

15. Photographs taken at intermediate points between center and limb indicate that the shifts fall off rapidly, and become very small at a short distance from the limb.

26. In order to obtain radial velocities from star lines that are not present in the comparison spectrum it is customary to use an interpolation formula to express the exact relation between wave-lengths and micrometer readings. These formulæ do not change much from plate to plate if the latter are all taken with the same spectrograph, and whatever differences there may be can be *largely* allowed for by adding to the micrometer readings (R) a linear expression: $a + b \cdot R$. Assuming that this is rigorously the case for short distances on the plate, it is shown that the error of this assumption can amount to a few hundredths of a kilometer per second in the case of plates taken with the Mellon Spectrograph of the Allegheny Observatory. Consequently it is only necessary to interpolate the place of a star line linearly between two comparison lines in order to obtain its displacement. This method has been tried on many plates at the Allegheny Observatory and has been found very convenient. The complete reduction of a plate in this way occupies about ten minutes.

27. The problem of Professor Moulton's paper is to find the possible rôle that the near approaches of the stars to one another may have played in sidereal evolution. The answer to this problem depends upon the extent of the sidereal universe, the number of stars in it, and the character of their motion. The discussion leads to the conclusion that the relatively near approaches of the stars have probably been an important factor in stellar evolution. The paper will be published by the Carnegie Institution.

The general committee elected Professor C. J. Keyser, Columbia University, vice-president and chairman of the Section, and Professor G. A. Miller, University of Illinois, secretary. The Section elected Professor G. B. Halsted, councilor; Professor F. R. Moulton, member of the general committee; Professors E. W. Brown and F. R. Moulton, members of the sectional committee—the former for five years and the latter for four years.

G. A. MILLER,
Secretary

UNIVERSITY OF ILLINOIS

THE AMERICAN MATHEMATICAL SOCIETY

THE fourteenth annual meeting of the American Mathematical Society was held at Columbia University on Friday and Saturday, December 27–28, 1907, extending through two sessions on Friday and a session on Saturday morning. The attendance included fifty-three members. President H. S. White occupied the chair, being relieved by Vice-president P. F. Smith at the afternoon session. The following were elected to membership in the society: Mr. Charles Ammerman, McKinley High School, St. Louis, Mo.; Dr. C. S. Atchison, Williams College; Mr. B. H. Camp, Wesleyan University; Professor W. M. Carruth, Hamilton College; Mr. G. R. Clements, Williams College; Professor Julia T. Colpitts, Iowa State College; Professor J. N. Ivey, Tulane University; Professor W. H. Jackson, Haverford College; Mr. W. C. Krathwohl, Columbia University; Professor Murray Macneill, Dalhousie University; Mr. C. N. Moore, Harvard University; Professor Maria M. Roberts, Iowa State College; Mr. E. W. Sheldon, Yale University. Seven applications for membership were received.

In response to the invitation of Professor E. J. Townsend, it was decided to hold the

next summer meeting of the society at the University of Illinois. The date will probably be the second week of September. The data of the next annual meeting was fixed as December 29-30.

The membership of the society increased during the past year from 554 to 582, including at present 52 life members. The number of papers presented at all meetings, including those of the Chicago, San Francisco and Southwestern sections, was 166, and the total attendance of members was 396. The treasurer's report shows the gross income for 1907 to be \$5,401.28, expenditures, \$4,515.26; balance on hand at end of the year, \$6,081.82, including \$2,969.40 life membership fund. Sales of the society's publications amounted to \$1,534.

Several important changes have occurred during the year in the administrative and editorial offices. Dr. W. S. Dennett retired in February from the treasurer's office, which he had held since 1899, and was succeeded by Professor J. H. Tanner, Professor E. H. Moore, who had served as editor-in-chief of the *Transactions* since its foundation in 1899, has retired, and is succeeded by Professor Maxime Bôcher. At the close of the year Professor Alexander Ziwet retired from the Committee of Publication, of which he had been a most valued member since 1893. The vacancy in the committee was filled by the election of Professor Virgil Snyder.

At the annual election, which closed on Saturday morning, the following officers and other members of the council were chosen:

Vice-presidents—James Harkness, G. A. Miller.

Secretary—F. N. Cole.

Treasurer—J. H. Tanner.

Librarian—D. E. Smith.

Committee of Publication—F. N. Cole, D. E. Smith, Virgil Snyder.

Members of the Council (to serve until De-

cember, 1910)—R. E. Allardice, Max Mason, G. D. Olds, M. B. Porter.

The following papers were read at this meeting:

F. L. GRIFFIN: "Certain families of central orbits with a constant apsidal angle."

F. L. GRIFFIN: "On the non-existence of certain types of periodic solutions in the problem of three bodies."

E. O. LOVETT: "On a problem in mechanics, Note II."

E. O. LOVETT: "On a class of periodic solutions in the problem of four bodies."

OSWALD VEBLEN and J. W. YOUNG: "A set of assumptions for projective geometry."

FRANK MORLEY: "The transformation of a Clifford configuration into itself."

R. G. D. RICHARDSON: "Lebesgue improper integrals."

E. W. BROWN: "The motion of the moon relative to a moving plane of reference."

E. W. BROWN: "The development of the infinite determinant."

ARTHUR RANUM: "Groups of singular matrices."

I. G. HARDY: "Curves in a space of n dimensions."

A. B. COBLE: "A reduction of the problem of solving a quintic to Klein's 'problem of the A 's' by means of invariant theory."

L. I. HEWES: "The necessary and sufficient condition that an ordinary differential equation shall admit a conformal group."

J. I. HUTCHINSON: "Hermitian forms with zero determinant."

E. B. WILSON: "On the uniform rotation of a homogeneous chain about a vertical axis."

E. B. WILSON: "On the theory of double products and strains in hyperspace."

MAX MASON: "Note on implicit functions."

H. E. HAWKES: "On the equivalence of families of bilinear forms."

G. A. BLISS: "An existence theorem for a partial differential equation of the first order which is non-analytic."

The meeting of the Chicago Section of the society at Chicago, December 30-31, 1907, and January 1, 1908, was especially marked by joint sessions with Sections A and D of the American Association for the Advancement of Science, at which the teaching of mathematics to students of engineering was made the subject of an

elaborate discussion participated in by mathematicians and engineers.

The next meeting of the society will be held at Columbia University on Saturday, February 29. The San Francisco Section will meet at Stanford University on the same day.

F. N. COLE,
Secretary

THE AMERICAN PHYSIOLOGICAL SOCIETY

THE twentieth annual meeting of the society was held at the University of Chicago, December 31 to January 2, 1907-8. It included joint sessions with the American Society of Biological Chemists and Section K of the American Association for the Advancement of Science. The following scientific papers were presented:

W. H. HOWELL and W. W. DUKE: "Further Communication on the Effect of Vagus Inhibition on the Output of Potassium from the Heart."

O. FOLIN: "Protein Metabolism in Fasting."

J. J. R. MACLEOD: "Experimental Glycosuria."

L. B. MENDEL: "Further Observations on the Parenteral Utilization of Carbohydrates."

H. D. HASKINS: "Preliminary Report of Certain Investigations as to the Nature of Peptones."

A. P. MATHEWS: "The Spontaneous Oxidation of some Cell Constituents."

WALDEMAR KOCH: "On the Chemical Study of Mental Disorders."

L. B. STOOKEY and V. GARDNER: "Concerning the Pharmacological Action of Potassium Iodide."

H. GIDEON WELLS: "The Chemistry of Hypernephromas."

J. R. GREER (by invitation): "On the Composition of Normal Lymph from the Neck Lymphatics of the Horse."

EMIL OSTERBERG and CHARLES G. L. WOLF: "Protein Metabolism in the Dog. The Metabolism with Low Caloric Values of Protein."

J. G. RYAN (by invitation): "The Presence of Glucose in Saliva."

S. J. MELTZER and J. AUER: "The Antagonistic Action of Calcium upon the Inhibitory Effect of Magnesium" (with demonstration).

C. F. HODGE and O. P. DELLINGER: "A Comparative Study of the Cilium as a Key to the Structure of Contractile Protoplasm."

C. F. HODGE, D. GIBBS and O. P. DELLINGER: "Daily Life of *Amoeba proteus*."

J. F. MCCLENDON (by invitation): (1) "The Reaction of *Amoeba* to Stimuli of Small Area." (2) "The Effects of Prolonged Centrifugal Force on *Paramoecium*."

R. M. YERKES: "The Relation of Plasticity to Age in the Dancing Mouse."

B. BRANDE (by invitation): "The Bacterio-agglutinating Action of Lymph under Different Conditions of Lymph Formation."

T. HUGHES (by invitation): "The Relative Hemolytic Action of Serum and Lymph under Different Conditions of Lymph Formation."

S. J. MELTZER and D. R. JOSEPH: "The Effect of Stimulation of the Vagi upon the Onset and Development of Rigor Mortis of the Mammalian Heart."

A. B. LUCKHARDT (by invitation): "The Osmotic Concentration of the Blood during Anesthesia."

W. T. PORTER, W. I. CLARK and F. H. PRATT: (1) "On Differences between the Bulbar and Spinal Vasomotor Cells." (2) "The Reactions of Peripheral Vasomotor Areas."

W. T. PORTER, R. RICHARDSON and H. K. MARKS: (1) "A Comparative Study of Vasomotor Reflexes." (2) "Vasomotor Reflexes after Excessive Hemorrhage."

C. C. GUTHRIE: "Survival of Tissues and Organs under Perfusion."

A. J. CARLSON and W. J. MEEK: "On the Mechanism of the Embryonic Heart Rhythm."

S. HATAI: "Comparison of the Nervous System in the Normal Albino Rat with the Nervous System in those Experimentally Stunted."

I. H. HYDE: "A Study of the Respiratory and Cardiac Activities and Blood Pressure in the Skate, following Intravenous Injections of Salt Solutions."

J. ERLANGER, J. R. BLACKMAN and E. K. CULLEN: "Further Studies on the Physiology of Heart Block in Mammals. Chronic Auriculo-ventricular Heart Block in the Dog."

G. W. CRILE (by invitation): "Observations on the Effect of Excessive Transfusion of Blood."

C. SIHLER (by invitation): "The Disputed Points in the Histology of the Submaxillary Gland and their Physiological Importance."

W. B. CANNON: "Some Observations on the Neuro-muscular Mechanism of the Alimentary Tract."

C. W. EDMUNDS and G. B. ROTH: "The Relation of Curara to 'Nerve Ending' and 'Receptive Substance.'"