

## University News:

London

PROFESSOR J. LEWIS, professor of inorganic chemistry in the University of Manchester, has been appointed to the chair of chemistry tenable at University College, and Professor O. J. Lewis, professor of mammalian morphology at St. Bartholomew's Hospital Medical College, has been appointed to the chair of anatomy tenable at that college.

## Strathclyde

A DEPARTMENT of Computer Science has been created and an extensive programme of development in computer work, centred on a newly installed ICT 1905 machine with a 32K word core store and magnetic tapes, has been launched by the university. It is hoped that an undergraduate degree course in computer science will soon be introduced.

## Appointments

MR. R. B. ABEL, formerly assistant research co-ordinator, Office of Naval Research and executive secretary of the Interagency Committee on Oceanography, has been appointed head of the U.S. National Science Foundation's programme to implement the National Sea Grant College and Programme Act of 1966. The Act assigned to the foundation the task of mobilizing appropriate institutions to play a more significant part in the development of marine resources through education, research, and advisory services.

## Announcements

THE U.S. Atomic Energy Commission has appointed an advisory panel on high-energy physics to help foster "a vigorous and productive national high-energy physics programme". The chairman is Professor Victor F. Weisskopf of M.I.T. The panel includes Dr. Rodney L. Cool (Brookhaven National Laboratory), Professor Earle C. Fowler (Duke University), Professor Leon Lederaman (Columbia University), Dr. Edward J. Lofgren (Lawrence Radiation Laboratory), Dr. George E. Pake (Washington University), Professor W. K. F. Panofsky (Stanford University), Professor Robert G. Sachs (Argonne National Laboratory), Professor Keith R. Symon (University of Wisconsin), Professor Robert L. Walker (California Institute of Technology), Professor Robert R. Wilson (Cornell University) and Professor C. N. Yang (State University of New York).

A DELEGATION from the Royal Society, consisting of Professor H. W. Thompson, Dr. R. D. Keynes and Dr. D. C. Martin, is visiting Bulgaria during February 17-23 at the invitation of the Academy of Sciences of the People's Republic of Bulgaria. The purpose of the visit is to sign a direct agreement for scientific collaboration between the society and the Bulgarian Academy of Sciences.

THE Ford Foundation has made a grant of \$200,000 over a period of three years in support of the Royal Society's new European Programme, which is aimed at strengthening the European scientific community by promoting interchange between scientists. This grant will be used to support the European Programme of fellowships at postgraduate and postdoctoral levels, study visits of shorter duration and small European research conferences. The first closing date for applications for fellowships is February 28.

THE meeting of the Mass Spectroscopy Group on "Analysis of Inorganic Solids", which was to be held at the University of Manchester on April 5, has been cancelled.

ERRATUM. The statement on the Information Exchange Groups in *Nature* last week (213, 547; 1967) was wrongly attributed to the "Commission of Biological Editors". The statement was, in fact, prepared by the Commission of Editors of Biochemical Journals under the International Union of Biochemistry.

## CORRESPONDENCE

## Fire Risks in Space Capsules

SIR,—There are important weight and control system advantages to using a pure oxygen atmosphere for space vehicles. In such a system one purges the capsule with pure oxygen at a pressure slightly greater than atmospheric for some hours and then allows it to vent to a pressure of about 5.5 p.s.i. in the case of the "Apollo" and early MOL projects during the first minutes of lift-off and ascent. Thereafter the capsule atmosphere is maintained as pure oxygen at that pressure. During descent the environment of the crew is returned to atmospheric pressure by the inlet of air. During the purging procedure and in pressurized flight the crew breathe through the open visors of their pressure helmets.

The fire studies carried out at this institute some time ago suggested that a threshold existed for the appearance of flash fires in oxygen rich gas environments, and that this threshold was unlikely to be below 6.0 to 6.5 p.s.i. partial pressure of oxygen. It seems to us that this has important implications for the future of single gas space vehicle systems. If, as it suggests, the in-flight condition carries no risk of flash fire, one can think of two methods which eliminate that risk from the remainder of the flight envelope, and retain the advantage of single gas systems without structural or control system modifications. Both involve breathing, with the helmet visor closed, from a personal supply of pure oxygen until the respirable atmosphere of the final flight condition is achieved some minutes after lift-off.

The methods are: (a) Dilution of the cabin oxygen with a soluble gas which can be absorbed once the fire hazard has been removed by a fall in the total environmental pressure. (b) The use of a mixture of oxygen and an insoluble gas, which can later be voided to the external vacuum and replaced by pure oxygen.

Carbon dioxide would appear to be an obvious choice for the soluble gas, because absorbants are already required for removing the carbon dioxide produced by metabolism. It is estimated that an additional two pounds of lithium hydroxide would be needed for the cabin of a spacecraft with a volume of 150 cubic feet, an atmosphere consisting of 40 per cent of oxygen and 60 per cent of carbon dioxide and a total pressure of 6 p.s.i. A similar weight of oxygen (equivalent to the metabolic needs of one man for one day) would suffice to restore the atmosphere of the spacecraft to the desired pressure. Engineering problems associated with the control and handling of large quantities of carbon dioxide during the purging phase might, however, dictate the choice of some other soluble gas.

Air would be a satisfactory mixture for the second method, the major disadvantage of which is the necessity for a decompression of the capsule early in the flight. Five pounds of oxygen would be enough to replace the atmosphere of the cabin.

Clearly, these arguments hinge on the existence and level of a threshold for flash fires which we know to be somewhat dependent on the nature and history of the supporting surface. The present series of fire studies at this institute is intended to give a better understanding of this phenomenon. This threshold might be exceeded on re-entry until "splash-down".

Both the solutions require that the crew have their visors closed for some hours before orbital flight is attained. This appears to be a small price to pay.

Yours faithfully,

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