

### Engine Research and Development at the Ministry of Aviation : Dr. John Remfry

DR. JOHN REMFRY has been appointed director of engine research and development at the Ministry of Aviation, in succession to Dr. J. W. Drinkwater, who is now at the National Gas Turbine Establishment, Farnborough. Born in 1904, he held a Foundation Scholarship at Sir Joseph Williamson's Mathematical School, Rochester, before entering H.M. Dockyard, Devonport, as an indentured apprentice to Marine Engineering and Shipbuilding in 1919, where he gained the Admiralty Prize for first place in school subjects in all dockyards in 1923 and a Whitworth scholarship in 1924. He graduated with the degree of B.Sc.(Eng.) with honours in mechanical engineering and motive power at the City and Guilds Engineering College in the University of London in 1926 and was awarded the Diploma of the Imperial College in aeronautics in 1927 after post-graduate study at the Royal College of Science. After a year at the National Physical Laboratory, Dr. Remfry was until 1936 a research engineer with Messrs. Rowntree and Co., York. During the next year in the Chief Engineer's Department of the London County Council he was concerned with the efficient generation and utilization of steam and electrical power. In 1937 he joined the Engine Department of the Royal Aircraft Establishment, Farnborough, and worked on problems of heat interchange for aircraft engine radiators, oil coolers and charge coolers. In 1944 he was transferred to the Directorate of Engine Research and Development, which was successively under the Ministries of Aircraft Production, Supply and Aviation, where he was engaged on the performance estimation and approval of reciprocating and gas turbine engines and the supervision of research at universities and contractors' works on aerodynamics, thermodynamics, heat transfer and engine materials. He has been an assistant director for aero engine projects and performance since 1950.

### International Academy of Astronautics: Honorary Members

PRINCE LOUIS DE BROGLIE, Miss Jacqueline Cochran and Mr. Harry F. Guggenheim have been elected honorary members of the International Academy of Astronautics. The first honorary member of the Academy was the late Prof. Niels Bohr.

Prince Louis de Broglie, the well-known French physicist, has made major contributions to the development of modern physics and to the fostering of international scientific co-operation. He is a member of the French Academy of Sciences and has been its secretary since 1942. Prince Louis de Broglie has received many honours and awards, including the Nobel Prize for Physics in 1929. For his efforts to explain aspects of modern physics to the layman, he was the first recipient of the Unesco Kalinga Prize in 1953. He has been professor at the Institut Henri Poincaré in Paris since 1928, and in 1943 he founded a Centre for Studies in Applied Mathematics. In 1945 he was counsellor to the French High Commission on Atomic Energy.

Miss Jacqueline Cochran (Mrs. Floyd B. Odlum), the leading woman in American aviation, has done much to prove that women are as capable as men to achieve success in the field of practical flying. She was the first woman to fly in the Bendix transcontinental race in 1934, and has since won numerous Bendix trophies, as well as the Clifford Burke Harmon Trophy of the International League of Aviators. Miss Cochran was the first woman pilot to pierce the sonic barrier in 1953, and she holds several national and international flight records. Since 1959 she has been president of the International Aeronautical Federation, an organization the functions of which now include the verification and maintenance of manned space flight records.

Mr. Harry F. Guggenheim, American philanthropist and publisher, has played an important part in the promotion of aeronautics and astronautics both on a national scale and on an international level. His interest in aviation goes back to the 1920's. He was U.S. delegate to the International Conferences on Civil Aeronautics in Washington, D.C., in 1927 and 1928. As president of the Daniel and Florence Guggenheim Foundation, he founded the Daniel and Florence Guggenheim Jet Propulsion Centres at Princeton University and at the California Institute of Technology, where his father had previously founded the Guggenheim Aeronautical Laboratory. Mr. Guggenheim was U.S. Ambassador to Cuba during 1929-33, and he has been honoured with numerous awards and decorations.

### Anglo-Belgian Company for Marine Reactor Development

THE United Kingdom Atomic Energy Authority and a syndicate of Belgian industrial companies headed by Belgonucléaire have jointly formed a company to own all the results of their development programme for the *Vulcain* reactor. The formation of the Company follows an announcement in May 1962 that the Authority had signed an agreement with Belgonucléaire to undertake a joint research and development programme on a design of nuclear reactor suitable for marine propulsion—given the name of *Vulcain*—on which Belgonucléaire had already done much preliminary work. This reactor is an advanced version of the pressurized water reactor embodying the principle of variable moderation. The Authority's participation in this joint effort is part of the programme of research announced by the Minister of Transport in November 1961 to develop a reactor system economically attractive to a wide range of shipping. This research is being undertaken with the approval and support of the Working Group on Marine Reactor Research, appointed jointly by the Minister for Science and the Minister of Transport. After assessing the relative merits of a number of reactor types most suitable for further development for marine propulsion, the Working Group's recommendation was accepted in November 1962, that the programme of research be concentrated in future on two types. One of these is the *Vulcain* reactor, and the other is the Integral Boiling Reactor, which is an advanced reactor concept originating within the Authority.

### Fuel Elements for *Scorpio* Reactor

THE Metallurgy Division at Harwell has recently completed the production of 400 plutonium-bearing fuel elements for *Scorpio* (Sub-critical carbon-moderated reactor assembly for plutonium investigations) experiments at the Atomic Energy Establishment, Winfrith. They are being used to simulate the partially used uranium fuel elements of a power reactor, in which plutonium has been formed by neutron bombardment of uranium-238; this plutonium build-up profoundly affects the behaviour of a reactor, especially its response to temperature variations. The fuel elements take the form of cylindrical bars, 28 in. long by 1.2 in. diameter, of depleted uranium containing 0.43 per cent uranium-235 with 0.25 per cent plutonium added; they are sheathed in stainless steel 0.015 in. thick. It is hoped that the *Scorpio* experiments will not only improve the basic understanding of plutonium reactor physics but will also help to check the accuracy of theoretical calculations of the effects of plutonium build-up in power reactors. The *Scorpio*'s are sub-critical graphite-moderated reactor assemblies of widely variable lattice geometries and capable of being heated to temperatures of up to 400° C. Precise measurements of neutron flux distribution throughout such an assembly (in *Scorpio* 1), or within individual lattice cells (in *Scorpio* 2), enable the reactivity of a system to be studied at different temperatures.