

graphs illustrating on one hand the devastating use of nuclear energy in destroying cities and their inhabitants, and on the other the applications of nuclear energy for medical and industrial purposes (including a photograph of the first nuclear power station recently put into operation in the Soviet Union).

The last day of the session was entirely devoted to a more technical discussion of physical problems, and was held in the main lecture room of the Physical Institute. Among others, Prof. J. Rayski, of the University of Toruń (who is well known to nuclear physicists in Great Britain), presented a new interpretation of the various kinds of particles recently discovered in cosmic radiation. The Academy of Sciences and the State authorities also organized official receptions of the participants, who enjoyed, during the whole duration of their stay, the most cordial hospitality.

For the occasion the Academy of Sciences, which displays considerable activity in publishing scientific periodicals and excellent journals aiming at the popularizing of science, had issued a series of valuable books. These comprise Polish translations of Madame Curie's "Traité de Radioactivité", of Mrs. Irène Joliot-Curie's shorter text-book on nuclear physics, and also of Madame Curie's delightful short biography of her husband which originally appeared in French in 1924. Another book contains a collection of articles by various Polish scientists surveying Madame Curie's work and its implications, as well as a reprint of two articles written in Polish by Madame Curie. Last, but not least, a magnificent volume has been prepared containing a reprint in the original language (mostly French or Polish) of the complete works of Madame Curie. It is interesting to see to what extent Madame Curie was anxious to write popular articles or more technical surveys on the development of radioactivity in her native language. A bronze medal bearing the figure of Madame Curie was struck to commemorate the celebration.

The present writer had the opportunity of visiting in detail the Warsaw Physical Institute and of discussing questions of common interest with Polish physicists there. He was much impressed by the activity with which the newly reorganized Institute was teeming, and with the results already achieved in a surprisingly short time in trying circumstances. The Experimental Department of the Institute, under the direction of Prof. L. Sosnowski, pursues no less than four lines of investigation. Prof. Sosnowski himself is interested in problems of semi-conductors; there is a section on nuclear physics (Prof. A. Soltan), a section on the study of cosmic rays by the emulsion technique (Prof. M. Danysz), and a section on optical and X-ray spectroscopy, which was set up by the late Prof. S. Pieńkowski, the creator of the Institute after the First World War. The Theoretical Physics Department occupies a new wing which was recently built in the space of a few months and which offers a group of very keen and active young theoreticians ideal conditions of work under the leadership of the two well-known theoretical physicists, Prof. L. Infeld and Prof. W. Rubinowicz. There are flourishing centres of research in physics at the other universities, which the writer had, however, no time to visit. The general impression from his brief contact with Polish physicists is that of a remarkably vigorous activity and growth, worthily upholding the brilliant traditions of Polish science.

L. ROSENFELD

## SOCIAL IMPLICATIONS OF THE GENETICS OF MAN

**I**N his presidential address to the Pacific Division of the American Association for the Advancement of Science, Prof. A. H. Sturtevant, of the California Institute of Technology, dealt with two matters. First, he emphasized the peculiar difficulties in the way of building up a sound body of knowledge on the formal genetics of man. These account for our gross ignorance of the part played by heredity, for example, in mental differences. Secondly, he considered the problems set by the genetical consequences of atom and hydrogen bombs.

Stressing that, for their effects on heredity, there is no lower level at which high-energy radiations are harmless, Dr. Sturtevant deprecated the statement by the Chairman of the Atomic Energy Commission that "... after every test... there is a small increase in natural background radiation in some localities within the U.S.A. . . . far below the levels which could be harmful in any way to human beings . . .".

Dr. Sturtevant made the point that the risk is one to which the whole of mankind is already being subjected, and, if mankind survives for many generations, the bombs already exploded will ultimately and inevitably result in an increase in the harvest of defective individuals.

Few biologists will disagree with Dr. Sturtevant's criticism of the attitude exemplified above. The genetical consequences of a world atomic war would, clearly, be trivial compared with the immediate results. If mankind cannot avoid such a war there is not much point in speculating on the genetical consequences. But if it should be avoided, then a permanent increase, no matter how small, in radioactivity, be it due to industrial waste products or to the tests mentioned by Dr. Sturtevant, might become of tremendous importance. With present knowledge we are not even in a position to make a few intelligent guesses. It is to be regretted that Dr. Sturtevant, besides deprecating the light-hearted attitude towards biological problems mentioned above, did not also consider the consequences of the development of atomic energy for peaceful purposes. It seems to the reviewer that we are taking incalculable risks by building the factories without concentrating as much energy and money on the study of the long-term biological consequences of the atomic age.

G. PONTECORVO

## UNITED NATIONS TECHNICAL ASSISTANCE BOARD

### REPORT FOR 1953

**T**HE sixth report on the United Nations Expanded Programme of Technical Assistance for Economic Development\*, submitted by the Technical Assistance Board to the Technical Assistance Committee of the Economic and Social Council, describes the progress

\* United Nations Technical Assistance Committee. Sixth Report of the Technical Assistance Board. Economic and Social Council—Eighteenth Session—Supplement No. 4. Pp. vii+267. (New York: United Nations; London: H.M.S.O., 1954.) 2.50 dollars; 17s. 6d.; 10 Swiss francs.

of the programme during 1953, the third financial period. It also includes information on the approved programme for 1954 and some details on that proposed for 1955. Almost 200 out of the 267 pages of the report are occupied by the statements of the participating organizations and an analytical summary of the programmes for 1953-55 taken country by country. The general features of the Expanded Programme are discussed in an introduction which is illustrated by a series of diagrams and charts; and, in view of what has already been recently published in *Nature* (173, 50 and 174, 1; 1954), it is unnecessary here to refer to more than a few points.

In the four years since the Programme began, the less-developed countries have re-examined their economic and social problems and have invited many thousands of experts from many lands to work with and for them. The technical skill and experience of many countries have been drawn upon to accelerate progress where it has lagged, and the report claims that in some measure the energies and initiative, the hopes and capacity for self-help of many peoples have been quickened. Nevertheless, the volume of technical assistance fell slightly, from 22,968,129 dollars in 1952 to 22,810,000 dollars, partly in consequence of a thorough review of the Programme, when pledges for 1953, totalling 22.4 million dollars, fell far below the cost of the technical assistance requested. The number of countries and territories receiving experts, however, increased from sixty-two to sixty-five, although fellowships were awarded to nationals of only eighty-two countries, compared with ninety-two in 1952, and sixty-seven, as compared with seventy-six, countries or territories acted as hosts to Fellows.

Attempting to distinguish features of the Programme on the basis of five years of operation, the report points out that only a small proportion of the funds is required to meet urgent priority requests: most technical assistance is designed to assist the less-developed countries in themselves solving chronic and age-long problems and represents only a fraction of sustained national effort required for appreciable and enduring results. The approved programme for 1954, for example, includes some eight hundred projects in each of which the average number of experts is about two throughout the year, and a hundred and fifteen projects which include only one fellowship each and no experts. Secondly, relatively little equipment is provided with the expert assistance: in 1953 only 10 per cent of obligations was for equipment and only about 6 per cent is planned for 1954. Thirdly, the Expanded Programme is not related directly to any source of capital supply.

Experience seems to show that a large proportion of the Programme in widely different fields must be devoted to training national personnel in the less-developed countries. Often these training facilities are linked with, or followed by, the award of fellowships to candidates recommended by the government concerned to enable them to follow a specified course at teaching institutions abroad. In many countries international experts have assisted governments in developing the institutional framework required for experimental work, pilot projects and development. It is also emphasized that the degree of underdevelopment and the requirements of various countries differ widely, and in most fields specific instruction and demonstration as to how to do things are taking the place of general advice as to what needs to be done.

During the year attempts were made for the first time to work out comprehensive technical assistance programmes at the country-level, and special attention to the possibilities of economy in the Board's field establishments led to a 24.5 per cent reduction in the estimated costs of these establishments for 1954. The holding of the Pledging Conference before the beginning of the Programme year also eased financial management in 1953, and the approval by the Technical Assistance Committee and the Economic and Social Council of proposals for the establishment of a reserve which might be utilized as a working capital and reserve fund should enable the Board to make advances to tide over time-lags between pledges and payment and to satisfy special currency requirements. Financial ceilings are now being imposed on obligations in order to regulate the rate of expenditure in relation to the rate of estimated collection. The Board is also re-examining the criteria and techniques to be used in judging the results of individual projects and the effectiveness of country programmes as a whole. In spite, however, of the improvement in financial management, the determined attack on administrative costs, the stronger co-operation between governments, agencies and the Board's representatives at the country-level and the improved co-ordination with other technical assistance programmes, much remains to be done to improve the operation of the Programme, to make more effective use of limited resources and to come to terms with the dimensions of the task for which the Expanded Programme was created. Once again it is clear that educational and economic advance should go side by side. Neither should dominate the other. This report should assist in formulating a clear conception of the principles involved in technical aid and what they require; and to overcome the difficulties encountered in obtaining a sufficient supply of experts and retaining their services, it may well prove necessary to form an international cadre with continuous and guaranteed agreed terms of service operating for something in the nature of a World Development Authority.

## FISH CULTURE IN INDONESIA

THERE has recently been published by the Food and Agriculture Organization (F.A.O.) a highly important report\* on fish culture in Indonesia. This report comprises a selection of the papers delivered and discussed at a seminar on brackish- and freshwater fish culture, held at Djakarta during April 11-May 23, 1951, under the aegis of the Indo-Pacific Fisheries Council.

It is now generally recognized that the fish resources of the sea, vast though they be, are not limitless, nor are they uniformly distributed throughout the seas and oceans of the world. In many highly populated regions of the earth, especially within the tropics, the marine fisheries are as yet poorly developed and their yields make inadequate contributions to the needs of the inhabitants. In consequence, great effort is being made in many such regions—much of it under the inspiration and guidance of the Food and Agriculture Organization—to increase the yield of sea foods.

\* Fish Culture in Indonesia. G. J. Kesteven, General Editor. Indo-Pacific Fisheries Council (F.A.O.) Special Publication No. 2. I.P.F.C. Secretariat, F.A.O. (Regional Office for Asia and the Far East, Bangkok, 1953.) n.p.