NEWS and VIEWS

Nobel Prize for Physiology and Medicine for 1949

THE Nobel Prize for Physiology and Medicine for 1949 has been awarded jointly to Prof. Walter Rudolf Hess, of Zurich, and Prof. Antonio Egas Moniz, of Lisbon.

Prof. W. R. Hess

PROF. HESS is professor of physiology in the University of Zurich. Thanks to his exceptional ability, Hess, originally a school teacher, obtained medical qualifications and adopted an academic career. His great energy and far-sightedness were responsible for the establishment of the High Altitude Research Station of the Jungfraujoch. This project met a long-felt need of scientific workers and was realized in 1931 with the help of an international foundation of which the Royal Society is a member. The earliest of Hess's physiological researches to attract widespread notice was his clear statement of the principles of autonomic nerve function. The medical world of the Continent owes to him the recognition of the 'ergotropic', power-increasing action of sympathetic nerve impulses, and the energy-saving or 'histotropic' action of parasympathetic stimulation promoting cell growth and repair. So early as 1925 he developed the technique which he has continued to use for investigating the function of individual regions of the brain. The method is to introduce needle electrodes into the brain of a cat and to stimulate very localized areas through these electrodes. The animals survive very well; special means are used for leading in the stimulating current, so that the animals can move freely. Motor effects of the stimulation are recorded cinematographically and analysed with the help of the film record. The brain tissue between the electrodes is then destroyed by electrocoagulation. The resulting disturbances, together with the effects of stimulation, allow conclusions to be drawn on the functions of the part of the brain concerned. The latter is identified with certainty by making histological preparations, plotted as an atlas of brain function. Last year Hess published a monograph which clearly outlines his conclusions on the relation of the diencephalon to motor activity. By these systematic and important researches, covering almost twenty-five years of tireless work, Prof. Hess has richly deserved the present award.

Prof. A. E. Moniz

PROF. MONIZ is a most distinguished neuro-surgeon whose international fame rests on two contributions to medical practice especially. Between 1927 and 1937 he introduced and developed cerebral angiography as a method of diagnosis of intracranial disease. All the essentials of the method at present in occasional use in neuro-surgical clinics are due to him. He published in 1936 a monograph on the operative treatment of certain psychoses, which described the operation of prefrontal leucotomy and the impressive results of its application to twenty cases of psychosis. Imagination, boldness and skill were necessary to demonstrate, as he did, the feasibility of the injection of radio-opaque substances into the internal carotid artery, and of the operative destruction of the white matter of the prefrontal lobes. He has described in his monograph how he came to devise leucotomy. He had noted how little the extensive removals of brain tissue by Brickner and Clovis Vincent had impaired social behaviour, and had considered the possibility of lesser removals of brain substance as a means of reversing the rigid functioning of groups of brain cells, which he thought to be responsible for the persistence in psychosis of painful ideas. The impetus to the first attempt came in London in August 1935, when he heard Jacobsen's description of his work with Fulton on the effects of frontal ablations on the so-called neurotic behaviour of chimpanzees. Assisted by Dr. Almeida Lima, he then perfected the technique of leucotomy within a few months

Although leucotomy is applicable in fewer cases and is more drastic than either insulin comas or electroplexy, the two other innovations which have recently revolutionized the treatment of mental disorders, the work of Prof. Moniz has exerted at least as important an influence, because he directed the attention of neuro-surgeons to psychiatric problems. The procedure which he devised may eventually be superseded; but the lesson which he has taught will not quickly be forgotten, for, with the neuro-surgeons who have followed him, he has played a large part in reviving in psychiatry a tradition of courageous and energetic treatment, and has demonstrated that skilful intervention may yield a degree of success even in the most serious and advanced cases of psychosis.

Botany at Trinity College, Dublin:

Prof. H. H. Dixon, F.R.S.

PROF. H. H. DIXON, professor of botany in Trinity College, Dublin, retires at the end of this year. Prof. Dixon turned from a training as a scholar in classics at Trinity College, Dublin, to the field of plant physiology, which he studied with Strasburger in Bonn. He was then associated with the physicist, Dr. J. Joly, who became his intimate and life-long friend. Together they worked out and published the cohesion theory of the ascent of sap (1894): the mechanistic explanation of the transpiration stream which replaced older vitalistic theories. Dixon devoted the following decades to elaborating and establishing this theory by ingenious experiments in the wide field of physiology concerning the water-relations of plants. Apart from this, he did valuable work in connexion with the transport of metabolic materials and so forth. He became professor of botany in 1904, and from that time has made his laboratory the centre of active teaching and physiological research. He became a fellow of the Royal Society in 1908.

Dr. D. A. Webb

PROF. DIXON'S successor is Dr. D. A. Webb, a scholar of equally wide cultural interests. After graduation at Trinity College, Dublin, he went to Trinity College, Cambridge, where he obtained the degree of Ph.D. for a thesis on the "Distribution of Metals in the Tissues of Marine Animals". This biochemical and zoological research at the outset of his career gave place to experimental and field research in botany when he returned to Dublin as lecturer in Dixon's department. He published a students' Flora of Ireland, and initiated important research work upon the calcicole habit, upon the ecology of areas of western Ireland, and upon the critical taxonomy of certain groups of flowering plants such as the dactyloid saxifrages. He was joint organiser of the very successful International Phytogeographic Excursion to Eire this year,

and it is apparent that modern field studies in Ireland will be profitably expanded under his guidance at Trinity College.

Sir Ambrose Fleming, F.R.S. (1849–1945)

NOVEMBER 29 marked the centenary of the birth of Sir Ambrose Fleming, who died as recently as 1945, at the age of ninety-five. Although Fleming is best known to the public for his invention in 1904 of the 'oscillation valve', the forerunner of the modern radio valve, he has other claims to be counted among the pioneers of radio. He was, in fact, the designer of the powerful transmitting station which, in December 1901, sent the first signals across the Atlantic, and, as scientific adviser to the Marconi Co. from 1899 onwards, he made many other important contributions during the early years of wireless communication. To commemorate the centenary of his birth, the Science Museum, South Kensington, London, is exhibiting, for two weeks from November 29, Fleming's original valve, and also on view is a collection of the original lamps and valves which he used in his early researches.

The Atlantic Cable and a Silver Thimble

A SILVER thimble of historic interest has recently been presented to the Science Museum, South Kensington, London, by Mr. R. B. Fitzgerald, nephew of the late Miss Emily Fitzgerald. The latter was the daughter of the Knight of Kerry upon whose land was built the telegraph house in which were terminated the first two Atlantic cables. After repeated failures in 1857 and 1858, the two cables from Valentia in Ireland to Newfoundland were successfully laid, and as an experiment they were connected together in Newfoundland so as to form from the Ireland end a continuous circuit some 3,700 miles in length. A cell was devised by borrowing Miss Fitzgerald's thimble, filling it with a few drops of acid and inserting a zinc wire. The current from this cell, which traversed the Atlantic and returned back again, was sufficiently strong to produce large deflexions on the reflecting galvanometer which had been recently devised by Prof. William Thomson, later Lord Kelvin.

New Satellites of Uranus and Neptune

IN British Astronomical Association Circular No. 312 some details are given regarding the two newly discovered satellites of Uranus and Neptune, respectively. Both were discovered by Gerard P. Kuiper during his search for new satellites with the 82-in. reflector of the McDonald Observatory, University of Texas. The new satellite of Uranus, now named Miranda, was discovered on February 16, 1948, magnitude 17, and is now known to have a period of about 33h. 56m. The motion is approximately circular and in the plane of the other four satellites. Neptune ii, for which the name Nereid has been proposed by the discoverer, was found on May 1, 1949, on plates exposed for forty minutes at the prime focus, with the mirror stopped down to sixty-six inches ($f/5$). Its magnitude was estimated to be 19·5, and later observations show that its period is about two years and that the plane of its orbit is within six degrees of the ecliptic. Kuiper says that, as Neptune could retain satellites nearly ten times as far away as Nereid, with periods up to about fifty years, further work is planned to cover the outer regions of the system.

Indian Dairy Research Institute: Silver Jubilee

THE difficulties of efficient dairying increase rapidly with the ambient temperature, and tropical dairying is beset with hazards which are not encountered in a more temperate climate. If children in hot countries are to be satisfactorily fed, and if, in countries such as India, the predominantly cereal diet of the great majority of the population is to be balanced by a sufficient intake of animal protein, fat, vitamins and lime, then tropical dairying, despite the difficulties, must be effectively practised. This is particularly important in India where religious sentiment is against the consumption of most types of animal food other than milk and dairy products.

What development there has been in dairying and dairy science in India during the past twenty-five years has been, in no small part, the result of the activities of the Indian Dairy Research Institute (formerly the Imperial Dairy Research Institute), which has just published a "Silver Jubilee Souvenir, 1923–1948" (pp. 45; Bangalore, 1948), with an interesting account of its development and progress since its establishment in 1923 at Bangalore. A very large proportion of the technical personnel—still grossly inadequate in numbers—of the Indian dairy industry, both the personnel engaged in improving the milk supply and those dealing with the technical aspects of milk distribution and manufacture, has been trained at this Institute, and most of the dairy research for the whole sub-continent is carried out there. Inadequate though its resources have been, and still are, to meet the enormous needs for development and technical improvement in every direction of Indian dairying, and despite past and present neglect by those in authority, the Institute has kept together a nucleus of well-trained workers and maintained a keen and hopeful spirit. With the solution of some of the most pressing political difficulties of the young Dominion, there can be little doubt that the Government, with the nutritional needs of the Indian people at heart, will support with adequate funds the well-considered scheme, already submitted to it, for the provision of more ample facilities for the future work of this Institute.

German Textile Industries during 1939–45

FOR some years before the Second World War, the German textile industries had been short of natural fibres such as cotton and wool. Substitutes therefore were sought in rayon and staple fibre, cottonized bast fibres (*Flockenbast*), paper and to a small extent in synthetics such as 'Perlon' and 'Pe Ce'. During the War, the difficulties were accentuated, and the chief aim of German textile technologists was to produce materials as similar to cotton or wool as possible and which would permit existing cotton or woollen machinery to be utilized. Rayon staple and, to a point, *Flockenbast* are genuinely useful fibres in their own right; but they were used by the Germans as substitute materials without regard to their inherent properties. The paper yarns were poor substitutes for the genuine article, though they found useful scope in the book cloth and artificial leather trades. These developments are described in a recent B.I.O.S. Overall Report (No. 13; pp. 178; London: H.M. Stationery Office, 1949; 3*s*.) which shows that the volume of fundamental research undertaken was small. There was, however, a high utilization-rate owing to the high level of technical ability among managers. Technical training at all levels was