

The Section then adjourned and joined the rest of the Society.

The following titles were also announced, but were not read, chiefly because of the absence of their authors. In several instances they were read by title:

Evidences of Northeasterly Differential Rising of the Land along Bell River. ROBERT BELL, Ottawa, Canada.

Surface Tension of Water as a Cause of Geological Phenomena. GEORGE E. LADD.

Geomorphy of Jamaica as Evidence of Changes of Level. J. W. SPENCER, Washington, D. C. (By title.)

Preliminary Note on the Pleistocene History of Puget Sound. BAILEY WILLIS, Washington, D. C.

Modified Drift in St. Paul, Minn. WARREN UPHAM, St. Paul, Minn.

Note on Plasticity of Glacial Ice. I. C. RUSSELL.

Physical Basis for General Geological Correlation. CHARLES R. KEYES, Jefferson City, Mo.

Notes on the Potsdam and Lower Magnesian Formations of Wisconsin and Minnesota. JOSEPH F. JAMES, Hingham, Mass.

The Age of the Lower Coals of Henry County, Missouri. DAVID WHITE.

New Evidence on the Origin of Some Trap Sheets of New Jersey. HENRY B. KUMMEL, Chicago, Ill.

The Origin and Age of the Gypsum Deposits of Kansas. G. PERRY GRIMSLEY, Topeka, Kansas. Read by title.

On the whole the meeting was a most enjoyable one, and the 75 to 100 Fellows who were in attendance returned to their homes with appreciative and grateful feelings to the geologists of Washington, by whom they had been so hospitably entertained.

J. F. KEMP.

AMERICAN MATHEMATICAL SOCIETY.

THE annual meeting of the American Mathematical Society was held in Hamilton Hall, Columbia University, on Wednesday afternoon, December 30, 1896. The President, Dr. George W. Hill, occupied the chair, and there were twenty-four members in attendance. Profs. T. W. Edmondson and J. L. Patterson were elected to membership. The Secretary's report showed a total membership of 279, being a net gain of 12 for the year. Reports were also received from the Librarian and the Treasurer. The *Bulletin* of the Society has appeared regularly through the year, being at present in the sixth annual volume. The last complete volume is a substantial octavo of 354 pages.

The annual election was held at this meeting, the following ticket being adopted: President, Prof. Simon Newcomb; Vice-President, Prof. R. S. Woodward; Secretary, Prof. F. N. Cole; Treasurer, Prof. Harold Jacoby; Librarian, Prof. Pomeroy Ladue; Committee of Publication, Prof. T. S. Fiske, Prof. Alexander Ziwet, Prof. Frank Morley; Members of the Council to serve until December, 1899, Prof. Alfred Baker, Dr. George W. Hill, Dr. Emory McClintock.

Three papers were presented, abstracts of which are given below.

Prof. Morley, of Haverford College, read a paper on the construction of a single point covariant with five given points. Taking the five points 1, 2, 3, 4, 5 on a conic, U, and taking Gundelfinger's conic for any four, let the intersection of the polars of the fifth point with respect to the two conics be found; the 5 points so obtained lie on a line which strikes U at the zeros of a quadratic covariant, Salmon's S. By taking the polar of the five points with regard to this covariant pair, counted thrice, we obtain a covariant point, readily identified as the second of Salmon's list. For

this a geometric construction was given. The constructions involve the ruler alone, as is proper when a single point is to be found.

Prof. Alexander S. Chessin, of the Johns Hopkins University, gave a brief account of his investigations on the motion of a physical pendulum, taking into account the rotation of the earth about its axis. He showed that when the relative velocity of the pendulum is zero, as in the famous experiment of Foucault, the motion of the axis of the pendulum can be represented as composed of two simultaneous motions: (1) of the motion on a very flat closed conic surface, this surface having a plane of symmetry which would be the plane of oscillations of the pendulum, but for the disturbance due to the rotation of the earth; and (2) of the rotation of this conic surface about the vertical of the point of suspension.* The conic surface being very flat, it will seem to an observer as if the axis of the pendulum oscillated in the plane of the vertical of the point of suspension, while at the same time this *apparent* plane of oscillations rotated about the vertical. In Foucault's experiment the rotation of the apparent plane of oscillations took place *clock-wise*. Prof. Chessin showed that this rotation depended on the construction of the pendulum; namely, if the pendulum be properly constructed and the amplitude of oscillations be sufficiently great, then the rotation of the apparent plane of oscillations could take place as well *clock-wise* as *contra clock-wise* or even *not take place at all*. This interesting phenomenon could be observed best at places near the equator, because the angular velocity of rotation of the apparent plane of oscillations is composed of two terms, one proportional to the *sin*, the other

to the *cos* of the latitude of the place of observation. The *contra clock-wise* rotation is due to the presence of the cosine term and is maximum on the equator. In concluding, Prof. Chessin emphatically urged experiments which would verify his calculations.

Prof. E. W. Brown, of Haverford College, made a brief statement of the progress of his calculation of the solar inequalities in the lunar theory. The motion of the node was compared with Hansen's result and with that given by observation. An explanation was also given of the slow convergence of the series which represents the principal part of the secular acceleration of the moon's mean motion.

Following a pleasant custom of previous years, several of the members dined together after the meeting.

F. N. COLE,

Secretary.

CURRENT NOTES ON ANTHROPOLOGY.

DIVINATORY AND CALENDRIAL DIAGRAM.

At the American folk-lore meeting Mr. Stewart Culin exhibited and explained several divinatory diagrams from Thibet, China and Corea, and called attention to their close similarity to the so-called 'calendar-wheels' and the *tonalamatl*, or book of days, of ancient Mexico. He pointed out that the fundamental conceptions of both are identical, and that both developed into games, such as *parcheesi* in India and *patolli* in Mexico, the Chinese game of 'promotion,' and the European 'game of goose.'

These all begin with the numerical concept of the four, expressed in four arms, like a cross, or four 'houses' or squares, which latter, by multiplication, may be 12, 16, 64, etc. This primary concept expressed the original notion of the 'four quarters,' *i. e.*, of the world, and, by extension of the cosmos, time as well as space. The relation of each individual to the All was the notion which imparted the divina-

* See *American Journal of Mathematics*, Vol. XVII., p. 86; Johns Hopkins University Circulars, Vol. XIV., No. 118, p. 64.