

stitution is enormous and one of the most pressing needs of the institution is to obtain additional assistance in the study of the collections already on hand and being received from a number of sources. The results already obtained indicate that light is being thrown on a number of important marine problems by systematic and continued investigations along the lines now being pursued. Professor C. O. Esterly is making investigations of the copepod fauna along and off the coast of southern California in a way similar to the investigations conducted by Professor Allen on the diatoms and dinoflagellates, and has published a number of papers. Recently an arrangement has been made with Dr. J. A. Cushman for a systematic study of the foraminifera along and off the coast of southern California.

The institution helps numbers of marine biologists by offering them facilities for studies at the institution and by supplying material to investigators. In an abstract such as this, it is not practicable to enumerate persons of the two categories indicated who have profited by such facilities as the institution can afford. It is desired that these facilities be utilized up to the institution's capacity.

During the coming summer it is proposed to hold at the Scripps Institution two conferences. The first of these will deal with the physical oceanography and meteorology of the Northeast Pacific and the interrelations of oceanic phenomena with the climate of the western United States. It is hoped to have represented at this conference all those institutions and organizations interested in such matters. It is intended that the second conference shall deal with certain problems of bacteriology, biochemistry and physical chemistry of the sea, and their relation to certain geological processes.

T. WAYLAND VAUGHAN

SCRIPPS INSTITUTION

NATIONAL RESEARCH ENDOWMENT

THERE was noted in *SCIENCE* last week the plans for a large endowment to establish national research professorships and to promote research in other ways under the auspices of the National Academy of Sciences. The official text of the announcement follows:

The National Academy of Sciences has appealed to a body of prominent public men to join with leading scientists in an endeavor to secure larger resources for research in pure science. It is hoped that an annual income of at least two million dollars can be secured to establish National Research Professorships and in other ways to cooperate with universities and other institutions throughout the country which are prepared to do their full share in the encouragement and support of fundamental research in the mathe-

matical, physical and biological sciences. While the United States is in the forefront of industrial research, it is accomplishing much less in pure science than its population and material resources would lead one to expect.

The academy has created a special board of trustees of the National Research Endowment which includes Dr. Albert A. Michelson, president of the National Academy of Sciences; Gano Dunn, chairman of the National Research Council; Dr. Vernon Kellogg, permanent secretary of the National Research Council; Elihu Root, Herbert Hoover, Andrew W. Mellon, Charles E. Hughes, John W. Davis, Julius Rosenwald, Colonel Edward M. House, Cameron Forbes, Felix Warburg, Henry S. Pritchett; Dr. Robert A. Millikan, foreign secretary of the National Academy of Sciences; Dr. John C. Merriam, president of the Carnegie Institution of Washington; Owen D. Young and Henry M. Robinson; Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research; Dr. John J. Carty, vice-president of the American Telephone and Telegraph Company; Dr. William H. Welch, director of the School of Hygiene and Public Health of Johns Hopkins University; Dr. James H. Breasted, director of the Oriental Institute of the University of Chicago; Professor L. R. Jones, of the University of Wisconsin; Professor A. B. Lamb, director of the chemical laboratory of Harvard University; Professor Oswald Veblen, of Princeton University; Dr. Thomas H. Morgan, of Columbia University, and Dr. George E. Hale, of the Mount Wilson Observatory. Mr. Hoover has been requested to act as chairman of the board and has accepted.

In discussing the vital need for greater financial support of pure science research, Mr. Hoover said in a recent address:

While we have in recent years developed our industrial research upon a scale hitherto unparalleled in history, we have by no means kept pace in the development of research in pure science. The sudden growth of industrial research laboratories has in itself endangered pure science research by drafting the personnel of pure science into their ranks. Thus applied science itself will dry up unless we maintain the sources of pure science. We must add to knowledge, both for the intellectual and spiritual satisfaction that comes from widening the range of human understanding, and for the direct practical utilization of these fundamental discoveries. A special study in an industrial laboratory, resulting in the improvement of some machine or process, is of great value to the world. But the discovery of a law of nature, applicable in thousands of instances and forming a permanent and ever available addition to knowledge, is a far greater advance.

Elihu Root is no less emphatic than Herbert Hoover in his appreciation of fundamental scientific research. He says:

Every practical advantage gained in utilizing natural forces for the benefit of mankind can be traced back to a necessary basis established through fundamental research in pure science by men who had no other object than to ascertain the truth. If that kind of research ends progress in applied science must presently also end. Fundamental research requires systematic support because it does not present the manifest promise of immediate profits. I think the proposed organization for the purpose of securing such support is very important and will be of the greatest value. I am much gratified that Mr. Hoover is willing to give his great ability and prestige to making the new undertaking a success.

Judging from our progress in other fields, we do not lack competent men for research, officials of the academy explain. Too often, with the comfort of their families at heart, such men reluctantly accept well-paid industrial positions instead of poorly paid academic posts. The problem is to make these posts so attractive that the ablest men will seek and hold them permanently because of the opportunities they offer to advance knowledge by fundamental research. This can be done by providing adequate salaries, freedom from too much teaching or administration, necessary instruments and apparatus and skilled assistants to perform the extensive routine operations that scientific research involves. In short, able investigators should be given some such comfort in life, freedom of action and opportunity for constructive thought that industrial and administrative officers in this country, certainly of no larger calibre, habitually enjoy. One way to accomplish this is by establishing National Research Professorships, or similar positions, in co-operation with universities vitally interested in the advancement of science. One hundred National Research Fellowships, financed by the Rockefeller Foundation and the General Education Board, are bringing the best advanced students in the physical and biological sciences and in medicine into research. The next important step is to improve the academic conditions under which such men, and more especially the mature investigators of demonstrated success, conduct their work.

President Michelson, of the National Academy, in writing to Mr. Hoover to express his great satisfaction that he had undertaken to act as chairman of the trustees of the National Research Endowment, says:

I regard this as one of the most important and significant movements in the direction of helping to make the contributions to science worthy of the enterprise of America.

We can no longer plead youth and the pressure of building up the industries as an excuse for the unfavorable comparison of our own meager contributions with those of England, France and Germany. There can be no doubt that the situation would be immensely improved

if the prospects of the more promising men who have the talent and ability and the taste for the pursuit of scientific investigation could be made comparable with those of say a successful physician or lawyer.

There is not the slightest conflict between the purposes of the National Academy of Sciences and those of the Smithsonian Institution, which is seeking a large endowment fund to provide adequately for the important investigations of its large staff. These two scientific organizations enjoy most cordial relations, as Mr. Hoover indicated in his recent New York address when he strongly commended the efforts of the Smithsonian to obtain an endowment and referred to it as the great pioneer of all American research, which has inspired much of the work in progress to-day.

Dr. Robert A. Millikan writes as follows:

In the application of science to industry the United States has always taken a leading place among the nations, and our industries may be counted upon to see that she continues to do so. But no such claim to leadership in the field of fundamental science can as yet be made for her. For the sake of our own intellectual development, for the sake of the diffusion of the spirit and the method of science among her people, and for the sake of the future of her material progress as well—fundamental science of to-day being but the applied science of tomorrow—her supreme need just now is for the stimulation of research in the fundamental sciences throughout the length and breadth of the land. This is why I regard the attempt to establish a National Research Endowment for the above purpose as one of the most important national movements ever launched in the United States.

SCIENTIFIC EVENTS

PRESENTATION OF THE COPLEY MEDAL OF THE ROYAL SOCIETY TO PROFESSOR EINSTEIN

PRESENTATION of the Royal Society medals was made at the anniversary meeting of the society on November 30, by the retiring president, Sir Charles Sherrington. The following citation was made with the award of the Copley Medal to Professor Albert Einstein:

The name of Einstein is known to every one through the theory of relativity which he originated in 1905 and extended by a notable generalization in 1915. Einstein realized that the time and space with which we are so directly acquainted by experience can be no other than the fictitious *local* time and space of the moving system—the motion in this case being that of the earth; we have no means of determining, nor can physical science be concerned with, any absolute reckoning of space and time. After this Einstein was led to the identification of mass with energy—another result of far-reaching importance,