News and Views

Nobel Prize for Physics: Prof. J. Chadwick

THE award of the Nobel prize for Physics for 1935 to Prof. James Chadwick and that of Chemistry for 1935 to M. and Mme. Joliot-Curie are associated with two of the most important discoveries of recent years, that of the neutron and of artificial radioactivity. Prof. Chadwick worked in Lord Rutherford's laboratory, and M. and Mme. Joliot-Curie in that of Mme. Curie, and it will be felt by all how fitting it is that these two latest awards should be connected in this way with the two great founders of nuclear physics. In 1919, Prof. Chadwick went with Lord Rutherford to Cambridge from Manchester, where he had taken his degree and worked before the War. His first research in the Cavendish Laboratory, on the scattering of α-particles, still remains one of the most important direct determinations of the nuclear charge of the elements. Then for many years he worked in collaboration with Lord Rutherford on the artificial disintegration of the elements by α-particles. These fundamental researches really laid the foundations on which modern nuclear physics is built. The scintillation method of counting the particles was the only certain method available at that time, and further advance was checked by its limitations. Prof. Chadwick was intimately connected with the development of electrical methods of counting, and applied them to a detailed study of the disintegration of some of the light elements. These investigations were of the highest importance since they yielded precise information about the nuclear energy levels.

WHEN M. and Mme. Joliot-Curie reported the anomalous behaviour of certain radiations emitted in the transformation of beryllium by α-particles, Prof. Chadwick was able in a very short time to carry out a brilliant investigation which showed, beyond doubt, that the neutron had at last been detected. The possibility of such a particle had often been discussed, and as early as 1922 experiments were made in the Cavendish Laboratory in the hope of finding something of this nature. In his first communication, Prof. Chadwick gave quite an accurate estimate of the mass of the neutron, and with various collaborators began a thorough investigation of its properties, particularly that of its power to disintegrate other elements. Recently, by investigating the disintegration of the deuteron by γ-rays, he has obtained what is generally accepted as the most dependable value for the mass of the neutron. The importance of the discovery of the neutron may best be realised when it is remembered that it has changed completely and simplified our ideas of the structure of nuclei.

Nobel Prize for Chemistry: M. and Mme. Joliot-Curie

M. AND MME. JOLIOT-CURIE have long been distinguished for their work in various branches of radioactivity. After the discovery of the positive electron, they made several investigations of its mode of production, and quite early concluded that it could be formed in some manner other than by the action of γ-rays. In particular they observed positive electrons to accompany neutrons in the disintegration of certain light elements by α-rays. Further investigation of this led them to the striking discovery that while the neutrons were emitted simultaneously with the bombardment by the α-particles, the emission of positrons was an entirely separate process occurring after the source of α-particles had been removed. By a variety of experiments, they were able to show that they had formed new radioactive bodies, and in many cases they were able to verify the chemical nature of the substances by using their radioactive properties as an indicator. This is a discovery of fundamental importance, and has provided a new and powerful method of investigating the transmutations of bodies. In the last year this work has been much extended by the proof that the neutron is very effective in forming new radioactive bodies, and both these and all other investigations have only tended to increase the importance of this new phenomenon, which in addition to furnishing many new isotopic species, promises to throw great light on the true nature of radioactivity.

Medal Awards of the Royal Society

HIS MAJESTY THE KING has approved of the awards this year by the president and council of the Royal Society in respect of the two Royal Medals to Prof. C. G. Darwin, Tait professor of natural philosophy in the University of Edinburgh, for his researches in mathematical physics, especially in the quantum mechanics of the electron and in optics, and to Dr. A. Harker, emeritus reader in petrology in the University of Cambridge, in recognition of his distinguished work and influence as a petrologist. The following awards of medals have also been made by the president and council: Copley Medal to Prof. C. T. R. Wilson, emeritus professor of natural philosophy in the University of Cambridge, for his work on the use of clouds in advancing our knowledge of atoms and their properties; Davy Medal to Prof. A. Harden, formerly head of the Department of Biochemistry of the Lister Institute, for his distinguished work in biochemistry and especially for his fundamental discoveries in the chemistry of alcoholic fermentation; Hughes Medal to Dr. C. J. Davisson, of the Bell Telephone Laboratories, New York, for research resulting in the discovery of the physical existence of electron waves through long-continued investigations on the reflection of electrons from the crystal planes of nickel and other metals.

New Officers of the Royal Society

THE following is a list of those recommended by the president and council for election to the Council of the Royal Society at the anniversary meeting on

November 30: *President*, Sir William Bragg; *Treasurer*, Sir Henry Lyons; *Secretaries*, Sir Frank Smith and Prof. A. V. Hill; *Foreign Secretary*, Prof. A. C. Seward; *Other members of Council*, Prof. E. D. Adrian, Mr. D. L. Chapman, Prof. A. W. Conway, Dr. W. H. Eccles, Prof. A. S. Eve, Prof. L. N. G. Filon, Dr. J. Gray, Sir Daniel Hall, Dr. S. W. Kemp, Sir Patrick Laidlaw, Sir Gerald Lenox-Conyngham, Prof. G. T. Morgan, Prof. R. Robison, Dr. Bernard Smith, Prof. W. Stiles, Mr. W. Trotter.

Dr. P. Kapitza's Apparatus and the U.S.S.R.

A REPORT published on November 19 in the *Cambridge University Reporter* gives an account of a proposed arrangement for the transfer of apparatus from the Royal Society Mond Laboratory at Cambridge to a new laboratory which is being built for Dr. P. Kapitza in the U.S.S.R. It will be remembered that Dr. Kapitza was refused leave to return to England after his visit to Russia in September 1934. In the report of the Committee for the Laboratory, it is pointed out that much of Dr. Kapitza's work in Cambridge had been preliminary to the experiments with strong magnetic fields at the temperature of liquid helium which he was on the point of beginning before he left for Russia, and that members of the Laboratory would not care to take up these experiments if Dr. Kapitza wished to resume work at once in this field. It is therefore suggested that the large generator for the production of strong magnetic fields, together with its associated apparatus, should be sold to the Government of the U.S.S.R. for the use of Dr. Kapitza. The remainder of the apparatus in the Laboratory, including the apparatus for the production of liquid hydrogen and liquid helium, would not be transferred since it is in constant use and will be required for the future work of the laboratory. It is proposed, however, to supply duplicates of this apparatus for transfer to Russia, so that Dr. Kapitza will have equipment identical with that he had developed in Cambridge. With the sum received for this apparatus it is proposed to buy new equipment suitable for the future work of the Laboratory. Such equipment might include a large electromagnet which could be used for nuclear research or for the production of low temperatures by the method of adiabatic demagnetisation.

Prof. Ejnar Hertzsprung

IN connexion with the recent announcement that Prof. Ejnar Hertzsprung, professor of astrophysics in the University of Leyden, and assistant director of the Leyden Observatory, has been appointed director of the Observatory to succeed the late Prof. W. de Sitter, it may be recalled that Prof. Hertzsprung was awarded the Gold Medal of the Royal Astronomical Society in 1929. Prof. Hertzsprung's work covers an extremely wide range of astronomical subjects, and he has contributed to our knowledge in nearly every branch of the science. In particular, he is known for his work on double stars and on the clusters. The mass luminosity relation, the division of the late type stars into giants and dwarfs, and the connexion between absolute magnitude and spectral type (the famous 'seven diagram') are all associated with his name (together with that of Prof. H. N. Russell, of Princeton). He will have as his assistant director at Leyden, Dr. J. Oort, who is also well known in Great Britain, chiefly on account of his work on galactic rotation.

"Everyday Science" and Civil Service Examinations

FOR several years "Everyday Science" has been one of the obligatory subjects of the competitive examinations for the important administrative group of Government services, comprising the Indian and Ceylon Civil, the Foreign Office and Diplomatic, the Consular and Overseas Trade (Intelligence Officer) and Home Civil (Junior Grade of the Administrative Class). We notice with astonishment and regret, therefore, the announcement of the Civil Service Commissioners that, with effect from next year, the subject will be omitted; some *optional* questions on science will be included under the subject "Present Day". The scope of the "Everyday Science" paper, now to be discontinued, is indicated by the following passage: "Such knowledge will be expected as candidates will have who have studied science intelligently at school and have since then kept their eyes open. A liberal choice of questions will be given. Attention should be paid to orderly, effective, and exact expression". The other parts of the obligatory section of the examination are: Essay, English ("to test the understanding of English and the workmanlike use of words"), "Present Day" (being questions on contemporary subjects, social, economic and political, calling for effective and skilful exposition), auxiliary language and viva voce. The inclusion of "Everyday Science" must have exerted an influence on school and college courses, and its omission will be regretted by many who believe in the value of "general science" teaching in schools and hold it to be plainly wrong (to quote the words of Mr. C. M. Bowra in *Time and Tide's* recent university supplement on "More and More of Less and Less") that highly educated men should know next to nothing of the structure of the universe or of their own bodies.

Royal Institution: Legacy of the late Mr. Harry Brown

FROM a statement recently issued by the Managers of the Royal Institution, it is understood that the munificent bequest to the Institution by the late Mr. Harry Brown, of the residue of his estate, reported in April last, is expected to amount to approximately £28,000. This large sum has been given without restriction as to its use, but the Managers hope to apply it mainly to the extension of experimental research, one of the two principal objects of the Institution's work. Shortly after information as to the legacy had been received, the freehold of 19 Albemarle Street, immediately adjoining the Davy Faraday Research Laboratory and the rest of the Institution's buildings, came into the market. With the double object of investing Mr. Brown's legacy and providing for future extensions of the premises, it was resolved to purchase the property. The