, O. H. Rechard, A. W. Recht, W. J. Risley, L. J. Rote, C. H. Sisam.

The following officers were elected for the coming year: Chairman, G. W. Gorrell, University of Denver; Vice-chairman, A. J. Kempner, University of Colorado; Secretary-treasurer, A. J. Lewis, University of Denver. Following the election of officers a resolution was presented in appreciation of the work of Philip Fitch who passed away last autumn. Mr. Fitch was secretary of the association for many years and rendered a very valuable service to the work of the association in this district.

The following eleven papers were read:

1. "Statistical treatment of the factor of soil heterogeneity in agricultural experimentation," by Professor Andrew G. Clark, Colorado Agriculture College.
2. "Mathematical geography," by Professor Chas. A. Hutchinson, University of Colorado.
3. "The icosahedron," by Mr. A. J. Lewis, University of Denver.
4. "A geometrical approximation of π," by Mr. L. J. Rote, Denver, Colorado.
5. "The hypersurface of bi-secants of a curve in four-way space," by Dr. C. H. Sisam, Colorado College.
6. "A geometrical construction showing the relation between the in-center and circum-center of a triangle," by Mr. J. Q. McNatt, Canyon City, Colorado.
7. "Graphical methods of approximating irrational roots," by Professor James R. Everett, Colorado School of Mines.
8. "Present trend in the organization of subject matter of high school mathematics," by Professor A. E. Mallory, Colorado State Teachers College.
9. "An age sifter," by Professor Walter K. Nelson, University of Colorado.

10. "On the solution of linear equations," by Dr. Aubrey J. Kempner, University of Colorado.

11. "Some problems in elementary research," by Dr. J. L. Gibson, University of Utah, by invitation.

Abstracts of papers follow:

1. Professor Clark showed how an assumption of continuity in the variation of soil fertility would offset the unreliability of results in experimentation plots due to their insufficient number. Using adjoining plots, a correlation is effected which uses a sufficient number of plots to overcome the unreliability of first results.

2. Professor Hutchinson gave a brief outline of the subject of cartography, indicating some of the problems of mathematical interest in that field.

3. This is an outline of the methods used by Felix Klein in developing the icosahedral equation and showing its use in the solution of the quintic equation.

4. Mr. Rote showed a construction for a square which approximated closely the area of a circle.

5. This paper deals with the problem of finding those properties of the hyper-surface of bi-secants to an algebraic curve in four dimensions that can be determined by projecting the given curve from a given line onto a plane.

6. Mr. McNatt developed in a new way the known formula for the distance between the in-center and circum-center of a triangle.

8. Professor Mallory emphasized the fact that the present tendency in the selection of subject matter of high school mathematics was toward the adaptation of material to pupils' ability and toward a more informal treatment of the subject generally.

9. Professor Nelson explained briefly a device consisting of nine cards which may be used to determine the age of a person. When the cards are placed according to instructions the age of the person appears in large type through an opening in the back of the pile of cards.

10. This paper was published in the August-September issue of this "Monthly."

11. The general parametric equations of the space and body centrodes of certain disks and disk-like bodies, and other surfaces and solids supported by and rolling between two intersecting planes are found. The abscissas of the instantaneous axes of rotation give the values of definite integrals whose peculiarities have in these problems specific physical meanings. This makes it possible to use the planes as mechanical analyzers of many integrals, including some elliptic and hyperelliptic integrals. Points rigidly attached to the rolling bodies generate roulettes, the abscissa of each point of which, using the general equations, contains a definite integral. These curves, under certain conditions, degenerate into many well known forms, such as the cycloids. If we assume the equations of the space and body centrodes and study the integrals and equations of curves which follow from them, we find a field in which research has been done by students of limited mathematical attainments. Other problems of

a mechanical nature leading either to new methods or new results were mentioned. It was suggested that more attention be paid to the finding of this type of problem for the purpose of stimulating research earlier in the case of students specializing in mathematics.

The members and friends of the association were guests of the State Teachers College on the evening of April 12 at a banquet. President Finley acted as toastmaster. The address of welcome was given by President Frazier of State Teachers College and the response was given by Professor G. W. Gorrell of Denver University, after which there was a very interesting talk by Dean J. L. Gibson of the University of Utah. Dean Gibson recounted his experiences in visiting Germany and German mathematicians after the war.

A. J. LEWIS, *Secretary*

THE MAY MEETING OF THE MINNESOTA SECTION

The regular spring meeting of the Minnesota Section was held at the College of St. Catherine, St. Paul, Minnesota, on Saturday, May 11, 1929. At the request of the chairman, Sister Alice Irene, Professor Dunham Jackson presided at the morning and afternoon sessions.

The attendance was 60 at the luncheon and 80 at the regular session, and included the following 30 members of the Association: W. O. Beal, R. W. Brink, W. E. Brooke, W. H. Bussey, Elizabeth Carlson, H. H. Dalaker, J. M. Earl, Margaret Eide, Gladys Gibbens, C. H. Gingrich, S. Guttman, D. Jackson, C. M. Jensen, W. H. Kirchner, E. L. Mickelson, Marie Ness, M. A. Nordgaard, G. C. Priester, Inez Rundstrom, R. E. Scammon, R. R. Shumway, Sister Alice Irene, Sister Prudentia Morin, F. J. Taylor, Ella Thorp, A. L. Underhill, M. B. White, H. B. Wilcox, G. L. Winkelmann, F. Wood.

The following officers were elected for the coming year: Chairman, Fredrick Wood, Hamline University, St. Paul, Minnesota; Secretary, A. L. Underhill, University of Minnesota; an Executive Committee consisting of the Chairman, the Secretary, Gladys Gibbens, University of Minnesota, F. J. Taylor, College of St. Thomas, St. Paul, C. M. Jensen, Macalaster College, St. Paul.

A motion was passed expressing the appreciation of the Section for the hospitality of the College of St. Catherine.

The following seven papers were read:

1. "An integrating operator," by Mr. Max Scherberg, University of Minnesota.
2. "Insect populations," by Mr. John Stanley, University of Minnesota.
3. "Newton's method of solving equations," by Professor W. O. Beal, University of Minnesota.
4. "Developmental geometry," by Miss Marie Ness, Department of Anatomy, University of Minnesota.
5. "Approximate solutions of problems in the calculus of variations," by Professor C. G. Priester, University of Minnesota.