1913 Johan Hjort of Norway
1918 Albert 1st, Prince of Monaco
1920 Charles D. Sigsbee, Rear Admiral, U. S. N.
1924 Otto Sven Petterssen
1926 Vilhelm Bjerknes
1927 Max Weber
1928 V. Walfrid Ekman
1929 J. Stanley Gardiner
1930 Johannes Schmidt
1931 Henry Bryant Bigelow
1932 Albert Defant
1933 Bjorn Helland-Hansen
1934 Haakon Hasberg Gran
1935 T. Wayland Vaughan
1936 Martin Knudsen

The committee on the award of the Agassiz Medal presents for that honor this year:

Edgar Johnson Allen, D.Sc., LL.D., F.R.S., for forty-two years the director of the Laboratory of the Marine Biological Association of Great Britain, at Plymouth, England. Dr. Allen has been in a very real sense the creator of this laboratory, which is one of the most important in the world. A British colleague has written that "it was universally regarded as a 'white elephant' when Dr. Allen took the directorship and turned it into a highly efficient research institution." In 1902 the Plymouth Laboratory was placed in charge of the British work on the International Commission for the Exploration of the Sea with Dr. Allen in charge of investigations. These investigations have been carried on there ever since and include studies on hydrography, meteorology, currents, plankton and other marine organisms. By means of these studies the circulation of oceanic waters in the English Channel and North Sea have been charted, and the movements of swarms of plankton and their relation to food fishes have been determined.

Much of Dr. Allen's own work in this program is embodied in the publications of his associates, for his wide knowledge, sound judgment and especially his sympathetic cooperation are praised by all who know him. His own most important publications may be classed in six different but related fields; namely, (1) The histology, physiology and embryology of Crustacea and Annelida; (2) the fauna and bottom deposits of English Channel Estuaries; (3) the culture of marine diatoms in artificial sea water and the quantitative study of plankton; (4) Mendelian studies of the eye pigments of Gammarus; (5) food from the sea; the connection between mackerel and sunshine; the age of fishes and the rate at which they grow; (6) the progression of life in the sea; origin of adaptations; the science of the sea.

For his contributions to oceanography in the creation and wise direction of the Plymouth Laboratory; for his unselfish cooperation with hundreds of investigators at the laboratory for the past forty-two years; for his active work in connection with the International Commission for the Exploration of the Sea; for his direct contributions to the study of the life of the sea and its relation to human welfare, the committee on the Agassiz Medal takes particular pleasure in recommending for the award at this meeting a friend of Sir John Murray and Alexander Agassiz—Dr. Edgar Johnson Allen.

EDWIN G. CONKLIN

In the absence of Dr. Johnson, the medal was received by Leander McCormick Goodhart, Esq., of the British Embassy.

PRESENTATION OF THE PUBLIC WELFARE MEDAL TO WILLIS RODNEY WHITNEY

MY great joy in presenting to you for honor my friend, idol and former director is tempered with a sense of inadequacy on my part. Poor lame words can not portray great qualities; they connote only the common.

Dr. Whitney is well known as a scientist, and you have already honored him as such. He has made outstanding contributions to human welfare in the field of electric lighting, and in the use of high-frequency electric currents for curing diseases such as paresis, arthritis and bursitis.

His greatest contribution, however, is as organizer and director of scientific research. Not the common organizer. The very term does him injustice. His organization was a growth rather than a creation. It grew so gradually that it is difficult to give any date when it became an organization, except the date, November, 1900, when the M. I. T. professor began sharing his time with General Electric, spending two days each week at Schenectady.

Nor was he an ordinary director, of the kind who keeps a large number of men busy by telling each what to do. Dr. Whitney never told anybody what to do. His leadership was more by example and inspiration than by precept. It would be unfair to him not to acknowledge that he originated a large fraction of the projects which he so generously credited to others; but he seldom if ever assigned these problems. I never was able to get him to tell me or even advise me what to do. His method was suggestion. On his daily rounds of the laboratory he always had some new suggestion, which he continued to peddle until some one became enthusiastic and *asked permission* to work on it. The executive who tells a hundred assistants what to do achieves the efficient goal of providing a hundred pairs of hands for one brain. Dr. Whitney had a hundred brains working together.

A characteristic feature of Dr. Whitney's direction was his receptiveness to new ideas; yet no one was harder to fool. He seldom fired anybody, yet it would be hard to find a group with fewer drones. He never talked about good will and cooperation, yet these qualities grew and flourished under his leadership. Most important of all was his faith in the value of fundamental research. When he asked me to join the laboratory I hesitated, telling him that I had never done anything practical in my life and mistrusted my ability to do so. "Don't worry about the practical part," he said, "that is my job. You go ahead and work on whatever you want to, and leave the rest to me." He lived up to his word. He himself tells the story of how he had to defend Langmuir, who had been working four years with no visible results. "Leave Langmuir alone," he said, "he is getting valuable data." The next year Langmuir brought out the gas-filled lamp, the following year the law of space-charge and the radio tube.

The laboratory that has grown up under his leadership is still small, scarcely 300 men. Its influence for public welfare is not so much *their* contributions to science and industry, as *his* contribution, as a pioneer in industrial research, in demonstrating what was by no means obvious, that pure research can be successfully carried on in an industrial laboratory, with profit and untold benefit to mankind.

For this eminence in the application of science to public welfare I commend to you Dr. Willis Rodney Whitney, pioneer of industrial research.

A. W. HULL

RESPONSE BY THE MEDALIST

I HIGHLY appreciate the honor you bestow in presenting to me this Marcellus Hartley Public Welfare Medal.

I am encouraged first to express a personal thought. I always lacked somewhat general civic virtue. I never wanted to be a mayor or a major. I usually quieted my critical conscience so as to concentrate selfishly on my attractive industrial job. Therefore, I greatly appreciate those plain words, "public service." Every one at heart wants to be of public service and all industries must hope to be. But nothing nicer could happen to an employee of an industry than such a reward from such a source.

Actually, however, I have been only a part of a machine or assembly line to which the reward more properly belongs. However, as representing a living active group of research men, I gratefully accept this token.

But I want to extend the explanations much further, back to one who did so much to encourage the use of new scientific truth in public service. While Bloody Queen Mary and Queen Elizabeth were burning at the stake countless persistent leaders of good and pure thought (Mary, the Protestants, and Elizabeth, the Catholics), Francis Bacon was devoting a long and useful life to advancing clearer conceptions of truth. It occurred to him that to learn with certainty how many angels could stand on the point of a pin, careful experiments and observations were necessary. Mary, Elizabeth and Bacon were each righteously and terribly in earnest, but their techniques greatly differed. Bacon advocated experiment, for there had accumulated an infinite ignorance about the truly infinite creation. He was so logical, so sincerely inquisitive and so persistent that societies for research and academies of science quite displaced the old Inquisitions. Bacon made it very plain that perpetual improvement in public welfare was only obtainable through honest, industrious interrogation of nature. We call that research.

In our particular research-group our duty is to help counteract the effects of obsolescence of electrical products and prevent interruption of employment of large groups by actively aiming at new electrical unknowns.

In such work we also found, somewhat as a by-product, that our research men could contribute to growing science by publishing their results. They have now published about one thousand scientific articles. These, I like to feel, are contributing thus to general knowledge and public welfare.

W. R. WHITNEY

ABSTRACTS OF PAPERS

Distribution of galaxies in the anti-center region: HARLOW SHAPLEY.

Solar corona photography: IRVINE C. GARDNER (introduced by W. W. Coblentz). The lenses of extremely long focal length (60 to 100 feet) and small relative aperture (1/80 to 1/200) that have been commonly employed for corona photography have two fundamental disadvantages; the image is larger than is necessary in order to insure that all resolved detail shall be recorded by the photographic emulsion; and the lens works too slowly to permit the outer portions of the corona to be photographed during an eclipse of short duration. A lens for eclipse photography has been specially designed and constructed at the National Bureau of Standards from optical glass made at the bureau's own glass plant. The lens is composed of four components, widely separated, has a clear aperture of nine inches and is corrected for all the third order aberrations over a large field, a feature impossible with the two-component (or three-component apochromat) telescope objective commonly used for eclipse photography. The equivalent focal length is approximately 19 feet and, as a by-product of the design, the lens has telephoto properties so that the overall length of the camera is only 14 feet. The camera is designed to permit focusing in the laboratory and a precise reproduction of the laboratory adjustment without further focusing at the eclipse station. The mount is designed to give extreme portability and to enable the camera to be rapidly erected by a small group of men. Consequently the use of the instrument does not require the occupation of the