

be the concern of the Agricultural Departments. The Research Councils proposed to continue their already substantial research in the fields mentioned in the report and to extend it, so far as resources permitted, where fruitful results appeared likely. The various tasks were shared between them in accordance with their normal interests. Research into problems bearing on the toxicity of agricultural chemicals to human beings fell to the Medical Research Council while the Agricultural Research Council was responsible for basic research on chemical hazards concerning farm crops, animals and soil, and the Nature Conservancy was responsible for research relating to the effects of agricultural chemicals on wild life and the natural environment. Research into improved methods of determining residues of toxic chemicals in foodstuffs and animal tissues was the responsibility of the Government Chemist in the Department of Scientific and Industrial Research. Certain problems were of concern to two or more research councils,

and the Agricultural Research Council was setting up a scientific committee with Prof. A. C. Frazer as chairman to keep all relevant research under review and report progress.

Civil Science by Government Agencies

In answer to a question in the House of Lords on March 7, the Minister for Science, Lord Hailsham, said that the Government had decided to review the existing organization for the promotion of civil science by Government agencies. This review, which would be concerned mainly with issues of administrative organization and the machinery of Government, would take full account of the views expressed by the Advisory Council on Scientific Policy, and advice would also be sought from scientists both inside and outside the public service. Lord Hailsham undertook to inquire into the consultation of representatives of industry also.

THE COLOMBO PLAN

TENTH ANNUAL REPORT

THE tenth annual report of the Consultative Committee on the Colombo Plan for Co-operative Economic Development in South and South-East Asia* includes a short chapter on technical co-operation, which has been an integral part of Colombo Plan operations since 1950 and provides a framework for exchanging technical assistance between participating countries. Excluding some 6,840 who went to the United States in 1950-58 before the United States became a formal participant, technical co-operation under the Plan enabled 19,533 men and women of the region to visit other countries to acquire specialized knowledge, aptitudes and experience enabling them to increase their contribution to the development of their own countries and has filled gaps in the technical knowledge in the region by providing experts whose influence extends far beyond the technological field. Despite the achievements of the past ten years, however, the importance of technical co-operation in overcoming the shortage of trained manpower has in no way diminished. The needs of countries in the area for trained men and women remain very great and frequently the progress of development has brought new requirements for the expansion of technical skill.

Total expenditure on technical assistance by all members of the Plan in 1960-61 exceeded £20 million, that on the provision of training places substantially increasing while that on equipment almost doubled, to reach £5.6 million. New training awards increased from 4,268 to 4,417, and the number of new experts provided from 535 to 786. Training capacity is now much greater than it was in 1950, particularly at the higher professional levels, and thirteen of the twenty-one member countries are now among those who in the past ten years have provided 1,852 training places within the area. A survey during the year revealed a serious gap in trained manpower between professional technologists and skilled craftsmen but also indicated that facilities for many specialized types of

training at the latter level are not fully utilized, and the need for constant endeavour to find improved methods and procedures of rendering technical assistance.

Even in this chapter of the report reference is made to the urgency which the growth of population in the area over the past decade has brought to the area, and this is one of the dominant notes of the review of economic progress during the past ten years and of the task ahead which are probably the two chapters of most outstanding interest in the report. Since the Colombo Plan commenced, the population of South and South-East Asia has increased by 150 million, and by 1980 it is expected to approach 1,000 million as against the 720 million expected for 1970 in 1950—a figure which was reached in 1960. The central fact of this situation is a sharp rise in the rate of natural increase, partly due to the very success of the Colombo Plan in such fields as health and medicine. The difficulties faced by these countries exceed any experienced in this field by the industrially advanced countries, and against this background the growing pressures of the peoples of the region for higher living standards and the extent of the progress which can be achieved can affect political stability.

It is not surprising, therefore, that the report singles as the dominant achievement of the past ten years under the Colombo Plan the awareness growing throughout the area and among the countries outside of the urgent need for more rapid development and for efforts to be directed towards that end. National income has indeed grown almost continuously, particularly since 1953, and most countries have recorded substantial gains in overall output as well as in important sectors, but frequently the rapid increases in population diminished the measurement of gains on a *per capita* basis. Invariably, the area-wide attack on poverty and low living standards through economic development has been pressed, and the forward movement of the economics of the area is clearly evident.

Agricultural production—the mainstay of the area's economy—has significantly increased both in terms of total production and in terms of yield per

* The Colombo Plan for Co-operative Economic Development in South and South-East Asia. Tenth Annual Report of the Consultative Committee, Kuala Lumpur, October-November 1961. (Cmd. 1600.) Pp. 233. (London: H.M.S.O., 1962.) 13s. net.

unit of cultivated land, and the index of agricultural output increased by about 12.5 per cent, compared with an average world increase during the same period of about 15.5 per cent. The production of rice, the staple food of the area's population, increased by about 40 per cent to more than 108 million tons in 1960, and that of maize by more than 30 per cent. Output of petroleum increased from 10.8 million tons to 26.5 million tons, of coal from 35 million tons to more than 54 million tons; steel production from about 1.3 million tons to more than 3 million tons; and of cement from less than 6 million tons to 10.8 million tons, while diversification is gradually being achieved both in agriculture and industry. Illiteracy is being reduced, and most countries aim at establishing universal primary education in the foreseeable future, while secondary and higher education are being rapidly promoted. Malaria is being eradicated, and health programmes have helped to mitigate the ravages of influenza, tuberculosis and other epidemics.

Looking at the task ahead, particularly in the light of the increase in population during the decade 1950-60 from 595 million to 743 million, or 1.5 times that of the increase during 1920-50, the report points out that while the objectives set out in 1950 have been shown to be correct, the task has proved even more formidable than was expected. The peoples of the region are aware that progress will continue to depend above all on their own efforts and determination and that external assistance, however massive, cannot replace those efforts. Apart, however, from this continuing need for popular understanding and support, the Governments of the region will continue to be faced with the need for resolute action to raise the standards of living, and in this priorities present special difficulty. The precise balance between investment in agriculture and in industry, of priorities within the agricultural and industrial sectors, between investment and consumption, between a lower level of education and training for the many and a higher level for the comparatively few will never be easy to determine. Beyond this there remains a challenge to

the more developed countries within the limits of their resources to help the less-developed countries to help themselves. In doing so they will make the greatest possible contribution to the development and welfare of the region, but while external aid will remain an important factor in determining the degree of economic progress, the more-advanced countries must continue to adapt their methods and approach to changing circumstances. There are no simple solutions to the many problems that arise and progress can only be made as difficulties are tackled in a continued spirit of goodwill and co-operation and on the basis of growing appreciation and understanding of each other's difficulties. The second, and largest, part of the report outlines the progress made in the individual member countries of the Plan in 1960 and during the decade 1950-60, while in Part 3 are outlined some contributions to economic development in South and South-East Asia made by individual countries. United Kingdom Government expenditure on capital and technical assistance for development in South and South-East Asia during 1960-61 totalled £35.9 million, bringing the total of such expenditure under the Plan to £182.78 million, with outstanding commitments at June 30, 1961, of £84.13 million (including the whole of the £20.8 million contribution to the Indus Basin Development Fund) to be paid over the period 1960-72. Expenditure of £1.14 million on technical assistance brought the total since 1951 to £7.06 million, and the 565 students in the United Kingdom undergoing training on June 30, 1961, brought the total of Asian students who have received instruction in the United Kingdom under the Plan to 3,892, and total expenditure for this purpose to £3.12 million. The 42 experts provided during the year brought the total to 427, and the £235,988 provided for equipment for training and research purposes brought the total under this head to £2.01 million. Capital aid expenditure during the year amounted to £34.76 million, bringing the grand total under the Plan to £175.72 million, with outstanding commitments at June 30, 1961, of £82.55 million.

PLANT TISSUE AND ORGAN CULTURE

A SYMPOSIUM on the above subject was organized under the joint auspices of the University of Delhi and of the South Asia Science Co-operation Office of Unesco, which is also at Delhi. These arrangements were made by Prof. P. Maheshwari on behalf of the University of Delhi and by Dr. J. Swarbrick on behalf of Unesco. The 38 active participants in the symposium are greatly indebted to its organizers for the opportunity so presented to discuss various aspects of this interesting and rapidly developing field of work, which was covered in 36 different papers presented to the symposium. These papers will be made more widely available in a symposium volume which is to be printed as a separate issue of the journal *Phytomorphology*.

Seven foreign delegates were able to participate in the conference under the arrangements made by Unesco. These delegates were: Dr. J. P. Nitsch (from Laboratoire de Phytotron, Gif-sur-Yvette), Prof. J. Reinert (Pflanzenphysiologisches Institut der Freien Universität, Berlin-Dahlem); Prof. H. E. Street (Department of Botany, University College of

Swansea), Prof. F. C. Steward (Cornell University, Ithaca, New York), Dr. A. N. Rao (University of Malaya), Prof. B. L. T. de Silva (University of Colombo), Dr. Tun (University of Mandalay). The remainder of the delegates to the symposium were from different parts of India.

Four of the foreign delegates (Dr. Nitsch, Profs. Reinert, Steward and Street) delivered informative general lectures under the following titles: "The *in vitro* Culture of Flowers and Fruits" (Dr. J. P. Nitsch); "The Experimental Modification of Growth and Differentiation in Plant Tissue Cultures" (Prof. J. Reinert); "Carrots and Coconuts: Some Investigations on Growth" (Prof. F. C. Steward); "Nutritional Problems Raised by Work with Root Cultures" and "Studies on the Hormonal Control of Root Growth" (Prof. H. E. Street).

In addition, these delegates delivered other papers on more specialized subjects such as: carbohydrate nutrition of excised tomato roots (Prof. H. E. Street); naturally occurring growth substances in relation to the growth of tissue cultures (Dr. J. P. Nitsch); and