

News and Views

Royal Society: New Fellows

At a meeting of the Royal Society of London on May 7, the following fellows were elected: Dr. A. C. Aitken, lecturer in mathematical statistics and actuarial mathematics, University of Edinburgh; Dr. J. D. Cockroft, demonstrator in physics, University of Cambridge; Prof. H. J. Fleure, professor of geography and anthropology, University of Manchester; Mr. C. Forster-Cooper, director of the University Museum of Zoology and reader in zoology, University of Cambridge; Sir Alexander Gibb, consulting engineer; Mr. H. L. Guy, chief engineer, Mechanical Engineering Department, Metropolitan Vickers, Ltd.; Prof. H. G. A. Hickling, professor of geology, Armstrong College, Newcastle-on-Tyne; Prof. Lancelot Hogben, professor of social biology, University of London; Dr. J. Kenyon, head of the Chemistry Department, Battersea Polytechnic; Prof. E. H. Kettle, professor of pathology, University of London; Prof. N. F. Mott, professor of theoretical physics, University of Bristol; Dr. R. G. W. Norrish, lecturer in physical chemistry, University of Cambridge; Prof. H. H. Plaskett, Savilian professor of astronomy, University of Oxford; Mr. E. F. Relf, superintendent, Aerodynamics Department, National Physical Laboratory; Dr. F. J. W. Roughton, lecturer in physiology, University of Cambridge; Prof. Birbal Sahni, professor of botany, University of Lucknow; Prof. E. B. Verney, Shields reader in pharmacology, University of Cambridge.

Transmutation of Matter

DR. J. D. COCKROFT gave the twenty-seventh Annual Kelvin Lecture to the Institution of Electrical Engineers on April 23. He chose as his subject the transmutation of matter by high energy particles and radiations. In 1919, Rutherford's discovery that the central nuclei of atoms could be penetrated and permanently changed by a bombardment of very high speed atomic projectiles, such as those given off by radioactive bodies, proved that the ordinary elements are not immutable. It took some years before the importance of his experimental results was fully recognised. He observed that nitrogen gas, penetrated by helium nuclei, ejected hydrogen nuclei. It has been shown since that boron, fluorine, sodium, magnesium, aluminium, phosphorus and sulphur can be similarly transmuted. In the case of nuclear transmutations, it seems that the loss of mass is precisely equal to the increase in the kinetic energy that has taken place. This gives a striking proof of the modern physical law that mass and energy are equivalent. In 1932, Chadwick discovered the neutron, a new type of atomic particle which has no electric charge. It does not therefore interact with other electrons and produces no ionisation when passing through a gas. It is of outstanding importance because of its power to produce transmutations. There is little hope that this process can be used on

an engineering scale to convert mass into energy. So far, our laboratory experiments produce the converse result. Theory indicates that at temperatures equal to those of the interior of the sun or stars, it might be possible to convert the inexpensive simple elements to the more valuable heavier combinations, but practically, there is no method of producing the effects formerly attributed to the 'philosopher's stone'.

The Hofmann Memorial Lecture

THIS lecture, in memory of A. W. von Hofmann, was delivered by Prof. G. T. Morgan, director of the Chemical Research Laboratory, Teddington, at the Imperial College of Science and Technology on May 4, Lord Rayleigh, chairman of the Governing Body of the College, presiding. Hofmann was the first director of the Royal College of Chemistry, which was founded in 1845. He held this position for twenty years. The College was eventually renamed the Royal College of Science, and became a constituent part of the Imperial College at South Kensington. In previous years, Huxley Memorial Lectures have been given at the College during the first week of May; in future, these will be alternated with lectures commemorating other distinguished men who have been associated with the Imperial College or its forerunners. The Hofmann Memorial Lecture was the first of the new series, and Prof. Morgan, from his early associations with the College and his work in organic chemistry, was an appropriate choice as lecturer. A brief account, giving the substance of the lecture, appears elsewhere in this issue (p. 769), and the complete lecture is also available (London: Macmillan and Co., Ltd., 1s. net).

Native Lands in South Africa

IN recent discussion in the Union of South Africa relating to the Cape franchise and native representation in Parliament, it was generally understood that, when once this question had been settled, consideration would be given to the problem of native lands, in accordance with an undertaking outstanding for many years. At present the lands held as native reserves comprise some 20,000,000 acres, which in part owing to native custom, in part owing to increase in population, is admittedly quite insufficient for tribal needs. In order to remedy a situation which is the cause of considerable unrest, and as General Hertzog, the Prime Minister, stated in Parliament, as an earnest of the Government's sincerity in dealing sympathetically with native needs, a Bill has been introduced, of which the second reading was moved by Mr. Grobler, Minister for Native Affairs, on April 30. Under its provisions, a South African Native Trust is to be established, which will be administered by the Governor General. In this Trust will be vested all lands reserved for