THE MARCH MEETING OF THE ROCKY MOUNTAIN SECTION.

The fifth regular meeting of the Rocky Mountain Section was held at the University of Denver, Denver, Colorado, on March 25, 26. Sessions were held on Friday afternoon and Saturday morning. The presiding officer was Professor H. E. RUSSELL of the University of Denver.

The attendance was thirty-three, including the following nineteen members of the Association: E. L. Brown, I. M. DeLong, A. R. Fehn, G. W. Finley, J. C. Fitterer, W. H. Hill, C. A. Hutchinson, H. A. Howe, G. H. Light, F. H. Loud, J. Q. McNatt, S. L. Macdonald, D. H. Menzel, H. E. Russell, C. H. Sisam, C. S. Sperry, C. E. Stromquist, O. B. Trout, J. W. Woodrow.

Those in attendance were royally entertained at a six-thirty dinner and welcomed to the University by Chancellor W. D. Engle. The reply for the Association was made by S. L. Macdonald. At the business meeting which followed, W. H. Hill, of the Greeley High School, was chosen Chairman and G. W. Gorrell, of the Colorado School of Mines, Vice-Chairman for the meeting to be held at the State Teacher's College at Greeley next year. Dean Howe then invited the guests to inspect the observatory, which was greatly enjoyed by all.

The following nine papers were read:

(1) "The effect of polarized light on the photographic plate" by Dr. J. W. Woodrow, professor of physics, University of Colorado.

(2) "The effect of translation upon certain dispersion and correlation formulas" by Professor C. E. Stromquist, University of Wyoming.

(3) "Trajectories" by Mr. Philip Fitch, North Denver High School (by invitation).

(4) "Note on extraneous loci" by Professor G. H. Light, University of Colorado.

(5) "On correspondence between curves" by Professor C. H. Sisam, Colorado College.

(6) "Mathematics of the high school as preparation for college" by Mr. B. F. Kitchen, Colorado Agricultural College (by invitation).

(7) "Thermal properties of glass" by W. B. Pietenpol, associate professor of physics, University of Colorado.

(8) "The suspended chain" by J. Q. McNatt, engineer for the Colorado Fuel and Iron Co.

(9) "A proof of a theorem in the adjustment of observations by the use of determinants" by Professor C. S. Sperry, University of Colorado.

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

1. It has been suggested by H. S. Allen and others that the action of light on the photographic film is due to a photoelectric effect. If this is true, incident plane polarized light should have different effects in different directions. Professor Woodrow photographed dark lines through a good Nicol's prism and found

that the lines parallel to the plane of vibration were distinctly sharper than those at right angles to the plane.

2. In this paper Professor Stromquist derives certain statistical formulas, in particular those for the standard deviation and the coefficient of correlation, that result from a given correlation, or double entry, table by adding new individuals to the table, by translating individuals in the table, and by superimposing one correlation table upon another.

3. Mr. Fitch discussed the trajectories due to a flow of water from an orifice subject to constant angle and constant kinetic energy.

4. Professor Light gave the geometrical conditions that must be fulfilled when the extraneous loci are cusp-loci, tac-loci, and singular solutions.

5. Professor Sisam discussed some properties of algebraic correspondences between two given algebraic curves of which at least one is rational.

6. Mr. Kitchen brought out, among other good points, the fact that high school students do not know how to draw conclusions from definite statements.

7. Experimental work on the rate of thermal expansion of glass from room temperature to 750 degrees Centigrade has brought out the relation between this and other thermal properties. Professor Pietenpol showed how the expansion of glass is of particular importance in its relation to the annealing of glass, and that a determination of the rate of expansion at high temperatures may be used as an exact method of determining the suitable annealing temperature.

8. Mr. McNatt took up the derivation of the equation of the catenary, and some of the properties of the equation were applied to the solutions of problems arising in connection with cables used in mines.

9. Professor Sperry gave a proof of a well known theorem that the average value of the ratio of the weight of the observed value of an unknown to its adjusted value for a series of unknowns is equal to the number of unknowns divided by the number of observations. Instead of the usual proof by undetermined coefficients, certain transformations were effected by means of determinants. This proof is believed to be superior in directness and simplicity.

G. H. LIGHT, *Secretary-Treasurer.*

RATIONAL TRIANGLES AND QUADRILATERALS.

By L. E. DICKSON, University of Chicago.

1. **The questions treated.** The chief object of this paper is to make a material simplification in Kummer's classic investigation of rational quadrilaterals. Incidentally it is shown that every rational triangle may be formed by juxtaposing two rational right triangles, so that it suffices to know Diophantus's complete solution of $x^2 + y^2 = z^2$ in rational numbers. From the latter will be deduced all solutions in integers, a problem usually treated independently of the former problem of the rational solutions. For most equations the two problems are essentially distinct.