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## ANNUAL MEETING OF THE ROCKY MOUNTAIN SECTION.

The eighth annual meeting of the Rocky Mountain section was held at the Steel Works Y. M. C. A., Pueblo, Colorado, on March 28 and 29. There were sixteen present, including the following eight members of the Association: I. M. DeLong, Philip Fitch, G. W. Gorrell, G. H. Light, S. L. Macdonald, J. Q. McNatt, H. E. Russell, C. H. Sisam. The section voted to hold the next meeting at the University of Wyoming. The following officers were elected: J. C. Fitterer, chairman; S. L. Macdonald, vice-chairman; Philip Fitch, secretary; G. H. Light, treasurer.

On Friday evening Mr. F. E. Parks, Manager of the Steel Works, delivered an address of welcome. He pointed out the advantages to all concerned of having the members of the section as guests of the company. Professor S. L. Macdonald responded to this address in a fitting manner, assuring Mr. Parks that the company's problems were also those of the section, and expressed the members' appreciation of the company's generous hospitality. An organ recital, followed by an address by Mr. D. K. Dunton, concluded the evening session. On Saturday morning the members visited the Steel Plant, Mr. Louis Deesz of the company officiating as guide.

The following nine papers were read:
(1) "Report of the Cincinnati meeting" by Professor H. E. Russell.
(2) "The undergraduate mathematics club" by Professor S. L. Macdonald.
(3) "To compute the radius of the circle inscribed in the area bounded by the arcs of three mutually tangent circles" by Mr. J. Q. McNatt.
(4) "Misleading definitions of ' $f$ ' in the elementary theory for finding the envelope of $f(x, y, c)=0$ " by Professor I. M. DeLong.
(5) "A problem in probability" by Professor G. W. Gorrell.
(6) "Pedal curves and related envelopes" by Mr. Philip Fitch.
(7) "On curves whose first polars have a rectilinear component" by Professor C. H. Sisam.
(8) "Times of rising and setting of the planets" by Dean H. A. Howe.
(9) "Magic squares of the first nine orders" by Professor F. H. Loud.

In the absence of the authors, the papers by Dean Howe and Professor Loud were read respectively by Professors Russell and Sisam.

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

1. In his report, Professor Russell commented on the attendance and interest of the Cincinnati meeting and dwelt briefly on the salient features of some of the more interesting papers.
2. Professor Macdonald's paper dealt with the advisability of having undergraduate mathematics clubs and showed how interest in mathematics was stimulated by such organizations. The meeting of pupils with a common interest often reveals qualities in them that would otherwise be dormant.
3. The paper by Mr. McNatt demonstrated an interesting method of computing the radius of the circle inscribed in the area bounded by three mutually tangent circles, in terms of the radii of these circles.
4. Professor DeLong pointed out that there were definitions of " $f$," as applied to the elementary theory for finding the envelope of $f(x, y, c)=0$, that were misleading and remarked that some authors of works on calculus had made no attempt to clarify the subject.
5. Professor Gorrell compared methods of attacking problems in probability and discussed the advantages of having more than one viewpoint of a problem.
6. In his paper, Mr. Fitch demonstrated a short method for finding the equation of a pedal curve and proved the following properties: (a) The pedal of a given curve with respect to a fixed point is the envelope of a family of circles described on the radii vectores from the fixed point to the given curve as diameters. (b) The fixed point is a conjugate point of this envelope. (c) The caustic of a given curve with respect to a fixed point is a translation of the evolute of its pedal for that point.
7. In this paper, Professor Sisam determined the equations of the noncomposite algebraic plane curves which have the property that every line through a fixed point is a component of a first polar with respect to the curve.
8. Dean Howe's paper dealt with the computation of the approximate times of rising and setting of the planets. The object of the method set forth is to render it possible for a student in elementary descriptive astronomy, by using data easily taken from the American Ephemeris, to obtain the time of rising or setting of any planet on any day of the year, with an error not exceeding three minutes. No logarithmic or trigonometric work is needed. The place for which the computation is to be made is supposed to be in the northern hemisphere, and to have a latitude no greater than $60^{\circ}$. Denver was chosen to illustrate the process.

From the Greenwich time when the planet crosses the Greenwich meridian on the given date, the Denver time when it crosses the Denver meridian is obtained by a simple interpolation. Then the problem is quickly finished by using the tables for sunrise and sunset at the end of the Ephemeris, making allowance for the fact that these tables are for the upper limb of the sun, instead of the center. In those infrequent cases where a planet's distance from the celestial equator exceeds twenty-three and a half degrees, an extrapolation is necessary.
9. In this paper, Professor Loud derived several new and interesting ways for forming magic squares.

Philip Fitch, Secretary.

