

Society for Freedom in Science

FOUR years ago, a circular letter was sent to a few scientific men suggesting the formation of a new society to promote the causes of pure science and of freedom in science. A group of thirty was thus formed, which became the nucleus of the Society for Freedom in Science. The Society has recently issued a statement of its purpose and aims, which are summed up in five propositions; put briefly, these are: (1) increase of knowledge by scientific research and its diffusion have a primary human value; (2) science can only flourish in an atmosphere of freedom; (3) scientific life should be autonomous; (4) conditions of research appointments should give workers freedom to choose their own problems; (5) scientific men in countries not under dictatorial rule should co-operate to maintain freedom of research.

The Society claims a present membership of 134, chiefly as the result of correspondence and the circulation of memoranda; but an effort is now being made to increase this number, so as to have firm backing for the Society's objects. It is feared that with the approaching period of reconstruction those who stress the applications of science to the detriment of so-called pure science and support the view that research should be centrally planned will be allowed undue influence, and the Society hopes to be in a position to insist on the claim for freedom in science. The Society is an informal body, with no rules, no regular subscription and no official president. Its affairs are conducted by a committee consisting of Dr. J. R. Baker, Prof. V. H. Blackman, Mr. R. Brown, Prof. J. A. Crowther, Prof. M. Polanyi, Dr. L. E. Sutton, Prof. A. G. Tansley and Prof. A. E. Trueman; the honorary secretary is Dr. J. R. Baker, University Museum, Oxford, from whom particulars can be obtained.

Visual Education

MR. G. PATRICK MEREDITH of the Education Department, University College, Exeter, took up the investigation of the use of visual media in education in 1940, and his lectureship was converted in 1941 into a lectureship in visual education—a novel appointment. The work expanded. The accommodation and equipment provided enabled a centre to be established with a staff which now includes an assistant lecturer, Dr. Renée Marcousé. Their researches on the comparative values of different visual teaching techniques were described at a conference held at the centre during July 1–2. One of the most interesting features was the testimony of the teachers who took part in the research. Their enthusiasm for the new media was striking and the demand for new materials and methods was made clear. The following subjects were included in the discussions: the design of the experiment, the statistical techniques and interpretation of the results (including a new technique of analysis); classroom methods, the film and still pictures used; the children's responses; the functions of the museums, exhibitions and other resources; and lastly, the planning of educational film production. The speakers included Mr. G. Patrick Meredith, Dr. Renée Marcousé, Mr. Bernard Gillett, Mr. Edgar Anstey, Mr. Neilson Baxter and the teachers concerned in the research. Representatives of the museums, film industry and Board of Education were present. A detailed report is to be published in the autumn.

Carnegie Corporation of New York:

Annual Report

THE annual report of the Carnegie Corporation of New York, for the year ended September 30, 1943, includes the reports of the president, Mr. W. A. Jessup, and of the secretary and of the treasurer, and gives a complete list of grants voted during the year totalling 2,562,900 dollars. Income for the year was 4,114,952 dollars in the Main Endowment Fund applicable to the United States, and 355,288 dollars in the fund applicable to the British Dominions and Colonies, the interest on the funds being equivalent to 2·7 per cent on investment securities, as compared with a yield of 4·5 per cent in the period 1932–33. The president points out that by means of reserves for various purposes the Corporation has spread allocations for the payment of appropriation for certain long-time interests over a period of years and has built up a depreciation reserve as partial protection of the endowment and legacy. The fact that the income to-day is only three fifths of the income ten years ago has, however, modified the grant-making policy of the Corporation. The Trustees are faced with the necessity of reducing either the number of grants made or the amounts involved, and possibly both.

The president also refers to the growing practice among donors of naming the specific purposes for which money is to be used. A recent inquiry among some twenty institutions showed that less than 10 per cent of the current gifts were free to be administered or allocated by the board of trustees and executive officers of the institutions. The president points out that in many instances a better method would be for the giver to expect the recipient institution to be capable and informed enough, and ready to accept, a larger share of responsibility for determining the allocation of gifts to research, to improvement in teaching, for equipment and for other important purposes within its own organization. Foundations such as the Carnegie Corporation have an obligation to continue to use their freedom from local and regional prejudices and from the pressures to which even privately endowed educational institutions are suffering, to foster new ideas and to nurture the pioneer spirit in education. Speaking of experimental projects, he said that those responsible should not expect support to be continued long after the undertaking has passed the experimental stage. These views are based on a review of the record of academic and foundation experience in administering grants during the past thirty years. During the year 1942–43, 12,000 dollars were voted to the Institute of International Education for continued support of the American University Union in London; grants totalling 225,300 dollars were made to agencies and organizations concerned with international understanding including the Carnegie Endowment for International Peace, the Institute of Pacific Relations and the Ethnogeographic Board under the National Research Council.

Gas Research Board: Annual Report

THE fourth annual report of the Council of the Gas Research Board has a special importance, covering as it does a period when the Board became associated with the Department of Scientific and Industrial Research. This, however, is only another step in a long course of development extending over nearly half a century, during which the gas industry

has maintained organized co-operative industrial research. Dr. J. G. King, formerly of the Fuel Research Station, has been appointed director, and Dr. F. J. Dent, who has been responsible for a large part of the research activity of the Joint Research Committee of the Gas Research Board and the University of Leeds, has been appointed joint assistant director.

Of the items mentioned, gas technologists will note with interest the progress in the work on the complete gasification of coal. This shows that several lines of work are being followed—direct hydrogenation under pressure, gasification in oxygen and steam under pressure, and catalytic synthesis of hydrocarbons from carbon monoxide and hydrogen. The laboratory work on these themes is in course of transference to large-scale working in plant erected in a provincial gas works. Research on gas purification holds promise of reducing the sulphur content of purified coal gas to one tenth of the figures currently obtained in public supply in Great Britain. Drying by infra-red radiation emitted by gas-heated sources is being studied and apparently offers certain advantages. Methane, a gas of high calorific value, is a principal constituent of coal gas, from which it can be separated by liquefaction to give a portable liquid fuel which in future may be of great service. Gas engineers have always taken great interest in refractory materials, and the present report again reveals this interest. The report may be said to show that the research association under its new style shows already a wide and widening range of activities.

Terms Used in Telecommunication

THE modern rapid growth of the applications of radio and telecommunications technique makes it desirable, even in war-time, to keep as up to date as possible a collection of definitions of the various terms and phrases used by workers and students in this field. To give effect to this point of view, the British Standards Institution has just issued a revised and enlarged edition of B.S. 204 entitled "Glossary of Terms used in Telecommunication" (obtainable from the British Standards Institution, 28 Victoria Street, London, S.W.1, 2s.). This publication has been prepared in collaboration with the General Post Office and other organizations concerned with communications technique and practice. It comprises revised sections of earlier glossaries dealing with telegraphy, telephony, radiocommunication, television and radio direction-finding, together with a new section on fire alarms. An appendix collects together the various symbols used for the quantities defined in the glossary. While it is doubtful if all workers in this field will agree with all the definitions, the revision, collection and rearrangement of the terms in this new publication will be found of considerable use as a reference manual by all those concerned with the preparation of technical documents and publications, as well as by the large number of other scientific and technical workers in this rapidly expanding field of telecommunications.

Radio-Telegraph Signals

A PAPER on high-speed recording of radio-telegraph signals was read recently in London before the Institution of Electrical Engineers by Messrs. R. B. Armstrong and J. A. Smale, in which the authors first describe the systems in most general use, and then give a brief definition of modulation requirements for telegraph services. The various sources of

distortion encountered are fading, noise and interference from other stations, but chiefly phase distortion due to propagation over more than one route between transmitter and receiver. The on-and-off character of Morse signalling enhances the difficulties which come from most sources of distortion. The paper then describes the general characteristics required in radio receivers designed for the purposes under discussion, including a description of two types of receiver in current use. This is followed by a consideration of special requirements of the recording units into which the receivers work, with a description of a typical unit. The special measures provided to offset the three types of distortion previously mentioned are also dealt with.

Diversity reception is discussed, with particular reference to the special problems of combining the automatic gain-control systems and the receiver outputs. Recording by undulator is chiefly considered in the paper as a whole; but the discussion on the effects of distortion, and the counter-measures taken, is even more applicable to machine-printing systems, since the latter have less margins of tolerance in operation. The paper concludes with an indication of the trend of development towards different methods of signalling, which may reduce difficulties of reception and recording in comparison with the old on-and-off methods of conveying intelligence.

Lighting Reconstruction

THE Illuminating Engineering Society has just issued the first three of a series of Lighting Reconstruction Pamphlets which are planned to be of service to Government departments, local authorities, borough engineers, architects and others who are preparing now for the lighting problems which will confront Great Britain during the period of post-war reconstruction. The present pamphlets relate respectively to "Principles of Good Lighting", "The Lighting of Public Buildings" and "The Lighting of Schools", and they provide excellent summaries of the broad principles of what is needed to make lighting efficient according to the particular application. The pamphlets are obtainable from the Society at 32 Victoria Street, S.W.1, at the uniform price of 1s. each, 9s. per dozen, or £3 per 100.

Distilled Water

THE development of the water-still has been slow, the normal type of apparatus being an externally heated metal boiler and a condenser. These are very inefficient, due to the fact that the number of calories required to heat the incoming cold water to boiling point is small compared with the heat required to convert the water into steam, and many kilowatts are required for an output of 20 gallons per hour. There is also the disadvantage of fur deposition from hard water, which can be diminished by taking only a fraction of the rated output.

A new type of still, called the "Strip-Action Still", is announced by Messrs. Townson and Mercer Ltd., 390 Sydenham Road, Croydon, which uses raw steam such as is available in a factory, and is made in units with a capacity of one gallon per hour. The initial design was in heat-resisting glass. The steam passes through an outer jacket which is air-cooled, and deposits dirt and high-boiling liquids with part of the condensed steam. The clean steam then passes down a multi-surface spiral condenser and comes out at the bottom as distilled water. By avoiding much contact with air, the water is of appreciably better