might have been opposed to any accumulation of property and money; for one reason that the association was migratory and without fixed habitation.

In 1869 a resolution was adopted that receipts from sales of the Proceedings should be made the nucleus of a research fund. To this small beginning was added later the life-membership fees, subsequent to the death of the life members. In the absence of donations the permanent fund grew slowly. In 1882 it was only $2,062.00; in 1891, $5,254.00; in 1910, $21,300.00. Due partly to the generous bequest of Richard T. Colburn the fund is now nearly $138,000.00.

The first notable gift was in 1873, from Mrs. Elizabeth Thompson, of $1,000.00 (22: 422). From this donation was published the memoir on Fossil Butterflies, by S. H. Scudder (23: 48). In 1884 Mrs. Thompson made a second gift of the same amount, to be used for experimental research on light and heat (33: 691). In 1911 Mrs. Jane M. Smith gave $5,000.00, the income to be used in payment of life membership fees for worthy old members. A donation of $4,381.21 was received in 1920 from W. H. Stephens.

The first grants for research from the permanent fund were made in 1887, of $175.00 to A. A. Michelson and E. W. Morley to aid in establishing a standard of length; and $125.00 to C. S. Minot for biologic study (36: 355). A third grant was made the next year to F. W. Putnam, of $200.00, for exploration of the Serpent Mound in Ohio. For several recent years the annual appropriation for grants has been $4,000.00, which in future years will be increased. However, it will require some time for our total of grants to equal that of the British association, which during the years 1834 to 1921 were an equivalent of nearly $403,000.00.

To-day the British association is suffering, only temporarily, it is hoped, from the monetary and political troubles of Europe. The outlook for the American association is bright, for financial resources and the ability to aid in the search for truth, and in helpfulness in other ways for human betterment. Other strong organizations, beside the technical societies, are now supporting scientific research; but with its honored history, its wide scope, its close relation to all the national societies and with its increasing membership and income, the association should hold its leadership in the field of American science.

In comparison with its sister associations of Great Britain and France, and others in the southern hemisphere, the American association has the peculiar difficulty and the delicate function of being the central and unifying body among a great number of very strong national societies. In further comparison, it may be said that the British association is older, richer and with great social and official prestige. Its home field is small and easily covered. It has been the chief national society, with the support of many strong local societies. The American society, on the contrary, has an immense territory, with cities far-scattered and thousands of miles for travel; no official or governmental relations; and since about 1888 has had to recognize a great number of very strong technical national societies. Our nearest approach to official recognition was the address of welcome at the third Washington meeting by President Taft; and the receipt of a communication on national conservation, in 1907, from President Roosevelt.

The annual "conferences" which the British association holds with the local societies are scarcely to be compared to the "convocations" of the American association in affiliation with (at present) 53 leading technical societies and some 40 associated societies (1921, Vols. 24–26).

The object of the association is to bring forth truth and to set forth the truth—to discover and to proclaim the phenomena of the cosmos. The educational function, the advancement of science by diffusion of knowledge, has not been undertaken in an active and systematic way. And the need is pressing for popular and general scientific education. Not only are many millions of people in this land of education ignorant of elementary science, and being served with sensation instead of fact, but to multitudes the theories and facts of science are repugnant. The truth has great need of fearless champions, and as the spokesman for organized science in America the American association should assume leadership.

HERMAN L. FAIRCHILD
UNIVERSITY OF ROCHESTER

ERNEST FOX NICHOLS

SURROUNDED by friends and associates and addressing, as one of the leaders in his own field of science, a distinguished audience of fellow scientists, Ernest Fox Nichols died suddenly on April 29, in the auditorium of the building of the National Academy of Sciences at Washington.

Were it possible to be unmindful of the added shock and sorrow to his family which such sudden death brings, his friends could have wished for him no more fitting ending of his life, devoted as it was to the advancement of scientific knowledge, than to die in full mental vigor, in physical health as it seemed, and to the very last instant taking the part of a leader in his profession.

Ernest Nichols was born fifty-four years ago and received his collegiate training in his native state, Kansas. As a graduate student in physics he began his career at Cornell University from which institu-

tion he received the doctorate of science in 1897 after having spent two years at Berlin where he completed his first important piece of experimental work. Unlike the majority of foreign students in Berlin in those days, Nichols worked on a problem of his own devising. He appeared older and more experienced than most of his fellow students in the laboratory, though he was not yet twenty-five years old, and his assiduity and his patience in overcoming great experimental difficulties was amply rewarded by his producing a very fine piece of work. This first important research of his was the study of the optical properties of quartz in the infra-red region of the spectrum and the results which he obtained led directly to the perfection of the so-called method of residual rays which has been used with conspicuous success by Rubens and his fellow workers in investigating the extensive infra-red spectrum. Before he left Berlin at the end of his second year, Nichols had published important papers in collaboration with Rubens and he was regarded both in Europe and America as an experimental physicist of extraordinary ability. In the course of the next ten years he held successively the positions of professor of physics at Colgate, Dartmouth and Columbia, and during this period his research work was largely directed towards the experimental verification of certain predictions of the dominant electro-magnetic theory of light. One of these predictions, that a beam of light should exert a minute pressure on an object in its path, had been looked for without success until Nichols, in collaboration with Hull, in America, and Lebedew in Russia, independently discovered and measured this minute effect and found it to be in accord with the theory.

In 1909 he gave up for a period of seven years his chosen field of work to become president of Dartmouth College. Throughout this period, embracing as it did the best years of his professional life, he cherished the hope that he might return to the life of productive scholarship which he had had to abandon in assuming heavy administrative duties. In 1916 he went to Yale as professor of physics, but his hopes of leisure for research in pure science were not to be fulfilled, as the approaching entry of America into the world war made it necessary to organize the scientists of the country for research and invention along lines having immediate practical value in war. Dr. Nichols was among the first to offer his services to the government through the National Research Council which he had helped to organize, and he was an active member of the group engaged in the study of antisubmarine defense in the early part of the war and was connected with the department of Naval Ordnance during the entire period of America's participation in the war.

In 1920 he became the director of research in pure science in the laboratory of the National Lamp Works in Cleveland, a position which, but for a short period of time, he occupied until the time of his death. In 1921 he was inaugurated president of the Massachusetts Institute of Technology, but owing to serious ill health was unable to continue in office for more than a few months.

Of the thirty years between the publication of his first important paper and his death, about one third was devoted to purely administrative work and this period was that during which discoveries of the most far reaching importance to physics were being made. When Nichols returned to experimental investigation, he felt that he had almost to learn his own subject over again, and he told many of his friends that it seemed to him that he should never regain a firm grasp of it. He did this, however, in spite of delicate health, and in the end was contributing regularly to the physical journals and reading papers before the American Physical Society and the National Academy of Sciences. His modesty with regard to his own place in American science was so great that one wishes he might have known what was to happen at his death: that the most distinguished gathering of his fellow scientists of America were to stand uncovered, bowed and sorrowful, at the tragic loss of an honored colleague as his dead body was born through their ranks.

AUGUSTUS TROWBRIDGE

PRINCETON UNIVERSITY

SCIENTIFIC EVENTS

RESOLUTIONS IN MEMORY OF JOHN M. STILLMAN

THE California Section of the American Chemical Society has passed the following resolutions on the demise of John M. Stillman:

WHEREAS, In the death of John M. Stillman the California Section of the American Chemical Society has suffered the loss of a loyal, distinguished and much loved member, and

WHEREAS, The members of the section were for many years inspired by the messages that he conveyed to them in meetings of the society, and in the class-rooms of the University of California and of Stanford University, and

WHEREAS, The passing of Dr. Stillman has deprived our profession of an earnest and skilful worker and valued contributor to chemical literature, and

WHEREAS, We are deeply thankful that it has been our privilege to have known him as teacher, colleague and friend; therefore, be it

Resolved, That the California Section of the American Chemical Society share with the members of the family of Dr. Stillman their sorrow. The society extends to them heartfelt sympathy; and be it further