

extension of postgraduate teaching until this situation is altered.

The title of the final session of the conference was "The Appreciation of Materials Science and Technology in Schools", and the chairman was Prof. Mitchell. At first sight this would appear to be an unusual subject for a conference of this kind, but it was soon apparent, both in the talks and in the discussion, that the attitudes of schoolchildren and their teachers are of great concern to university teachers, particularly in the applied sciences.

Prof. J. G. Ball, the first speaker, spoke of the almost total lack of appreciation of the nature of applied sciences, including materials science, which, in his experience, exists among schoolboys. There is a barrier in their minds between pure sciences on one hand, and what they regard as second-rate technological subjects on the other. Physics and chemistry, the sciences with which they are familiar, seem to be unnecessarily remote from real materials and real life. He described his attempts to provoke interest in metallurgy in sixth-formers, and particularly his discovery that their ideas of the subject were only of the craft aspect of it, of forges and lathes, and they had no idea of the intellectual side. This intellectual challenge was, in his opinion, the approach which should be made in order to correct the erroneous ideas which boys have picked up. An interesting note of uncertainty came into Prof. Ball's address, as he confessed that he was not yet completely convinced that a course in pure science was not the best preparation for a career in applied science, for some students at least. He concluded his address with suggestions for ways in which an interest in materials science might be aroused in schools, all of which have been used in existing subjects to a small extent. Careers pamphlets issued by professional organizations, conferences with schoolmasters, displays and exhibitions provided by universities were some of the means suggested.

Mr. M. Deere (Reactor School, Atomic Energy Research Establishment) outlined the work being carried out by the Reactor School at Harwell to give schoolmasters and their pupils an opportunity to meet technologists and to learn from them the nature of their work. Teachers attend courses on which the lectures are given by senior scientists. Facilities are provided for science teachers to undertake research work at Harwell, and scientists visit schools to give lectures and to give advice on scientific projects carried out by pupils. Courses for mathematics teachers

have also been held, and courses for careers masters are planned. Boys in the first year of sixth-form work will be invited to courses which will be designed to bring them into direct contact with the technical work carried out at Harwell by discussing with the scientists real problems which are being tackled there. The purpose of this is not recruitment, but is rather what Prof. Ball spoke of earlier, an attempt to give boys a realistic image of the work of an applied scientist and to reveal the intellectual challenge which the work provides.

Early in the discussion which followed, Mr. R. S. Barron (Dauntsey's School) described a scheme which is being used in his school to give sixth-form boys an opportunity to become acquainted with engineering. Each boy carries out, over a period of 12 months, a project of his own choosing, and a report of the work is assessed for the Advanced Level of the General Certificate of Education by the Cambridge Examination Board. Advice on the work and assistance with the provision of expensive equipment are sought from industry and from Government research establishments. It came as a surprise to many in the audience to find that the Advanced Level examination scheme is flexible enough to permit enterprise of this kind.

Mr. M. H. Devenport (Eton College) attributed the lack of interest in applied science among schoolboys partly to the subject's lack of glamour when compared with, say, physics and its association with the Nobel Prizes. He was of the opinion that a move towards a less academic type of science in schools could be brought about through the existing examination system, without radical changes, provided that engineers give a clear lead in suggesting lines of work which are interpretable at sixth-form level. Several technologists present were dismayed by Mr. Devenport's remarks about the way their subject failed to inspire boys, but had to admit the truth of them, and suggestions for making applied science more appealing carried little conviction. There was no doubt in anyone's mind that a great deal of work of the kind described by the various speakers would have to be done before a noticeable change in schoolboy attitudes could be expected.

It was left to Prof. Entwistle to point out that there appeared to be no reason why schoolgirls should not be encouraged to study materials science. It was the first time in the conference that they had been mentioned.

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¹ *Nature*, 199, 233 (1963).

THE EUROPEAN ATOMIC ENERGY COMMUNITY

THE seventh annual report of the European Atomic Energy Community (E.A.E.C.)*, commonly known as Euratom, covers the period March 1963–February 1964 and consists of two distinct volumes, both in French. Volume 1 discusses in general terms the need for, and the economics of, the development of nuclear energy facilities in Europe; the co-operative programme of research undertaken by the six member states of Euratom; the relationship between Euratom and industry; the establishment of nuclear research centres and the dissemination of information about nuclear energy; health and safety precautions; and the links between Euratom and other nuclear energy organizations. The evidence, including the relevant technical facts and figures, for the statements and conclusions described in Volume 1 is given in the 37 articles which form the contents of Volume 2.

The illustrated report (*Eur 1850e*), though perhaps not so comprehensive as the annual report, is a much more

readable and useful picture of the progress achieved by Euratom. It is in English and confines discussion in its 19 sections to a limited number of aspects of the technical and research work of the organization. Each section is written by one or more members of the group actively engaged in the particular aspect discussed. In the brief introduction to the report reference is made to the treaty signed in Rome on March 25, 1957, by the Governments of the member states (Germany, Belgium, The Netherlands, Italy, France and Luxembourg) establishing Euratom, and to the tasks and objectives of the Community. The aim is to foster progress in the peaceful uses of nuclear energy. Its main activities are carried out at, or directed from, the Joint Nuclear Research Centre, comprising the four establishments at Ispra (Italy), Petten (Netherlands), Geel (Belgium) and Karlsruhe (Germany). Ispra is the main establishment and has at its disposal large-scale digital and analogue computers essential for reactor studies, and there is a separate research programme on automatic translation and documentation. The European library of nuclear codes recently established by O.E.C.D. is to be housed at Ispra. The

* Communauté Européenne de l'Énergie Atomique, Euratom. Septième Rapport Général sur l'Activité de la Communauté, Mars 1963–Février 1964. Pp. 118. (Bruxelles: Euratom, 1964.) Documentation jointe au Septième Rapport Général sur l'Activité de la Communauté, Mars 1963–Février 1964. Pp. 213. (Bruxelles: Euratom, 1964.)

reactor physics, materials and engineering departments of the establishment are almost entirely concerned with the *Orgel* reactor project. The *Orgel* reactor is fuelled by natural uranium (in the form of ceramic compounds or alloys), heavy water moderated and cooled by high-boiling organic compounds. The structural materials consist of special preparations of light metals. Section 3 of the report by J. C. Leny and S. Orlowski describes in detail the *Orgel* project and the associated *Orgel* critical experiment and the *Essor* test reactor, which is now being constructed and which is expected to go critical at the end of 1966.

The Central Bureau of Nuclear Measurements, the establishment at Geel, is envisaged to become, in the nuclear field, a bureau of standards similar to the well-known national standards laboratories. The laboratories of the Central Bureau as planned in 1960 are now nearing completion; and by the end of 1964 the Bureau will have received all its heavy equipment. The pulsed 3-MeV Van de Graaff accelerator with a Mobley bunching system is in operation and the pulsed electron linear accelerator, of the travelling-wave type (*S* band, approx. 10-cm wave-length), is now being installed. The duties of the Bureau include not only the preparation and conservation of primary standards and their intercomparison with those of other laboratories, but also the improvement of standards, instruments and methods of measurement in addition to the accurate measurement of nuclear data. A full description of the Bureau together with its equipment for fissile and stable isotopes is given in Section 2 of the report.

Petten is a general-purpose establishment, the main function of which at present is to operate the test reactor (*HFR*) provided by the Dutch Government through the Reactor Centrum Nederland. The establishment is responsible also for the management of certain other important associations—*BR2*, *Dragon*, *THTR* and *Kema*—and a general programme of study related to them. The reactor *HFR* is virtually identical with the reactor *ORR* at Oak Ridge, and, consequently, close relations exist between the Petten and Oak Ridge establishments with regard to high-temperature reactors.

The specialized establishment, the Transuranium Institute at Karlsruhe, now in the course of construction on a site assigned to Euratom by the Gesellschaft für Kernforschung, is to be devoted to the non-military uses of plutonium in the nuclear energy industry. The laboratory will be brought gradually into use from about mid-1964 and is expected to be complete by 1966.

In addition to the sections dealing with the research establishments, there are sections dealing with thermo-nuclear research, radiobiology, radiation protection, industrial development of power reactors, marine reactors, the Euratom-United States joint programme, and the activities of the Eurisotop Bureau. The total personnel employed by Euratom on January 1, 1963, was 1,910, of which some 1,500 were members of the research establishments. The total is expected to rise to 3,200 by the end of the five-year programme in 1967.

NUFFIELD PROVINCIAL HOSPITALS TRUST

THE Nuffield Provincial Hospitals Trust has published its sixth report, recording the progress of schemes described in the previous report and announcing new projects during the past three years. A wide range of activities has been supported, and 150 projects are listed under 15 general headings*.

In welcoming the Ministry of Health's entry into the field of providing finance for service and operational research, the Trustees note that "this policy is to be applauded and the competition it introduces will be stimulating. Of course, it does not follow that there will henceforth be an abundance of money available for the kind of study which indicates how health services can be made more effective, or whereby resources can be deployed in a better way. Yet the implication is that Britain is entering a period of more intensive scientific enquiry into its health services—surely a wise investment from which excellent dividends may be expected in the future". The Trust's own contribution to this investment during the period under review amounted to £1,305,000. During the period covered by the report 13 books have been published on sponsored research, and several other projects have resulted in reports published under other imprints.

The most important single new subject appearing in the report is postgraduate medical education. The Trustees' decision to allocate a large sum of money (£308,750) to help promote schemes in the provinces has stimulated a great deal of activity. The aim of the Trustees, to stimulate the development of a comprehensive national policy for the continuing education of doctors, and so lead to the improvement of medical-care services, seems in a fair way to being realized.

The following selection gives an indication of the range of the Trust's interests: A grant of £20,000 over five years was allocated to the Oxford Regional Hospital Board for

operational research studies of a number of aspects of hospital problems. £5,000 went to the United Birmingham Hospitals for a survey of health services for children in the City of Birmingham, and £1,000 to the University of Nottingham for a study on recruitment to, employment of, and demand for, certain of the professions supplementary to medicine; physiotherapy, occupational therapy, dietetics, orthoptics, and radiography. £2,400 over two years was made available for the secondment of a nurse to work in the Casualty Department of the General Infirmary at Leeds to investigate the cause and prevention of accidents in the home.

The North-Eastern Regional Hospital Board, Scotland, received a grant of £50,000 for the building of an in-patient and day hospital unit for child psychiatry in Aberdeen, and to cover the first year's running costs. The Aberdeen area, the report states, is particularly suitable for a project of this kind "in view of the basic demographic knowledge already available about the area, the close integration between the hospital service and the university department in mental health, the presence of an active research organization and the contacts already established with the local health and education authorities". £12,000 has been allocated for the provision of a parents' hostel at Smith's Hospital, Henley-on-Thames, which has facilities for some fifty psychotic or severely disturbed children. It has been found that little success attends efforts to treat these children unless the staff work very closely with the children's parents, particularly the mothers, since the corner-stone of treatment is the restoration or encouragement of this relationship. To an increasing extent the child is treated through the mother, because only rarely can anyone else give the necessary time and individual attention to bring about the return of the child to his or her normal position in the family.

A grant of £4,000 was allocated in order to make possible a study of community mental health services in Devonshire, the main purpose of which is to discover the problems and difficulties experienced by patients who have been

* The Nuffield Provincial Hospitals Trust. Sixth Report: A Record of the Progress of Schemes and Descriptions of New Projects 1961-1964. Pp. 152. (London: The Nuffield Provincial Hospitals Trust, 1964.)