

suggestions for basic alterations should be supported by well-thought-out proposals and should be subjected to prolonged and public discussion, as in the pages of the official journal. Until great interest and able leadership become evident in favor of a change, the conference felt that our organization should be left without fundamental alteration.

The minutes of the New York session of the secretaries' conference are to be mailed to the conference members in the near future, and members will be asked to make and to consider suggestions for the work of the conference during 1929 and for the program of its Des Moines session next December.

THE NEW YORK SESSION OF THE ACADEMY CONFERENCE

THE academy conference acts as a special committee of the American Association, on the relations between the affiliated academies of science and between them and the association. The association is anxious to aid the academies in every way and especially to facilitate their representing the aims and purposes of the association in their respective regions. The facilities of the permanent secretary's office are at the disposal of the academy conference in the carrying on of its work. The conference consists of the representatives of the affiliated academies in the association council and three members named by the executive committee to represent the association as a whole in the deliberations of the conference. The conference has a secretary, elected at its annual session at the time of the annual meeting of the association. He conducts correspondence with the members throughout the year and formulates therefrom a program for discussion at the next conference session. The work of the organization was well started in 1928, by William H. Alexander and Howard E. Enders, conference chairman and secretary for that year, and an interesting session, at which great enthusiasm was shown, was held at New York, following the first council session on Thursday afternoon, December 27. The session was followed by the annual complimentary academy dinner, to which conference members were invited by the association, and that dinner proved to be a very profitable and enjoyable feature of the New York meeting.

Dr. D. W. Morehouse, representing the Iowa Academy of Science, was elected secretary of the academy conference for 1929, and Dr. Howard E. Enders, representing the Indiana Academy of Science, who had been conference secretary for 1928, is chairman of the conference for 1929. These elections were subsequently approved by the council of the association.

Since the business of the academy conference deals with matters specially interesting to the academy representatives and since this conference is but newly organized, it will not be necessary in this place to

report in detail on its work, and the permanent secretary wishes only to record the fact that the conference is now actively functioning and that it appears to have before it a very useful future. This report of progress may be added to at a later time, as the work of the conference takes definite form. It is expected that its work will shortly become of great interest not only to all academy members but to the general membership of the association as well.

THE PRESIDENT ELECT

ROBERT ANDREWS MILLIKAN, distinguished president of the American Association for the Advancement of Science for 1929, is of New England stock, of Scotch and English descent. His father, Rev. Silas Franklin Millikan, who was a graduate of Oberlin College, preached for forty years in Congregational churches of Illinois, Iowa and Kansas. His mother, Mary Jane Andrews, was also a graduate of Oberlin College and she had been dean of women in Olivet College, Michigan. President Millikan received the A.B. degree from Oberlin College in 1891 and taught elementary physics there during the following two years. He received the Ph.D. degree in physics at Columbia University in 1895 and spent the next year studying physics in the universities of Berlin and Göttingen. Assistant in physics at the University of Chicago in 1896-97, he passed rapidly forward and attained a professorship in 1910, a position which he held for eleven years. Since 1921 he has been director of the Norman Bridge Laboratory of Physics, of the California Institute of Technology, at Pasadena.

It is interesting to note that Millikan's special interest in physics, the science that owes so much to his many brilliant and successful research contributions as well as to his eminently clear and inspirational teaching and writing, does not appear to have dated from his college days. In his undergraduate period at Oberlin College he was most absorbed in Greek and mathematics and he limited himself to a single one-semester course in physics. His deep and lasting interest in his chosen science developed in connection with his teaching of the subject after his graduation. As an undergraduate he took prominent part in many student activities; he was an athlete of some local success, he was president of his class in the sophomore year, editor-in-chief of the college annual in his junior year, acted as student gymnasium director during his junior and senior years and made the speech on behalf of his class at the time of his graduation. He is still an enthusiastic tennis player.

For a third of a century Dr. Millikan has been actively and indefatigably engaged in physical research, chiefly in the fields of electricity, optics and molecular physics. The following brief summary of some of our new president's best-known investigations,

as reported from time to time in the scientific literature, may serve to indicate, in a confessedly inadequate manner, the sort of intellectual achievement for which the American Association has honored both him and itself by his election to its presidency.

(1) The isolation and measurement of the electron, resulting in direct demonstration of the atomic structure of electricity and making it possible to ascertain with a high degree of precision the number of molecules in a given weight of any simple substance.

(2) The direct photoelectric evaluation of the fundamental radiation constant known as Planck's h , which furnished the first direct, experimental establishment of the validity of the Einstein equation of 1905. The subsequent general establishment of the validity of that equation, by means of an extensive series of researches that began with the work of Millikan, constitutes one of the most far-reaching advances of modern physics and the Einstein equation has now become scarcely second in importance, in the electromagnetic theory, to the equations of Maxwell in that field.

(3) The study of Brownian movements in gases, resulting in one of the strongest links in the chain of evidence that finally silenced all opposition to the atomic and kinetic theory of matter.

(4) The great extension of the known ultra-violet spectrum, reported in 1920-23, by which the range of the explored ultra-violet frequencies was extended downward by two octaves. These studies completed the work begun by Moseley, establishing the order of progression of the chemical elements, or of their evolution, on the basis of the character of the radiations emitted by the constituent electrons within the atom.

(5) The discovery, reported in 1923, of the "law of motion of a particle falling toward the earth after it enters the earth's atmosphere," by which was definitely settled both theoretically and experimentally a problem of the kinetic theory that had been in controversy for seventy-five years.

(6) The experimental study, with Dr. I. S. Bowen, of the properties of light atoms when completely or partially "stripped" of their valence electrons, together with the new spectroscopic laws based on the results of these studies, from which, in part, was subsequently developed the exceedingly fundamental concept of the "spinning electron."

(7) The discovery of the conditions controlling the extraction of electrons from metals by fields alone, which furnished the first direct experimental proof that electrons in metals do not at ordinary temperatures appreciably take part in the motion of thermal agitation but do begin to take part in that motion at sufficiently high temperatures. This discovery appears to be beginning to clear up the problem of the nature of metallic conduction.

(8) The study of the nature and properties of cosmic rays, very high-frequency radiation of cosmic origin, which appears to penetrate space uniformly in all directions.

Millikan's strong influence on contemporary scientific thinking and on many of the prevalent trends of scientific philosophy is evident everywhere where carefully thoughtful people converse and write. Alone and in collaboration with others he has exerted great influence on elementary and advanced physical teaching through a number of standard and much-used text-books, which have been kept abreast of our rapid advance by needed revisions. That he is still deeply interested in elementary students of physics is shown by the recent publication of "A First Course in Physics for Colleges," by Millikan, Gale and Edwards (1928). On the more philosophical side, many general readers have been helped by his broad and tolerant attitude of mind as shown in "Science and Life" (1923) and in "Evolution in Science and Religion" (1927).

Dr. Millikan's outstanding leadership in science is well attested by many honors conferred upon him. He is a member of the Phi Beta Kappa society and of the Society of the Sigma Xi. He is a member of the National Academy of Sciences, of the American Philosophical Society and of the American Academy of Arts and Sciences. He is an honorary member of the Royal Institution of Great Britain, of the Academies of Amsterdam and Rotterdam, of the Royal Irish Academy and of the Academies of Sciences of Holland, Russia and France. He is also a member of the Gesellschaft der Wissenschaften of Göttingen. Among honorary degrees that have been conferred upon him by institutions of learning are: *Doctor of Science*, by Oberlin College, Amherst College, Northwestern University, University of Pennsylvania, Columbia University, University of Dublin and Leeds University; *Doctor of Laws*, by Yale University, University of California and University of Colorado; *Doctor of Philosophy*, by King John Casimir University, of Poland, and University of Ghent. He has been recipient of the Comstock prize of the National Academy of Sciences, of the Edison medal of the American Institute of Electrical Engineers, of the Hughes medal of the Royal Society of Great Britain, of the Nobel prize in physics awarded by the Swedish Academy of Sciences, of the Faraday medal of the London Chemical Society, of the Matteucci medal of the Italian Academy of Sciences, of the gold medal of the American Society of Mechanical Engineers and of the gold medal of the Society of Chemical Industry of England.

Dr. Millikan has always had great interest in the broader aspects of education and the welfare of humanity, in connection with which he has been con-

tinually active in many ways. He was for many years one of the directors of the University of Chicago Settlement, he is a trustee of Oberlin College and is the American member of the Committee on Intellectual Cooperation of the League of Nations. He belongs to the Congregational Church. His friendliness and reliable helpfulness to his students and colleagues have always been of rare quality, inspiring unusual confidence, affection and loyalty, as one gathers from conversation with those who know him well.

Millikan has a brilliant record of scientific activities in the war period. He devoted himself wholly to them from March, 1917, to January, 1919, serving first on several committees of the Council of National Defense, notably with the General Munitions Board and the Optical Glass Committee. Throughout the war he served on the Anti-Submarine Board of the U. S. Navy, which consisted of four naval officers and three civilians, its main responsibility being the direction of the work of the anti-submarine research station at New London, Connecticut. He received a commission in the U. S. Army in July, 1917, and served throughout the remainder of the war as lieutenant-colonel in charge of the science and research division of the Bureau of Military Aeronautics. He is at present a lieutenant-colonel in the Officers' Reserve Signal Corps.

Our new president has taken active part in American scientific organizations, especially in the National Research Council (of which he is now vice-chairman), in the American Physical Society (of which he is a past president) and in the American Association for the Advancement of Science, to the presidency of which he now comes with an exceptionally extensive experience and sympathetic interest. The records of the American Association show that he has been a member since 1907 and a fellow since 1910. He was vice-president for Section B (Physics) in 1911. No other member of the American Association approached him in the number of votes cast in the nomination canvass of the membership regularly conducted last fall, and the unanimous vote of the council on December 29, by which he became president for 1929, is thoroughly and heartily approved by the membership at large. He now becomes an *ex-officio* member of the council and of its executive committee, in which are vested the control of association affairs. The American Association, and American science in general, are to be congratulated on the addition of Dr. Millikan's name to the long list of distinguished names that constitute the presidential roll.—B. E. L.

GENERAL OFFICERS OF THE ASSOCIATION FOR 1929

President

Robert A. Millikan, California Institute of Technology, Pasadena, Calif. (*Elected at the fifth New York meeting.*)

Retiring President

Henry Fairfield Osborn, American Museum of Natural History, New York, N. Y.

Vice-Presidents, Retiring Vice-Presidents and Secretaries of the Sections

Section A (Mathematics):

Vice-president, E. T. Bell, California Institute of Technology, Pasadena, Calif. (*Elected at the fifth New York meeting.*)

Retiring Vice-president, Raymond C. Archibald, Brown University, Providence, R. I.

Secretary, Charles N. Moore, University of Cincinnati, Cincinnati, Ohio. (*Elected at the fifth New York meeting, to succeed himself.*)

Section B (Physics):

Vice-president, Charles E. Mendenhall, University of Wisconsin, Madison, Wis. (*Elected at the fifth New York meeting.*)

Retiring Vice-president, P. W. Bridgman, Harvard University, Cambridge, Mass.

Secretary, A. L. Hughes, Washington University, St. Louis, Mo. (*Elected at the fifth New York meeting, to succeed himself.*)

Section C (Chemistry):

Vice-president, Samuel Colville Lind, University of Minnesota, Minneapolis, Minn. (*Elected at the fifth New York meeting.*)

Retiring Vice-president, C. E. Kenneth Mees, Eastman Kodak Co., Rochester, N. Y.

Secretary, R. B. Renshaw, New York University, New York, N. Y. (*Elected at the fifth New York meeting, to succeed Gerhard Dietrichson.*)

Section D (Astronomy):

Vice-president, Harlow Shapley, Harvard University, Cambridge, Mass. (*Elected at the fifth New York meeting.*)

Retiring Vice-president, J. S. Plaskett, Dominion Astrophysical Observatory, Victoria, B. C., Canada.

Secretary, Philip Fox, Northwestern University, Evanston, Ill. (*Elected at the fifth New York meeting, to succeed himself.*)

Section E (Geology and Geography):

Vice-president, George Frederick Kay, University of Iowa, Iowa City, Iowa. (*Elected at the fifth New York meeting.*)

Retiring Vice-president, Frank Leverett, University of Michigan, Ann Arbor, Mich.

Secretary, Kirtley F. Mather, Harvard University, Cambridge, Mass. (*Elected at the fifth New York meeting, to succeed G. R. Mansfield.*)

Section F (Zoological Sciences):

Vice-president, Charles Manning Child, University of Chicago, Chicago, Ill. (*Elected at the fifth New York meeting.*)

Retiring Vice-president, Michael F. Guyer, University of Wisconsin, Madison, Wis.

Secretary, Geo. T. Hargitt, Syracuse University, Syracuse, N. Y. (*Elected at the fifth New York meeting, to succeed himself.*)

THE PRESIDENT ELECT

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