due to weight of years are added like burdens due to disease, Nature can not hope to successfully contend with both. Second, confirmed alcoholics. These unfortunates seldom recover from pellagra. Third, cases in which the mentality is seriously impaired. These psychic changes indicate marked destruction of important nerve centers, and render the prognosis doubtful. Fourth, that class of intellectual weaklings who have neither the intelligence nor pertinacity to faithfully hold to and observe a course of treatment for months or years, if necessary, but who are continually shifting from one to another, or taking the nostrums of quacks and charlatans. Practically all of this fourth class succumb.

On the other hand, those who are not included in the classes just mentioned, who will zealously and patiently carry out the medicinal, dietetic and hygienic rules of those physicians who are experienced in the care of such cases, the hope of ultimate and permanent recovery may be confidently grasped by the large majority.

Let me in closing admonish my hearers that the keynote in the treatment of pellagra is *optimism*. If the patient can be kept in good spirits, and in a consistently hopeful frame of mind, the higher centers, untrammelled by fears or obsessions, can best exert their beneficent influence over the lower centers, vegetative and otherwise, and with a brighter hope of victory can we combat this dreaded scourge.

L. O. HOWARD,
Secretary pro tem.

THE AMERICAN PHYSICAL SOCIETY

A REGULAR meeting of the Physical Society was held at the Bureau of Standards, Washington, April 24 and 25, 1914. This was a joint meeting with the electrophysics committee of the American Institution of Electrical Engineers. The programs of the two morning and of the Saturday afternoon sessions were in charge of the Physical Society with President Merritt in the chair. The Friday evening session was in charge of the A. I. E. E. with Chairman J. B. Whitehead in the chair. The Friday afternoon session was given to a lecture by Sir Ernest Rutherford, F.R.S., of the University of Manchester, Eng., "On X-ray and Gamma-ray Spectra," complimentary to the American Physical Society.

Special features of the meeting were the opening of the new electrical building of the Bureau of Standards and an exhibit of physical apparatus. This exhibit was arranged under the direction of a committee of the American Physical Society with Dr. F. A. Wolff as chairman. It was a large and representative exhibit, participated in by thirty-two manufacturers, importers and industrial research laboratories, ten universities and educational institutions, and eight federal scientific bureaus.

Members of the Physical Society were especially invited by the National Academy of Sciences to attend the William Ellery Hale lectures by Sir Ernest Rutherford, F.R.S., upon "The Constitution of Matter and the Evolution of the Elements." These were given in the auditorium of the National Museum on April 21 and 23, and were attended by a large number of the Physical Society members.

All in attendance at the meetings were the guests of the scientific staff of the Bureau of Standards at luncheon on both days of the meeting. After the Friday evening session the local branch of the A. I. E. E. gave a smoker which was largely attended.

At a short business session of the Physical Society the following items of business were transacted:

On recommendation of the council, it was voted to establish a new grade of foreign members, to be defined as non-residents of North America, to pay dues of $4.00, with no initiation fee and to receive the *Physical Review* (with *Science Abstracts* on additional payment of $2.00) and having all rights of regular members in the society. Also, to make such changes in the by-laws as the establishment of this new grade of membership would necessitate.

On motion it was voted to approve and authorize an International Congress of Physics to be held in Washington in October, 1915, in case it should appear that it can be properly financed. (A committee of nine was appointed by the Council to determine this question).

It was voted that the president appoint a committee of three to express the deep sense of loss felt by the members of this society in the death of their former president, Professor B. O. Peirce.

The society voted to express to the director and members of the National Bureau of Standards its high appreciation of the generous hospitality extended to the society throughout the meeting, also to the Washington Section of the American Institute of Electrical Engineers for arranging trips and providing guides to various places of scientific interest in the city and its neighborhood.

The program of scientific papers was as follows:

"Solenoids," by C. R. Underhill.

"Some Investigations of Lightning Protection for Buildings," by DeBlois.

"A Milli-Ampere Current Transformer," by Edw. Bennett.

"Some Simple Examples of Transmission Line Surges," by W. S. Franklin. (By title.)

"Theory of the Corona," by Bergen Davis.

"High Temperature Measurements with the Stefan-Boltzmann Law," by C. E. Mendenhall and W. E. Forsythe.

"Cold-end Compensator for Thermocouples," by Charles B. Thwing. (Apparatus shown.)

"The Emissivity of Metals and Oxides. I.; Nickel Oxide (NiO) in the Range 600° to 1,300° C.," by G. K. Burgess and P. D. Foote.

"Formulæ for the Ordinary Mercury Contact Thermostat, and Some Practical Conclusions Deduced from Them," by W. P. White. (By title.)

"The Specific Heats of Mixtures of Water and Alcohol, and of Solutions of Non-Electrolytes in these Mixtures," by W. F. Magie.

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

"The Infra-red Arc Spectrum of Barium," by H. M. Randall.

"On the Growth and Decay of Color Sensation," by M. Luckiesh.

"Some Effects of Diffraction on Brightness Measurements made with the Holborn-Kurlbaum Optical Pyrometer," by A. G. Worthing and W. E. Forsythe.

"Further Experiments on the Use of the Photo-electric Cell in Stellar Photometry," by Jakob Kunz, J. Stebbins and W. F. Schulz.

"Displacement of Arc Lines not Due to Pressure," by Chas. E. St. John and H. D. Babcock.

"On the Accuracy of Terrestrial-magnetic Measurements," by L. A. Bauer.

"The Gamma-ray Comparison of Specimens of Radium Salts," by N. Ernest Dorsey.

"Note on the Photo-electric Effect with Potassium Surfaces in Very High Vacuum," by Saul Dushman.

"The Results of the Atmospheric Electric Observations on the Second Cruise of the *Carnegie*, June, 1910, to December, 1913," by C. W. Hewlett.

"Apparatus for the Spectroscopic Synthesis of Color," by H. E. Ives and E. J. Brady.

"New Methods for Measuring Time Constants of Low Resistances," by Frank Wenner, Ernest Weibel and F. B. Silsbee.

"A Sensitive Moving Coil Galvanometer," by F. Wenner, E. Weibel and F. C. Weaver.

"Some Records of the Wireless Time Signals Made with a Physiological Recorder," by C. W. Waggoner.

"Electric Conduction and Thermo-electric Action in Metals," by E. H. Hall.

"Electrochemical Indicators and Recorders. Instruments for Showing Continuously the Chemical Content of Solutions," by F. A. Harvey.

"Characteristic Curves of Tungsten Filament Incandescent Lamps and their Application in Heterochromatic Precision Photometry," by G. W. Middlekauff and J. F. Skogland.

"The Thomson E.M.F. in and the Thermal Conductivity of Tungsten at Incandescent Temperatures," by A. G. Worthing.

"A Direct Determination of h," by R. A. Millikan.

"Some Peculiarities in the Thermal Expansion of Invar," by Arthur W. Gray.

"A New Turbidimeter," by P. V. Wells.

"The Diurnal System of Convection," by Wm. H. Blair.

"The Control of the Wave-length Sensibility Curves for Selenium," by E. O. Dieterich.

"On the Relation between the Photo-electric Potential and the Frequency of Light for Potassium," by S. Karrer.

"Reflection and Scattering of Slow-moving Electrons," by Albert W. Hull.

"Reversible Transitions between Solids at High Pressures," by P. W. Bridgman.

"Surface Leakage over Insulators," by H. L. Curtis.

"Spark Potentials in a Magnetic Field," by R. F. Earhart. (By title.)

"Some Points with Regard to the Variation of the Specific Magnetization of a Substance with Temperature," by W. F. G. Swann.

"High Frequency Verification of Kirchoff's Capacity Formulæ," by F. C. Blake and Chas. Sheard. (By title.)

"Corona Produced by Continuous Potentials," by S. P. Farwell.

"A Significant Instance of Galvanometer Instability," by W. P. White.

"Wave-length Sensibility Curves of Potassium Photo-electric Cells," by H. E. Ives.

"An Electromagnetic Puzzle," by F. J. Rogers.

"The Photo-electric Effect of Carbon as Influenced by its Absorbed Gases," by Otto Stuhlmann, Jr., and R. J. Piersol.

"The Relation of Residual Gases to the Photo-electric Sensitiveness and the Contact E.M.F. of Sodium," by R. A. Millikan and W. H. Souder.

"Effect of Glass Walls on Thermionic Currents," by Saul Dushman.

"A New Design of Flicker Photometer for Laboratory Colored-light Photometry," by H. E. Ives and E. J. Brady.

"Note on the Physiological Effect of the Current," by F. J. Rogers.

"Examples of the Precision Attainable in Determinations of Thermal Expansivity," by Arthur W. Gray.

"Dioptric Formulæ for Combined Cylindrical Lenses at Oblique Axes," by Charles Sheard. (By title.)

"The Testing of Potentiometers," by Frank Wenner and Ernest Weibel.

"An Absorbing Solution for Eliminating Color Differences in Photometry," by H. E. Ives and E. F. Kingsbury.

"Photographs of Retrograde Rays, (*a*) from the Cold Cathode, (*b*) from the Hot Lime Cathode," by O. H. Smith.

A. D. Cole,
Secretary

THE SOCIETY OF AMERICAN BACTERIOLOGISTS

II

THURSDAY, JANUARY 1, 1914

Systematic Bacteriology

Morphology of the Bacteria (Vibro and Spirillum), An Early Research: Joseph Leidy, Jr.

This paper will be published in Science.

The Classification Card and the Type or Study which it Merits: H. A. Harding.

The classification card has not appealed to the pathologists, because they could test unknown cultures more quickly on animals, nor to water bacteriologists because their attention has been focused upon *B. coli* and special media, but it has been very valuable to students of bacterial ecology. The card is justly criticized because the observations of bacterial cultures are not always accurately recorded by it and because the present group number is unwieldy and of undetermined value as a basis for classification. One of the most urgent demands of bacteriology to-day is the careful testing out of various suggestions looking toward an improved technique. Dr. H. J. Conn has suggested that the ease of handling the group number can be increased by pointing it off into periods of about three figures each. The significance of such periods would be increased if each was devoted to a class of reactions such as morphology, fermentation, nitrogen relations and enzyms. The reactions should be selected for this group number after careful study of their accuracy and utility, and pending the results of this study the card of 1907 should be retained practically unchanged.

Constancy in the Fermentative Activity of Streptococci: Jean Broadhurst.

Attempts to correlate the fermentative results of different workers in saccharose mannit and other Gordon media have led to a series of experiments dealing with the different conditions characterizing the technique in different laboratories. Differences, such as acidity, presence or absence of sugars, subjection to raw and variously heated milks, were tried out without finding any definite results on the later Gordon reactions. Slight and brief increases in temperature (above 37°) depressed fermentative activity decidedly. Much more marked (as previously reported) were the contrasts resulting from the use of meat extract and of meat Gordon media. These effects are evidently not necessarily lasting. Permanent changes were effected by a stay in the alimentary canal (*e. g.*, a gain in lactose in dogs fed on streptococci-free milk). Cultures kept for 1 to 4 months on meat agar (10-day transfers) showed a gain in the amount of fermentative activity (the amount of acid), many strains show also a gain in the number of substances fermented; less often a loss occurred in the number of substances fermented. Studies carried on with individual animals for varying periods (2–10 mo.) showed unexpectedly wide ranges in the physiological types of mouth and fecal streptococci, affecting probably the diagnostic value of fermentative reactions. These, and other phases of the work reported upon, seem to warrant the following conclusions: (1) Constancy may be claimed for streptococci under identical or duplicate conditions. (2) Constancy in these fermentative responses is also characteristic of a large percentage of strains, under varying or varied conditions. Age, a stay in the alimentary canal, and meat extract, have more effect on such results than any of the (19) varied conditions tried.

The Relation of Habitat and Physiological Characters in the Streptococci: L. A. Rogers and Arnold Dahlberg.

It is reasonable to assume that true species in the bacteria will be found associated with a definite habitat as it is with the higher plants and animals. Studies were made of the physiological characters of 51 cultures from infected udders; 114 cultures from bovine feces; 31 cultures from