Recognizing the needs of the more extensive cultivation of the wide field of oceanography, he conferred with the late Dr. Wickliffe Rose, president of the General Education Board, on the needs of a more comprehensive provision for research in this science, and at the annual meeting of the academy in 1927 he introduced a resolution, "that the president of the academy appoint a committee on oceanography from the sections of the academy concerned to consider the share of the United States in a world-wide program of oceanographic research." The members appointed were William Bowie, E. G. Conklin, B. M. Duggar, John C. Merriam, T. Wayland Vaughan and F. R. Lillie, *chairman*.

The following year, through the efforts of Dr. Lillie and Wickliffe Rose, the General Education Board made a grant of $75,000 to finance a thorough study of the problems as well as the needs of a comprehensive program of oceanography. Dr. Henry B. Bigelow was appointed secretary of the committee on oceanography to collect information and prepare a report on the present status of this science in America and Europe. This report was presented to the academy and to the Rockefeller Foundation and was later published in a volume of 263 pages. At the same time T. Wayland Vaughan made a special study of the status of oceanography in the Pacific area, and ultimately extended this to a survey of the "International Aspects of Oceanography," which was published in a quarto volume of 225 pages in 1937 with funds remaining from the original grant of the General Education Board.

After Dr. Bigelow's report had been carefully considered and generally approved and the decision had been reached to establish a central oceanographic station at the most suitable place on the Atlantic coast, the Woods Hole Oceanographic Institution was incorporated in 1930 and its board of trustees petitioned the Rockefeller Foundation for funds for building, equipment, research ship and endowment; one month later the foundation granted $2,000,000 for this purpose and later added $1,000,000 to the endowment.

As a member of the committee on oceanography and of the board of trustees, I know how much of all this success was due to the efforts of Dr. Lillie, and how little to the rest of those whose names were associated with his.

Dr. Lillie served as president of the Woods Hole Oceanographic Institution from its incorporation until his retirement at his own request last summer, when Dr. Bigelow, who had been director from the time of its foundation, was chosen president. In all this labor of awakening interest in oceanography, in securing large endowment, in building and equipping the station and in organizing its main lines of research, Dr. Lillie took the leading part ably seconded by Dr. Bigelow.

This is the leading privately endowed oceanographic institution in the world. Already it has drawn to itself many of the leading oceanographers of the world. Its research ship, the *Atlantis,* has sailed more than 150,000 miles on research voyages; more than 240 research papers and monographs have been published from the institution since its foundation. The National Academy of Sciences may well be proud of the fact that it took so important a part in sponsoring this notable institution, without any cost to itself.

For his important researches and his wise leadership in marine biology, for his enduring contributions to the science of oceanography in the founding and endowing of the Woods Hole Oceanographic Institution, for his modest but effective leadership in causing this country to assume its share in a world-wide program of oceanographic research, the committee on the Murray Fund presents to you, Mr. President, for the eighteenth award of the Agassiz Medal, Frank Rattray Lillie.

EDWIN G. CONKLIN

RESPONSE BY THE MEDALIST

THE chairman of the committee on the Murray Fund has stated so fully the reasons why I should be the recipient of this honored award that I hardly need to enter a disclaimer for the association of my name with the list of those who have previously been honored with this award—all distinguished and original contributors to the field of the ocean sciences. But I wish personally to emphasize the fact that I stand here this evening in a representative rather than in a personal capacity. The accomplishments have been, indeed, the work of many minds and hearts.

The roots of this occasion are bedded in the history of oceanography in America. They were planted by early seamen and navigators, and cultivated in the early surveys under our federal government, which called the first international conference for a uniform system of observations at sea held in Brussels in 1853. Lieutenant M. F. Maury, of the United States Navy, who had been instrumental in devising the first "Winds and Currents" charts of the oceans, summarized the scientific knowledge of the oceans up to 1855 in his classical work on "The Physical Geography of the Sea," in which he attempted to lay down a "system of philosophical research with regard to the sea."

At this time America was clearly leading in the organization of oceanographic research. We lost that position for many years in spite of much excellent detailed work by federal agencies, and by individuals, such as the former president of the academy, Alexander Agassiz. During this period a new and more comprehensive oceanography arose in Europe, and was organized under an International Council beginning about the first of the century, based quite largely on

common economic needs of European nations. An International Committee on the Oceanography of the Pacific also was created in 1923. In spite of the economic background of these organizations in fisheries, navigation and climatology, they recognized the unity of the sciences of the ocean and promoted fundamental theoretical investigations.

At the annual meeting of the academy in 1927, the following resolution was passed: "That the president of the academy be requested to appoint a committee on oceanography from the sections of the academy concerned to consider the share of the United States of America in a world-wide program of oceanographic research, and report to the academy." The president of the academy, Professor A. A. Michaelson, thereupon appointed William Bowie, E. G. Conklin, B. M. Duggar, John C. Merriam, T. Wayland Vaughan and Frank R. Lillie, *chairman,* as members of the committee; to this list the name of Henry B. Bigelow was soon added.

Here I must digress into more personal matters. In 1891 I made my first acquaintance with the life of the ocean, at the Marine Biological Laboratory, Woods Hole, Mass. In 1910 I became director of this institution and took charge of its development with the aid and support of the very distinguished group of scientific men constituting its board of trustees, and especially of the president of the board, Mr. C. R. Crane, and later of the Rockefeller Foundation, the Carnegie Corporation and the General Education Board. By 1924 the resources of this institution were developed into a really magnificent plant for biological research, with special emphasis on life in the ocean.

During this period, about 1924, I had the privilege of becoming acquainted with that great citizen, lover of his fellow-men and of science, Wickliffe Rose, posthumous recipient of the Marcellus Hartley Public Service Medal awarded by the academy in 1931, president of the General Education Board and the International Education Board, who had acquired a deep interest in the sciences of the ocean. In the course of his travels here and abroad he became well acquainted with oceanographic work in various countries, and was deeply impressed with the economic wealth of the ocean, which he felt could be much better utilized for the welfare of nations. We had many talks on this subject which culminated in a proposal for a new central oceanographic institution in America, with estimates as to the cost of its establishment. Dr. Rose felt, however, that the plan, on account of its wide scope, needed farther study, and he suggested that if possible, the National Academy of Sciences be interested in the appointment of a committee to draw up a report similar to that previously prepared on the subject of forestry. This was the immediate stimulus for the appointment of the committee on oceanography, which was considered beforehand with the president of the Carnegie Institution, Dr. John C. Merriam, and was proposed with his advice and assistance.

Funds were provided by the General Education Board for the proposed study; Dr. Henry B. Bigelow, curator of oceanography at Harvard University, was appointed secretary of the committee; and the study of the problem was then vigorously prosecuted. The results of this study have been published in two works, one in 1931 entitled "Oceanography, its Scope, Problems and Economic Importance," by Dr. Bigelow, and the second in 1937 entitled "International Aspects of Oceanography—Oceanographic Data and Provisions for Oceanographic Research," by T. Wayland Vaughan and others.

As a result of its studies, the committee was encouraged to present a report to the Rockefeller Foundation, with a request for the establishment of a central oceanographic station on the Atlantic coast. This was the real beginning of the Woods Hole Oceanographic Institution, and in 1929, shortly after Dr. Rose's retirement, the proposal was favorably acted upon by the Rockefeller Foundation under the presidency of Max Mason, and the sum of three million dollars was appropriated for the establishment, equipment and endowment of this station. The members of the committee on oceanography became trustees of the organization, together with some other scientific men, certain public-spirited citizens, and representatives of federal departments specially concerned with problems of the ocean, and Dr. Bigelow was appointed director.

The development of the Woods Hole Oceanographic Institution proceeded rapidly and effectively under Dr. Bigelow's leadership. In accordance with the principle that a research vessel is as necessary for an oceanic institution as a telescope is for an astronomical observatory, the best possible oceanographic vessel was built in Denmark and brought to this country. This is the *Atlantis,* already famous for her explorations. The institution took as its special objective the development of the oceanography of the Western Atlantic, north of Trinidad, in this way supplementing the work of the International Council for Exploration of the Sea. It also assumed as a fundamental objective the establishment of cooperation between all the American agencies concerned in ocean sciences, whether connected with state or private institution or with federal establishments such as the Navy, especially its Hydrographic Office, the Bureau of Fisheries, the U. S. Coast Guard and the Coast and Geodetic Survey. A small, capably selected staff was established, and the facilities of the station were created on a generous scale and

made available for the use of the universities and the government agencies concerned.

I think it is fair to say that, while the establishment of the Woods Hole Oceanographic Institution is in many respects the most conspicuous aspect of its work, the committee did not forget the broad assignment "to consider the share of the United States of America in a world-wide program of oceanographic research," and has supported the development of existing oceanographic stations on the Pacific coast and of the Bermuda Biological Station for Research on an international basis.

The responsibility for the continuation of the program assigned by the academy to its committee on oceanography has been transferred to the agencies thus set up, and the committee was accordingly discharged at its request in 1938.

FRANK RATTRAY LILLIE

PRESENTATION OF THE PUBLIC WELFARE MEDAL TO JOHN EDGAR HOOVER

BY temperament, by tradition and by resolution, the people of the United States are devoted to the ideal of human freedom and human dignity. This ideal may be threatened from without our country or from within, and the dictum that eternal vigilance is the price of liberty applies as well in the one case as in the other. The great science of medicine has been developed to preserve the physical and mental health of the individual. Of equal importance is the safeguarding of the health of our social organism. There exist constantly in this organism malignant cells, often combined into groups, enemies of the wholesome life.

To maintain law and order in our society is more than to preserve property or safeguard life. It is to maintain a social framework in which the good life may be lived to free men from the threat of vicious cruelty of the criminally minded. Respect for government itself grows as governmental agencies succeed in this vital work of the preservation of freedom.

To-night the National Academy of Sciences presents the Marcellus Hartley Medal for great public service to the director of the Federal Bureau of Investigation of the United States Department of Justice. John Edgar Hoover was born and educated in the District of Columbia. At the completion of his legal training he entered the Department of Justice in 1917, and in 1919 was appointed a special assistant to the Attorney General. In 1921 he became assistant director of the Bureau of Investigation and in 1924 was named its director.

Hoover brought to this great agency of American law enforcement a high idealism, great organizing ability and a trained mind. He insisted at once on freedom in making appointments to his staff from any political pressure, and rapidly raised to a high level the requirements in character and training for the personnel of the bureau. Brain and character—not brawn—became the word. College graduates—not political cast-offs—became his special agents. Specialized functions were organized and raised to a high efficiency. Their names are familiar to all: the Identification Bureau, the Crime Laboratory, the Department of Crime Statistics. Through the National Police Academy with an outstanding group of instructors, police officers from the entire country share the intensive training of the agents of the Federal Bureau. Through this organization the dignity and ability of a profession are being brought to a level consistent with its social importance.

The potential value of the work of Hoover is great, but its worth has already proved itself with startling and dramatic force in present performance. Since the Federal Bureau was given authority to investigate bank robberies there has been a reduction in this crime of 75 per cent. The percentage of convictions secured in cases investigated by the Bureau is 96. In the most recent fiscal year 5,162 convictions were secured. During the past five years for every dollar expended in the operation of the Bureau $6.33 has been returned to the government in recoveries and savings. In 1932, when Congress passed the Federal Kidnapping Statute, this vicious crime was a national menace, a challenge to the decency of American life. Since that time the Bureau has investigated 178 kidnapping cases. All but two have been solved. In 1939, 20 kidnapping cases were reported to the Bureau. All were solved.

The Federal Bureau has rendered these great services to the American people. Its activities are a part of the great non-political functions of government. As Hoover has kept its personnel and its activity free from political influence, so do we expect that its services for good government will proceed unharrassed by political interference.

In spirit and performance the work of John Edgar Hoover has exemplified the scientific way of life. To the many formal expressions of appreciation which he has received we add to-night that of the National Academy of Sciences for great public service performed in a scientific manner and by the aid of science.

MAX MASON

RESPONSE BY THE MEDALIST

IN accepting the Public Welfare Medal of the National Academy of Sciences, I first want to acknowledge the contributions which this academy has made to the furtherance of science in America. Secondly, I accept this medal, not for myself alone, but also as a tribute to my associates—the patriotic men and women