

physics for students who may later take up a specialized aspect of nuclear engineering; but as the subject becomes more firmly established further developments will be made, leading to the consideration in more detail of specialized topics. In addition to the university undergraduates, the course is being attended by a number of extra-mural students from local industry in Glasgow, and it is hoped and expected that this interest and participation will increase. Of the forty hours of lectures in the course, thirty are given by a member of the Natural Philosophy Department of the University, and the last ten by a member of the Engineering Department. The first few lectures are devoted to elementary atomic and nuclear physics, with emphasis on the energy bound in atoms, molecules and nuclei and on the possibilities of the release of this energy, and then the properties of neutrons and simple treatments of neutron thermalization are considered. This leads on to reactor physics, with calculation of the critical size of a homogeneous, graphite-moderated, pure uranium-235 reactor and simplified calculations for a heterogeneous reactor using natural uranium as fuel. A short account is given of the engineering problems caused by the fact that many materials have high cross-sections of thermal-neutron absorption. Further lectures deal with problems of irradiation, damage to reactor materials, health physics, radiation shielding, isotope separation, the breeding of nuclear fuel, and the uses of radioactive isotopes in industry. In the last ten lectures problems of heat transfer from the fuel elements to the coolants are discussed, together with the conversion of this heat energy into useful power. For the practical course, only ten two-hour periods are available, and the experiments are therefore simple, being designed either to demonstrate the orders of magnitudes of the relevant physical quantities or to illustrate points of nuclear engineering practice.

#### Technical College Libraries in Great Britain

A MEMORANDUM on libraries in colleges of technology and further education, which has been forwarded by the Council of the Library Association to the Scientific and Technical Information Committee of the Advisory Council on Scientific Policy, urges the need for a higher priority for college libraries in the expansion of technological and technical education and the allocation of more money for such libraries. Of the 555 institutions in Great Britain providing in some degree technical education, only 160 possess three hundred or more books housed in a room called a library, although this room is often used for other purposes and only is open as a library at specific times. 121 of these have some person other than a member of the teaching staff in charge, and altogether fifty-nine qualified librarians are employed in fifty-two libraries. The annual allowance for books, periodicals and equipment may vary from £50 to more than £2,000. Apart from meeting the needs of students and teaching staff for books and periodicals and providing an information service to assist students and staff in studies and research activities, a few of these libraries make useful contributions to the technical information service for industry; and the Library Association Council is convinced that the provision of adequate library services in technical colleges would make a valuable contribution to the dissemination of technical information and would also assist the training of qualified technologists.

For these reasons a statement of government policy regarding libraries for the various grades of technical colleges is urgently required to guide local education authorities and the Ministry of Education as to the development of existing libraries and the establishment of new ones. The Council also recommends that, in considering this development, due regard should be paid to co-ordinating the libraries with the services already provided by public, university and other libraries within the area served by the colleges, and all these libraries should be encouraged to co-operate in regional schemes for the provision of technical libraries, especially in subjects in which the college offers advanced courses. Special grants are needed to inaugurate and maintain libraries at a reasonable standard of efficiency, and the Council suggests that the 50 per cent subsidy on H.M. Stationery Office publications which is already enjoyed by public libraries and university colleges should be extended to all technical college libraries. National negotiation of salaries for qualified library staff by the appropriate Whitley Council is also recommended, as well as training in the use of libraries and books as part of the curriculum in all technical teacher-training colleges.

#### Ion-Exchange Resins for the Production of Pure Water

A LECTURE under the title "Will Ion Exchange replace the Laboratory Still?" was given to the Institute of Science Technology by Mr. W. F. Lorch (Elga Products, Ltd.) at King's College, London, on March 5. The considerable amount of power wastage in attempting to remove small amounts of impurities from large volumes of water was stressed. Ion-exchange resins, and the fact that most compounds ionize in water, gave the key to this problem. Three main methods of water treatment were outlined. The batch method, in which a quantity of mixed anion and cation resins is shaken with singly distilled water for one minute, is suitable for obtaining small amounts of very pure water. The two- or multi-column process requires flow through a cation and then an anion exchanger, or preferably a number of these in series since various equilibria are involved. Regeneration of the resins *in situ* necessitates the use of considerable quantities of rinse water. The single-column method uses a mixed bed of anion and cation resins, giving in effect a multi-stage process. With large-scale plants it is now possible to carry out regeneration *in situ*. The portable deionizer, which was demonstrated, is supplied with exchangeable cartridges of the mixed resins. Single-column exchangers can replace a distillation unit for most purposes. The cost of 'ion-exchange' water is in general much less than that of singly distilled water, while its conductivity is much lower. During the discussion it was mentioned that cartridges containing a dyed resin would soon be available, thereby enabling visual indication of exhaustion. The total solids obtained from an apparatus of this type is of the order of 2 p.p.m.

#### East African Agricultural and Fisheries Research Council: Report for 1954-55

THE East African Agricultural and Fisheries Research Council, which was established in 1954 as the governing body of the four East African Research Organizations, has issued its first annual report, covering the year 1954-55 (pp. 84; from the Librarian, Office of the Administrator, E.A. High