

both as a whole and in its separate parts. Their conclusions that there are very appreciable motions in closely adjacent portions of the nebula have been confirmed by observations made in the last few weeks with the Bruce spectrograph. Differences of over 10 km. per second in the velocity in the line of sight have been found, and the general effect of rotation of the nebula inferred by the French observers is confirmed by the spectrograph.

The Euler-Laplace Theorem on the Rounding Up of the Orbits of the Heavenly Bodies under the Secular Action of a Resisting Medium: T. J. J. SEE.

HORACE CLARK RICHARDS

THE AMERICAN PHYSICAL SOCIETY

A REGULAR meeting of the American Physical Society was held at the National Bureau of Standards, Washington, on Friday and Saturday, April 23 and 24, 1915.

Friday, 2 P.M.

Hon. William C. Redfield, Secretary of Commerce, opened the meeting with a cordial address of welcome in which he gave strong expression to his interest in the progress of science, and his appreciation of the vital interdependence of physics and the commercial interests of the country.

Papers were presented as follows:

"On the Distributed Capacity of Single Layer Solenoids," by J. C. Hubbard. (By title.)

"The Skin Effect in Bimetallic Wires," by John M. Miller.

"Magnetization by Rotation," by S. J. Barnett.

"Intercomparisons of the Standard Instruments at Magnetic Observatories 1905-1914," by L. A. Bauer.

"Simultaneous Readings in Electrical Measurements, with Demonstration of a New Type of Switch for Facilitating Them," by Walter P. White.

"The General Design of Critically Damped Galvanometers," by Frank Wenner. (By title.)

"Apparatus for the Simultaneous Measurement of Length, Electrical Resistance, and Magnetic Permeability as Functions of the Temperature," by Arthur W. Gray. (By title.)

"The Dielectric Constant of a Heterogeneous Dielectric," by H. L. Curtis and M. James.

"The Separately Excited Electrodynamometer

as a Sensitive Galvanometer," by Ernest Weibel.

"The Crushing of a Hollow Conductor by Lightning," by W. J. Humphreys. (By title.)

"Aneroid Barometers," by M. D. Hersey.

"A Method of Measuring Heat Conductivities," by R. W. King.

"Viscosity of Ethyl Ether near the Critical Temperature," by A. L. Clark.

"An Equation of State for Normal Substances, Tested in the Vapor Dome," by Harvey N. Davis.

"The Correction of Echoes in the Auditorium at the University of Illinois," by F. R. Watson. (By title.)

"The Transpiration of Plants in Relation to Temperature and Solar Radiation," by Lyman J. Briggs and H. L. Shantz.

"A Mercurial Barometer in which the Well Setting is Eliminated," by Lyman J. Briggs.

Saturday, 9:30 A.M.

"The Reflecting Power of Metals for the Ultra-Violet Region of the Spectrum," by Edward O. Hulburt.

"The Visibility of Radiation in the Red End of the Visible Spectrum," by Edward P. Hyde and W. E. Forsythe.

"The Effective Wave-Length of Transmission of Red Pyrometer Glasses and other Notes on Optical Pyrometry," by Edward P. Hyde, F. E. Cady and W. E. Forsythe.

"The Use of a Hollow Filament with Perforations in the Determination of the Black-body-Temperature and True-Temperature Relation for Tungsten," by A. G. Worthing.

"A Further Extension of the Spectrum in the Extreme Ultra-Violet," by Theodore Lyman.

"The Fluorescence and Absorption Spectra of Uranyl Nitrate," by E. L. Nichols and Ernest Merritt.

"A Precision Artificial Eye," by Herbert E. Ives. (By title.)

"A Flicker Photometer Attachment for a Lummer-Brodhun Photometer Head," by E. F. Kingsbury.

"Color Grading and Color Specifications by Means of the Rotary Dispersion of Quartz," by Irwin G. Priest and Chauncey G. Peters. (By title.)

"A Proposed Method for the Photometry of Lights of Different Colors," by Irwin G. Priest.

"On X-ray Wave-lengths," by William Duane and F. L. Hunt.

"The X-ray Spectrum of Tungsten at Constant Potential," by David L. Webster.

"Factors Governing the Darkening of a Photographic Plate by X-rays," by J. S. Shearer.

"The Wave-length Sensibility Curve for Isolated Crystals of Selenium between 200 $\mu\mu$ and 450 $\mu\mu$," by L. P. Sieg and F. C. Brown.

"The Variation of Equilibrium Conductivity of Selenium with the Intensity of Illumination," by F. C. Brown.

"The Effect of Variation of Temperature on the Coefficient of Recombination of Electrons in Selenium Crystals," by Kathryn J. Dietreich.

Saturday, 2 P.M.

"A Null Method with Photo-electric Cells," by F. K. Richtmyer.

"New Tests of Einstein's Photo-electric Equation," by R. A. Millikan.

"Factors Affecting the Relation between Illumination and Photo-electric Current," by Herbert E. Ives, Saul Dushman and E. Karrer.

"The Theory of Adsorption," by Irving Langmuir.

"The Law of Stokes and the Removal of Particles from Fluids," by W. W. Strong.

"Ionization Potential of an X-ray Tube," by E. C. Drew. (Introduced by Horace C. Richards.)

"Parson's Magneton Theory of Atomic Structure," by David L. Webster.

"A Conducting Paint," by M. James.

"Mechanical Strain and Thermo-electric Power," by Walter P. White.

"Recent Results and Conclusions Regarding Specific Heats at Moderate and High Temperatures," by Walter P. White. (By title.)

"Geometrical Tripods and Stands," by Lyman J. Briggs.

"Changes in Electrical Resistance Accompanying Thermal Expansion," by Arthur W. Gray.

"The Ballistic Use of a Moving Coil Galvanometer in Measuring Discharges Obeying the Exponential Decay Law," by A. G. Worthing.

"The Mobilities of Ions in Air," by E. M. Welisch.

"The Effect of a Magnetic Field on the Initial Recombination of the Ions Produced by X-rays," by J. E. M. Jauncey. (By title.)

"An Accurate Method for the Measurement of the Conductivity of Electrolytes," by W. A. Taylor and H. L. Curtis. (By title.)

The thanks of the society were extended to the Washington members for the lunch generously provided on Saturday for all visiting physicists and to the Bureau of Standards for numerous courtesies extended.

On Friday evening a large number of the members in attendance dined together at the Cosmos Club. This pleasant feature was arranged for and carried out by Dr. L. J. Briggs of the Bureau of Plant Industry.

The attendance at all sessions was good, and there was considerable profitable discussion of papers. On account of the length of the program, a number of local members courteously yielded their time to others and presented their papers by title only.

A. D. COLE,
Secretary

THE ENTOMOLOGICAL SOCIETY OF AMERICA

THE ninth annual meeting of the Entomological Society of America was held at the University of Pennsylvania on December 31, 1914, and January 1, 1915, in affiliation with the American Association for the Advancement of Science. The meetings were all well attended, but from the shortness of the time and the amount of business to be transacted several papers had to be read by title.

The annual public address was delivered on Wednesday evening, December 30, at the Academy of Natural Sciences by Professor Stephen A. Forbes, of the University of Illinois, on the subject: "Ecological Foundations of Applied Entomology." At the same meeting Dr. Henry Skinner, of the Academy of Natural Sciences, gave "A History of the Entomological Society of America." The visiting entomologists were entertained by the local entomologists at a smoker after the addresses.

The following papers were presented:

"Food Habits of Some Colorado Aphids," by C. P. Gillette.

"The Poison Glands of *Automeris io* Fabr.," by Cornelia F. Kephart.

"Geographical Distribution of Neuropteroid Insects, together with Analysis of Our Insect Fauna," by Nathan Banks.

"The Biology of *Nymphula maculalis* Clemens," by Paul S. Welch. Read by title.

"Modification of Tiger-beetle Colors by Temperature and Moisture," by V. E. Shelford.

"Life-history, Development and Work of Unspotted Tentiform Leaf-miner of Apple," by L. Haseman. Read by title.

"Pupal Characters Used in the Classification of the Sphingidae," by Edna Mosher. Presented by the secretary.