

managed to summarize so much material, and the success of the chairmen (Profs. G. V. Raynor and A. G. Quarrell) in keeping speakers to their allocated times. The papers and discussion will be published in the Monograph and Report Series of the Institute of Metals.

J. W. CHRISTIAN

BIOLOGISTS AND NATIONAL SERVICE

THE Institute of Biology has made inquiries of the Ministry of Labour and National Service about the opportunities open to graduate biologists in the Services (*J. Inst. Biol.*, 3, No. 1; November 1955). The position appears to be as follows. All science and engineering graduates entering the Forces are considered for National Service commissions, and in the past about 40 per cent of them have been commissioned during their National Service. Both in the Royal Navy and the Royal Air Force, science graduates are accepted for National Service only if they can be recommended by a pre-call-up officers' selection board for a National Service commission. In the Army all graduates are called up in the ranks; but each is given an opportunity of being considered for a National Service commission during the period of his basic training.

There are comparatively few opportunities for a graduate in the biological sciences to be employed in any of the three Services in a capacity which will make direct use of his qualifications. So far as the Navy is concerned, his acceptance is unlikely. The demands of the Navy are mainly for mechanical and electrical engineers, mathematicians and physicists, and it does not usually have any requirement for graduates in the biological sciences. In the Royal Air Force, a comparatively small number of graduates in biology is accepted for National Service commissions in the Education Branch. It is also open to any National Service recruit to opt for service in the General Duties Branch for training as a pilot.

The War Office has recommended that a graduate in the biological sciences should apply for service in either the Royal Corps of Signals, the Royal Artillery, the Royal Engineers or the Royal Armoured Corps, where his scientific background is likely to be particularly valuable. There is, of course, nothing to prevent a science graduate from applying for service in any branch, technical or non-technical, and acceptance for a commission will depend solely on qualities of leadership and character and does not depend on technical or academic qualifications, except in so far as a potential officer must be intelligent and able to express himself clearly. Commissions in the Royal Army Education Corps are not given to National Service men; but a graduate in biology, especially if he holds the postgraduate Certificate of Education, may elect to do his service in that Corps where he could expect to be appointed sergeant instructor. The Royal Army Medical Corps is normally officered by medically qualified men; but an occasional vacancy occurs for a physiologist, biochemist or entomologist in commissioned rank. Otherwise, biology graduates may be appointed as laboratory technicians or in similar posts, and promotion to sergeant rank is possible.

An increasing number of science graduates now apply for short-service commissions as an alternative

to National Service. These are voluntary regular engagements and usually involve a minimum of three years full-time service. Short-service commissions are available for science (including biology) graduates in the Education Branch of the Royal Air Force or in the Royal Army Educational Corps, as well as in other branches of the Royal Air Force and the Army.

There is no 'allocation' of scientists to defence work; but there is a number of projects of high priority carried on by government departments and private firms on which science graduates may be employed and given deferment on the applications of the government department concerned. Most of the vacancies are for physicists, mathematicians, chemists and engineers: biologists are required only on rare occasions. Deferment can also be granted for certain appointments in the Colonial Agricultural Service, for which biologists are much more in demand.

INTERNATIONAL SURVEY OF PROGRAMMES OF SOCIAL DEVELOPMENT

IN accordance with a resolution of the United Nations Economic and Social Council, the Bureau of Social Affairs of the United Nations Secretariat, in co-operation with the International Labour Office, the United Nations Educational, Scientific and Cultural Organization, the Food and Agriculture Organization and the World Health Organization, has prepared a survey of national and international measures taken to improve social conditions throughout the world*. Entitled "International Survey of Programmes of Social Development", it is concerned primarily with measures taken since 1945, and with those taken by governments rather than by voluntary or private organizations, and is intended to supplement the "Preliminary Report on the World Social Situation". The survey brings out the remarkable recent expansion of such programmes throughout the world, an expansion which has necessitated the report being limited to the outlining of trends and developments, using concrete cases only for illustrative purposes. The report should be particularly useful to all concerned with Colonial development and welfare and with technical assistance generally, whether under the Colombo Plan or in other ways.

An introductory chapter reviewing the similarities and differences in national approaches to social welfare, production and rural development points out that, in practically all the types of programme surveyed, the three problems constantly being encountered are those of obtaining adequate personnel to execute the programmes, adequate information to guide them, and adequate resources to finance them. Shortages of trained personnel are experienced by countries at all levels of development. Training abroad on fellowships has made an important but limited contribution to the supply of the higher-level technical and professional workers in some countries; attempts have been made in many countries to deal with the maldistribution among the professions, and

* International Survey of Programmes of Social Development. Pp. iv+200. (New York: United Nations; London: H.M.S.O., 1955.) 2 dollars, 15s., 8 Sw. fr.

the less-developed countries are increasingly turning to auxiliary workers, or technical assistants.

The problem of obtaining adequate information for social programmes is in part that of balancing the use of limited resources; but reliance on social research as a basis for formulating, checking and evaluating systematic plans and programmes is increasing, and more attention is being given to experimentation and small trials before launching large projects. In regard to finance, however, there is little agreement as to what constitutes balanced development or a balanced allocation of funds for simultaneous economic and social development, or as to the order and timing of expenditures on different types of programme; nor does a chapter in the survey dealing specifically with research and surveys in connexion with social programmes warrant any confidence that a more detailed framework of thought to guide specific decisions is either possible or desirable.

This chapter is well documented and gives a brief picture of the organization of government research in various countries, as well as of such recent developments in the technique of research into social problems as the sample survey and the interdisciplinary approach, known as operational research. While, however, the increase in government statistical activities, especially in the under-developed areas, is emphasized, little information is given, or appears to be available, as to expenditure on social research. In the United States it amounts to some 2-3 per

cent of the Federal expenditure on research, but no figures are given for other countries. In Norway, public research expenditure rose from 14.7 million kroner in 1938 to 83.4 million kroner in 1952, and total expenditure on public and private research and development (both civil and military) is estimated at about 1 per cent or more of gross national expenditure in the German Federal Republic, Great Britain, the Netherlands, the United States and the U.S.S.R. In the economically developed countries, non-military research expenditure appears to be between 0.3 and 1 per cent of national income, but in undeveloped countries it is much less. During the decade ending 1952, population censuses were conducted in 155 out of 239 areas of the world, covering nearly 60 per cent of the world's population. Ninety-five countries and territories have taken on agricultural censuses within the framework of the 1950 World Census of Agriculture, and since 1948 more than thirty countries or territories have published a general statistical bulletin for the first time. In general, however, the role of the social scientist in relation to social policy appears to be uncertain.

The remaining chapters of the survey deal separately with health, nutrition, education, labour and social security programmes; with the programmes to improve housing and community facilities and to aid the consumer; and with special programmes of social protection and rehabilitation, or of social development for rural areas; and with general approaches to social development.

A DIETARY DEFECT IN MAIZE DEVELOPED DURING TREATMENT WITH LIME

By P. L. PELLETT and PROF. B. S. PLATT, C.M.G.

Human Nutrition Research Unit, Medical Research Council Laboratories, Hampstead, N.W.3

IN a recent appraisal of the state of knowledge on pellagra¹, it was agreed that the problem of the pellagragenetic properties of maize is not yet solved and that the etiology of the disease is by no means simple. The incidence of pellagra is reported to be low in some regions of Mexico where the consumption of maize is high; the explanation of this is not clear—it may be that the disease is not diagnosed or reported, that the diet contains some foods, for example, beans, which protect the consumer, or it may be the result of the method of preparing the maize grain for making tortillas. The last of these possible explanations has led to several investigations on the effects on the nutritive value of maize when treated with lime in the Mexican manner.

Krehl *et al.*² found no difference between rats fed on lime-treated or raw maize. However, Laguna and Carpenter³, Cravioto *et al.*⁴ and Squibb *et al.*⁵ reported that rats fed on lime-treated maize grew better than rats given untreated maize; these results have been confirmed in our laboratory. Recently, Braude *et al.*⁶ reported the curative effect on pellagra in pigs of maize which had been partially hydrolysed with sodium hydroxide; but Goldsmith *et al.*⁷ were unable to demonstrate any beneficial effects of lime-treated maize in human pellagrins.

The effect of lime on the nutritive value of maize has been ascribed either to an increase in 'available'

nicotinic acid following hydrolysis with alkali of a 'bound' form^{3,6}, or to the racemization of certain amino-acids, thereby avoiding amino-acid imbalance in the diet⁴. The highly critical nature of the balance of amino-acids for growth has been emphasized in a recent paper by Elvehjem and Harper⁸.

The diets of the rats in the three previously reported experiments on the effect of lime-treatment of maize have contained adequate amounts of the known B-vitamins except nicotinic acid, the investigators having been concerned primarily with the effects of lime on the availability of nicotinic acid. However, since lime-treated maize, when substituted for untreated maize in human dietaries, may not be combined in diets with foods supplying adequate amounts of B-vitamins, experiments have been made on the effects on rats of diets consisting mainly of lime-treated or untreated maize and without supplements of the B-vitamin complex.

The results obtained in three separate experiments are summarized in Table 1, from which it can be seen that: (i) the rate of growth of the rats fed on lime-treated maize was significantly lower than that of the rats on untreated maize; (ii) supplementation of the diet with either nicotinic acid or tryptophan had no effect on this depressed growth-rate; (iii) on addition to the diet containing lime-treated maize of aureomycin or of a mixture of B-vitamins, the