

thing else. The ionization potential of O_2 is 12.5 volts, but its absorption is difficult to calculate and experiments suggest that it is not strong.

The difficulty with regard to the loss of electrons is to account for the observed high recombination rate of 10^{-8} . The reaction



would give a rate of 10^{-12} .

A possibility is



which could be fast as there is so much atomic oxygen present. It would need



to give the final equilibrium, and to get the correct recombination-rate would need a high probability of at least 10^{-6} for this reaction, whereas it can scarcely be above 10^{-7} .

Thus only



is left, and it is difficult to be precise about this as the details will also involve the behaviour of molecular nitrogen. It is therefore not yet possible to come to any very definite conclusions, and further advance needs both the computation of theoretical rates, and also improvement in the very difficult experimental technique of measurement.

Sir Edward Appleton, summing up, said that the discussion showed that in spite of the War, and even because of it, it had been possible to make notable scientific progress. Prof. Chapman, from the chair, commented that most of the war-time material remained difficult of access, and he hoped it would be published in as much detail as possible. He instanced the detailed publications of meteorological stations in which the availability of a large amount of information had often proved quite unexpectedly useful, and hoped that some similar publication could be made of ionospheric information. J. W. Cox

NEWS and VIEWS

Mechanical Engineering at the Imperial College : Prof. C. H. Lander, C.B.E.

PROF. C. H. LANDER, who is retiring from the chair of mechanical engineering at the City and Guilds Engineering College, University of London, has played an outstanding part for a long period in research and education in engineering, particularly in relation to the utilization of fuel. He obtained varied practical experience in engineering over several years, first with the Manchester Ship Canal Company, then as assistant to Mr. Charles Hopkinson and later with Heenan and Froude, Ltd. As a result he had acquired an excellent background before taking the course in engineering at the University of Manchester, where he graduated in 1905 with first-class honours and was awarded the Fairbairn Prize. He was demonstrator and later lecturer in engineering in the University of Manchester during 1906-16, in which year he was awarded the degree of D.Sc. for a series of original investigations on heat flow, surface friction, and allied subjects. During this period he was also part-time engineer to the Home Office in charge of experimental work on heating and ventilation; this work was the basis of provisions in the Factory Acts. During the First World War Dr. Lander served as an officer in the R.N.V.R., and his important service was recognized by one of the awards to inventors for secret war inventions.

Soon after the establishment of the fuel research organisation of the Department of Scientific and Industrial Research, Dr. Lander was appointed assistant to the Director of Fuel Research (the late Sir George Beilby), and he was rapidly promoted to deputy director in 1922 and director in 1923. In 1928 he was awarded the C.B.E. It was in 1931 that he returned to academic life as professor of mechanical engineering at the City and Guilds College, where he has advanced education not only in mechanical but also in chemical engineering, and has inspired post-graduate research. Prof. Lander's ability and experience were invaluable during the Second World War. He played a prominent part in the development

of flame-throwers, gas turbines and jet propulsion, and petrol burners (F.I.D.O.) for dispersion of fog over airfields. For many years he was vice-chairman of the British National Committee of the World Power Conference, to mention only one of the many organisations assisted by his knowledge and advice. Perhaps the work in which he has been most interested is that in relation to heat transfer, on which he has led teams of investigators for more than twenty-five years. Though he has reached retiring age, Prof. Lander will not be idle. He is president-elect of the Institute of Fuel; a year ago this Institute awarded him the Melchett Medal for his distinguished work.

Dr. O. A. Saunders

DR. O. A. SAUNDERS, who has just been appointed to the University of London chair of mechanical engineering at the Imperial College of Science and Technology, is a graduate of London and Cambridge and was a senior scholar at Trinity College, Cambridge, during 1926-29. After leaving the University he was trained at the Fuel Research Station under Dr. C. H. Lander and Eng.-Capt. J. Fraser Shaw, after which he specialized on the thermodynamical side of fuel and power appliances. His work on industrial heat transmission is well known, and in 1921 he published in collaboration with Dr. Fishenden a standard book on heat transmission. In 1932 he took up the post of lecturer in applied mathematical physics in the Mechanical Engineering Department at Imperial College, and in 1937 became the first Clothworkers' reader in applied thermodynamics. During the War his services were seconded to the Ministry of Aircraft Production for special investigations on internal combustion engines, and later he joined the Directorate of Turbine Engine Research, in which he was in charge of research on jet propulsion and gas turbines.

Dr. Saunders has published numerous original papers including fundamental investigations of heat transfer by convection in gases and liquids, radiation and the phenomenon of exhaust gas discharge from

internal combustion engines, and also various papers in engineering journals. He has contributed considerably to the science of heat transmission and the flow of gases, and to the theory of the internal combustion engine applied to modern developments. His interests lie both in fundamental thermodynamics and fluid mechanics, and in applications of the gas turbine prime mover to the propulsion of aircraft, ships and for the generation of power on land. He is chairman of the Turbines, Jets and Rockets Sub-Committee of the Aeronautical Research Council, chairman of the Mechanical Engineering Panel of the Ministry of Aircraft Production Gas Turbine Collaboration Committee and chairman of the Submarine Propulsion Sub-Committee of the Admiralty Scientific Advisory Panel.

Sir John Lennard-Jones, K.B.E., F.R.S.

ALTHOUGH he has held the Plummer chair of theoretical chemistry in the University of Cambridge for fourteen years, only for about one half of that time has Sir John Lennard-Jones been the academic man pure and simple. Since early in the War he has been a Government servant; and his resignation from the post of Director General of Scientific Research (Defence) has just been announced. Sir John first left his university post, to which he is now returning, in 1939, when he joined the Ministry of Supply to take charge of a group of scientific workers. Later, as chief superintendent of armament research, he controlled research being done for all three Fighting Services. His wide experience in the armaments field goes back to the First World War, when he left the R.F.C. as a flying officer to work at the Experimental Station at Orfordness. Latterly, as Director-General of Defence Research, he was in charge of a dozen stations scattered the length and breadth of Britain. Although he is now going back to Cambridge, Sir John will still be connected with the Ministry of Supply, the University having agreed to make his services available on a part-time basis as chief scientific adviser.

Physics at Reading :

Prof. R. W. Ditchburn

PROF. R. W. DITCHBURN, who has been appointed to succeed Prof. J. A. Crowther in the chair of physics in the University of Reading (see *Nature* of March 30, p. 148), graduated at Liverpool. In 1922 he went to Cambridge, where he worked under Sir J. J. Thomson in the Cavendish Laboratory on the continuous absorption of light in potassium vapour. He held the Isaac Newton studentship during 1925-28. In 1928 he was elected fellow of Trinity College, Dublin, and in the following year became Erasmus Smith's professor of natural and experimental philosophy. His researches in Dublin extended his earlier work on the continuous absorption of light in vapours of alkali metals. He also worked on the theory of optical instruments and the properties of thin films. During the War he returned temporarily to England to work for the Admiralty on problems connected with the psycho-physics of vision. Having wide humane interests and a natural capacity for administration, Prof. Ditchburn made opportunity in the midst of an active career as a physicist to shoulder the responsibilities of registrar of the School of Social Studies and to organise a great deal of social work through philanthropic channels. The influx of refugees into Eire during the last ten years much

increased the scope of this work. His return to England will be a most opportune accession of administrative and research experience at a time when post-war university re-organisation is just getting under way.

University Grants Committee

IN a Parliamentary written reply on July 30, the Chancellor of the Exchequer stated that the University Grants Committee ought to play a more positive part in the expansion and planned development of the universities of Britain, and accordingly it has been given the following new terms of reference :

"To inquire into the financial needs of university education in Great Britain; to advise the Government as to the application of any grants made by Parliament towards meeting them; to collect, examine, and make available information on matters relating to university education at home and abroad; and to assist, in consultation with the universities and other bodies concerned, the preparation and execution of such plans for the development of the universities as may from time to time be required in order to ensure that they are fully adequate to national needs".

Tercentenary of Flamsteed

THE tercentenary of the birth of the Rev. John Flamsteed, first Astronomer Royal and rector of Burstow, Surrey, will be commemorated at a special evensong at 3.50 p.m. on Sunday, August 18, in Burstow Church. The present rector, the Rev. A. Hackford, will conduct the service, after which the Astronomer Royal, Sir H. Spencer Jones, will give an address on Flamsteed's work. Representatives of the Royal Astronomical Society and other bodies will be present. Flamsteed, who was born on August 19, 1646, at Denby near Derby, was made by Charles II "Our Astronomical Observer" in 1675, and Flamsteed House, at the Royal Observatory, Greenwich, was built for his use. His salary was but small and he had to find his own instruments. His enthusiasm and industry, however, enabled him to overcome these and other difficulties, and he laid well and truly the foundation of the fame of the Observatory. In 1684 he had been given the living of Burstow, and at his death in 1719 he was buried in the chancel of the church. In 1887 the late J. J. Tustin erected the east window and a memorial tablet to his memory. The church is situated about three miles south-west of Horley, and the Reigate-Horley-East Grinstead bus, No. 424, gives a half-hourly service to within half a mile of it.

Centenary of John Owens

THE *Manchester Guardian* of July 27 contained an appreciation of John Owens, the founder of Owens College, Manchester, now the University of Manchester, who died on July 29, 1846, at the age of fifty-five. Owens had been in business with his father as a furrier and a maker of hat linings, but had afterwards engaged in other business enterprises, and, being a bachelor of simple tastes and abstemious habits, had accumulated a considerable fortune which it is said he wished to leave to his closest friend, George Faulkner. But of the money Faulkner would have none; he prevailed upon Owens to make a will leaving his fortune for educational purposes. An institution was to be set up at or near Manchester for the instruction of young persons in such branches