

Society, he was awarded its Hughes Medal in 1954 and last year received the Gold Medal of the Royal Astronomical Society.

The National Academy of Sciences also elected thirty-five new members in recognition of their distinguished and continuing achievements in original research. Among these scientists are James G. Baker of the Harvard College Observatory, Joseph W. Chamberlain of the Kitt Peak National Observatory, Robert F. Christy of the California Institute of Technology, Harry G. Drickamer of the University of Illinois, Wendell R. Garner of Johns Hopkins University, Leland J. Haworth of the National Science Foundation, Mark Kac of the Rockefeller Institute, Leon M. Lederman of Columbia University, Bernd T. Matthias of the University of California and Bell Telephone Laboratories, Harden M. McConnell of Stanford University, and Chen Ning Yang of the Institute for Advanced Study. In addition, six scientists were elected foreign associates of the Academy, among whom is Sin-Itiro Tomonaga, president of the Science Council of Japan.

IPPS honors

Last month, during its annual dinner in London, the British Institute of Physics and the Physical Society presented several awards.

André Maréchal of the Sorbonne and the Institut d'Optique has been awarded the Thomas Young Medal for his distinguished work in many fields of optics. Professor Maréchal was the first to show that the loss of energy from a diffraction pattern resulting from phase errors over the aperture is determined by the variance of the phase error. This has led to a system of tolerances on aberrations for any type of image-forming system. Much of this work was later confirmed using an analogue computer built by Maréchal for the evaluation of the complex amplitudes in diffraction patterns. He has also contributed to the physical aspects of image formation, and more recently has devised a technique, now known

as spatial filtering for the improvement of optical images.

Dr. Maréchal was born in a suburb of Paris in 1916 and was educated at the Ecole Normale Supérieure. Besides holding academic posts at the Sorbonne and the Institut d'Optique, he serves as secretary of the French Physical Society.

The Duddell Medal was awarded to H. A. Gebbie of the National Physical Laboratory in Teddington, for his work in interference spectroscopy in the infrared. Dr. Gebbie obtained his PhD from Reading University in 1952 and following academic appointments in the US, joined the staff of the National Physical Laboratory, where he is now senior principal scientist officer in the Basic Physics Division. At NPL, he has developed a spectroscopic technique in which no prism or grating dispersing element is used but instead an interferometer produces an interferogram in which all wavelengths over a wide band are processed simultaneously. This interferogram is then converted into a conventional spectrum by a Fourier transform carried out on a digital computer. The great energy grasp of this technique enables emission spectra from very weak sources of low intensity to be recorded, and its application to the far infrared has decreased time of observation by a factor of fifty and the cost of an instrument by a factor of three.

The Charles Vernon Boys Prize of the IPPS was given to A. Howie and M. J. Whelan, both of Cambridge University, for their studies of lattice defects in crystals by electron microscopy. Dr. Howie's work has dealt with the extension of the transmission electron microscope technique to the study of deformed single crystals, and with his coworkers, has applied the kinematical theory of electron diffraction to the problem of dislocation image contrast. More recently, he has studied inelastic scattering of fast electrons in crystals and the scattering of low-energy electrons by lattice imperfections. Dr. Whelan has developed and applied new methods for observing dislocations directly in

crystalline materials by transmission electron microscopy. This work permits the study of the arrangement and motion of dislocations in metals, and the correlation of the observed effects with the macroscopic strength properties of bulk materials.

B. J. Mason of the Imperial College of Science and Technology was given the Charles Chree Medal for his work in atmospheric physics, especially the physics of clouds, precipitation, and thunderstorm electrification. Dr. Mason has served as professor of cloud physics at Imperial College since 1961, and is the author of over a hundred publications in his field, including the texts *The Physics of Clouds* and *Clouds, Rain, and Rainmaking*. A frequent visitor to the United States, he was awarded a Rockefeller Travelling Fellowship in 1953 to advise on the founding of the Institute of Atmospheric Physics at the University of Arizona, and during 1959 he was appointed visiting professor of meteorology at the University of California in Los Angeles.

John B. Adams, director of Britain's Culham Laboratory, was invited to give the Guthrie Lecture in memory of the founder of the (British) Physical Society, Frederick Guthrie. Dr. Adams was born in Kingston, Surrey, in 1920 and educated at Eltham College and South East London Technical College. During the early days of atomic energy projects in Britain, he joined the Ministry of Supply, which at that time was responsible for atomic and research development in the United Kingdom. Later, he joined the Atomic Energy Research Establishment at Harwell, to work initially on the design and later the construction of the 175-MeV synchrotron, which was the first high-energy proton accelerator built after the Second World War. Dr. Adams came to CERN in 1953 to design and build the 25 000-MeV proton synchrotron which was completed in 1959. Following the tragic death of Prof. C. J. Bakker in 1960, Dr. Adams was appointed director-general of CERN, and the following year became head of the Culham Laboratory.