

international legislation to prevent the discharge of oil and oily waste products into the sea.

Technical Teacher Training

A POLICY statement entitled *Technical Teacher Training*, issued by the Association of Teachers in Technical Institutions and based on a report prepared by the Association's Education Committee, concludes that untrained teachers have been too readily accepted in the past and that the training of teachers is essential to ensure effective use of expenditure on further education (Pp. 24. London: Association of Teachers in Technical Institutions, 1963). It recommends that, as soon as possible, all new entrants to technical teaching, both full-time and part-time, should receive professional training and normally a full-time one-year course. A recognized professional qualification of technical teachers is recommended and suitable training schemes should be developed for regular part-time teachers, whose salary scales should provide financial recognition of professional training. Experienced members of staff should be given the responsibility of guiding and assisting new entrants, and grants to trainee teachers should be closely related to what they may reasonably expect to earn on appointment. Refresher courses should be provided for certain teachers and for those courses subsistence grants should be paid, while supplementary courses in general education should be provided to help meet the demand for teachers for craft and technician courses. Better liaison facilities are required between technical colleges and technical teacher training colleges, and the salaries paid in the latter must be sufficient to attract some senior staff from the former. While there is room for experiment with sandwich courses in teacher training, more experience is required for a final judgment. Existing teachers should be encouraged to improve their qualifications, and emphasis is laid on the need for much more research into problems of further education. Educational fellowships in all types of educational institutions are advocated to enable teachers to undertake educational research. Besides further extension of the existing technical teacher training colleges, at least two new colleges are required, one in the north-east and one in the south-west of Britain, and it is suggested that training departments should be opened in colleges of technology and some technical teaching training given in university departments of education. The new 'staff college' should cater for all fields of further education and for those concerned with educational administration and industrial training.

The Advancement of Science in India

THE Indian Science Congress Association has issued as a reprint the text of Dr. D. S. Kothari's presidential address, "Science and the Universities", given at the fiftieth session of the Congress at Delhi during October 7-10, 1963 (Pp. 17. Calcutta: Indian Science Congress Association, 1963). Dr. Kothari begins by quoting the Prime Minister's statement on scientific policy five years earlier and then discusses the implications of what he terms the 'current scientific revolution', in which the doubling period of science is about fifteen years in terms of co-operation and the unpredictability in the march of events. Not merely does it mean that some 90 per cent of scientists who have ever lived are alive to-day, but also that the time-gap between basic discovery and its application is continually diminishing. The gap between the richer and poorer countries, the developed and the underdeveloped countries, is widening rapidly, so that it is increasingly difficult for the developing countries to import the capital equipment and machinery needed to raise their production. This situation is detrimental to the interests of both developed and underdeveloped countries, but it is possible for the developed country to make major contributions to the rapid development of a newly developing country by supplying the initial nucleus of technical exports and material resources. Dr. Kothari

recognizes that research and development expenditure is not an entirely satisfactory index of the development of science in a country, but there is a close and direct connexion between the percentage of national income spent on research and development and the number of scientists and technologists expressed as a percentage of the population. Stressing then the contribution of the universities to scientific advance, both in teaching and in research, Dr. Kothari refers to the unity of science and the danger of fragmentation, the imperative importance of a climate of free enquiry, the growing significance of team-work and the problems presented in the allocation of resources. These are the considerations which indicate where the universities can contribute most decisively to the scientific interests of a country, and finally he emphasizes the value, in a country of limited resources like India, of the centres of advanced study which the University Grants Commission was seeking to establish.

Higher Education in India

THE report of the University Grants Commission to the Government of India for the year 1961-62 records an increase in the number of universities from 33 to 46 during the Second Plan period, and with the five established during the year the total is now 51, of which 35 are affiliated, 14 unitary and 2 federal in character (Pp. v+36. New Delhi: University Grants Commission, 1963. Rs. 1.50; 3s. 6d.; 54 cents). Several steps were taken in the development and expansion of engineering and technological education in the universities, and a Committee was appointed to make a thorough study of standards prevailing generally, while another Committee is considering the selection of some twenty centres of advanced study in various universities. The Commission continued to be concerned with examination reform and measures for promoting general education, and has offered assistance in organizing summer schools, institutes, conferences and seminars in different subjects. Great importance is attached to the development of the affiliated colleges in which about 86 per cent of the university students in the country are enrolled, and where the organization of postgraduate teaching presents problems. Some twenty-two State universities are now participating in the Commission's scheme for raising salary-levels to that of the central universities. The number of students increased by 11 per cent to 1,156,000, the increase of women students, now 186,030, being particularly notable, and the overall increase was shared by all faculties, the percentage increase being greatest in agriculture (78.6), engineering and technology (56.8), medicine (48.2) and education (46.7). Postgraduate students increased in number from 63,000 in 1960-61 to 72,859 (22 per cent of whom were studying science subjects); the total has almost doubled in the past five years. The percentage of failures in 1960 varied from 57 per cent in the B.A. examination, 50.8 per cent in the B.Com., 49 per cent in the B.Sc., and 46.6 per cent in the M.B.B.S. to 13.7 per cent in the B.Sc.(Tech.), but many successful candidates secured only minimum marks.

Organization of Scientific Research in Poland

IN a brief survey of the development of scientific research in Poland, published in *Polish Facts and Figures* (No. 729; October 19, 1963), Prof. I. Malecki refers to considerable changes in the scope and organization of research in Poland since 1952. Between 1950 and 1963 industrial production increased 3.7 times and there are now 172,000 students in 73 universities and specialized colleges, which employ 16,300 scientific workers, while the Polish Academy of Sciences employs 6,200 persons (including 500 professors and assistant professors), compared with 2,000 in 1953; 21 research institutes and 56 laboratories are now attached to the Academy. The two institutes of nuclear research, while under the scientific supervision of the Academy, are controlled by the High