

production and use of penicillin. From its pilot plant in Toronto it supplied large quantities of penicillin to the Department of National Defence, and less amounts for civilians, until the commercial production in Canada was able to supply ordinary needs. It undertook the preparation of an influenza vaccine. It prepared recommendations for prevention of infection of wounds. It advised the Department of National Defence on questions of bacteriological significance as often as requested.

The Subcommittee on Surgery (chairman, Dr. Wilder D. Penfield) supervised researches through regional groups in Montreal, Toronto, London and Winnipeg, and through sections on burns, orthopaedics, plastic surgery, surgical radiology, thoracic surgery, and traumatic injuries of the nervous system. These included investigations on the treatment of burns; infected wounds and peripheral nerve injuries; treatment of low-back pain with and without sciatica; use of penicillin; skin grafting; bone grafting; facial prostheses; recognition of non-metallic foreign bodies by X-rays; and surgical problems of air transport of wounded.

The Subcommittee on Industrial Hygiene and Industrial Medicine (chairman, Dr. D. Y. Solandt) was concerned mainly with health problems in industries active in the manufacture of munitions and supplies.

The Associate Committee also provided the Department of National Defence with recommendations in respect of nutrition and prepared a memorandum on problems of nutrition in Canada, which was submitted to the Ministry of Food and the Medical Research Council in Great Britain.

In carrying out this programme of medical research, the Associate Committee had the co-operation and assistance of several hundred leading physicians and surgeons throughout Canada, who were keenly interested in this subject. Their able and willing contributions enabled the Committee to plan and direct medical research during the War on a high level of efficiency. Under the new arrangement the existing need for expansion can be met and continuity of research from year to year in selected fields will be provided for on a permanent basis.

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## NATIONAL INSTITUTE OF ECONOMIC AND SOCIAL RESEARCH

THE annual report for 1944-45 of the National Institute of Economic and Social Research\*, referring to the steps taken to execute the research policy for the immediate post-war years outlined in the previous report, refers to an inquiry into distribution for the planning, direction and organisation of which Mr. Hugh Weeks is responsible as chairman of a small technical committee. A second step is the decision to start a study of the building industry, for which purpose Mr. I. Bowen has accepted an appointment as research associate. The further development of the Institute's research policy depends upon the availability of trained applied economists who possess the experience and maturity for handling

large-scale projects. With minor exceptions, there have been in Britain no trained economists coming from the universities for five years, while the demand for applied economists is not falling off with the end of the War. The year that has passed since the Institute's post-war research policy was outlined confirms the prediction then made that demands for guidance would be made on an unprecedented scale.

A joint exploratory committee has been set up with representatives of the Institute of Chartered Accountants to investigate the field of work in which accountants and economists have a common interest and which would repay more detailed co-operative investigation. The first task of the committee is to explore the varying meanings and uses of terms such as 'income', 'expenditure', 'capital', 'saving', 'profit', 'loss', 'maintaining capital intact', 'stock valuation', and so on. At the end of 1944 the Institute intimated to the universities its desire to devote certain accumulated funds to university research in economics and allied social sciences in the United Kingdom during the post-war transition period; as a result it has been decided to adopt a scheme of senior research fellowships and grants-in-aid to operate over the next two years.

The second and third issues of the Register of Research in the Social Sciences were prepared and circulated, the response to the second register being very encouraging. Until June 1945 the Institute continued to provide secretarial and other facilities for the work of the National Service Committee for Social, Economic and Statistical Research, advisory to the Ministry of Labour. Inquiries completed for publication during the year and mentioned in the report include that of Prof. J. R. Hicks and Mrs. U. K. Hicks on the "Incidence of Local Rates in Great Britain", Prof. Sargent Florence's "Investment, Location and Size of Plant: an Inquiry into the Structure of Different Industries", and Dr. T. Balogh's "Studies in Financial Organisation".

Of major inquiries continued throughout the year, that on national expenditure, output and income, 1920-38, directed by Mr. Richard Stone, has resulted in two papers read to the Royal Statistical Society and an Occasional Paper, "Consumers' Expenditure in the United Kingdom, 1920-38; Interim Results and Analysis". The whole inquiry endeavours to present a consistent set of estimates of the components of the national expenditure, output and income over the period, and on the basis of this material to provide an economic analysis and interpretation of the changes which have taken place.

The investigations on the distribution of the product of industry under Dr. L. Rostas led to an Occasional Paper, "Productivity, Prices and Distribution in Selected British Industries". The ultimate purpose of the investigation is the analysis of the material collected to discover the dominant factors which determine distribution and prices in industry. Statistical investigations of prices, costs, distribution and productivity in different-sized units within selected industries have been made possible by the assistance of the Board of Trade. In the third major project, on the measurement of Colonial national incomes, Miss Deane is completing the work which can be undertaken in Britain and has prepared an Occasional Paper on the "Measurement of Colonial National Incomes: An Experiment". The next stage of the work will be a field study in Africa, for which purpose a Colonial research fellowship has been awarded to Miss Deane by the Colonial Office. Mr. R. Titmus's

\* National Institute of Economic and Social Research. Annual Report, 1944-45. Pp. 22. Publications and Programmes. Pp. 22. (London, 1945.)



inquiry into disease mortality and its changing distribution in England and Wales has now been entitled "Distribution of Health and Location of Industry", and a report on the findings is in preparation. "The British Banking System, 1939-45" will be ready for publication shortly, and the Institute has also been able to assist an inquiry into the influence of social factors on the infant mortality rates in England and Wales before the War. Although the first six months of 1944 constituted the most satisfactory period in the working life of the Library, considerable damage was caused to the material in it by the flying-bomb which wrecked the Institute's premises in July, and most of the material had to be stored.

A separate list of publications and programmes of the Institute dated September 1945 has also been issued. In Sections 1 and 2 of this pamphlet are listed the titles and authors of the books already published or in the press in the two series, Economic and Social Studies and Occasional Papers. Section 3, which gives an account of work in active preparation for the press, contains further information regarding the scope of some of those major research programmes which are sufficiently advanced to permit an account of the series of publications which they are expected to produce.

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## INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

### ANNUAL REPORT

THE recently issued annual report for the year 1944 of the Indian Association for the Cultivation of Science, in addition to the financial statement and accounts of the various funds and the budget estimates for 1945, includes a list of papers appearing in the four issues of the *Indian Journal of Physics* and the *Proceedings of the Indian Association for the Cultivation of Science* published during the year.

A report on the scientific work of the Association by Prof. K. Banerjee is appended, with a list of papers. Detailed studies on the extra reflexions in Laue photographs indicate that these reflexions may be divided into three classes. The first, which has been observed by C. V. Raman and by Lonsdale and Smith for diamond, by C. R. Bose and Prof. Banerjee for phloroglycinol dihydrate and by the latter and R. K. Sen for benzil, shows extremely sharp spots which fall off in intensity very slowly with increase of deviations from the glancing angles for Bragg reflexions. The second type of extra reflexion consists of sharp lines in the Laue photographs and has been closely studied in benzil, where the reciprocal lattice points have plane extensions. The third type is the very commonly studied type of diffuse reflexions. Investigations into the atomic arrangements of some organic crystals, including benzil and phenanthrene, by the method of Fourier analysis, are being made. Other X-ray investigations have covered the solid solutions of metals and salts in glass, indicating that the introduction of gold and platinum induces devitrification, while these metals enter into the glass in fine colloidal states.

The effect of change of wave-length of the exciting radiation on the fluorescence of naphthacene has been studied by exciting a crystal of anthracene containing traces of naphthacene, and it has

been shown that the positions and numbers of fluorescence bands do not change with wave-length of exciting radiation. The substance continues to fluoresce even when the wave-length of the exciting radiation is between that of the longest wave absorption band of anthracene and that of naphthacene in that material. It has also been found that the position and number of fluorescence bands of anthracene, perylene, phenanthrene and naphthacene in benzene are independent of the wave-length of the exciting radiation, and the longest wave-length in the absorption spectrum of a substance is its critical wave-length for excitation of fluorescence; the fluorescence becomes very strong when the exciting radiation lies in any absorption band of the substance.

The effect of solvents on the absorption and fluorescence spectra of naphthacene has also been studied, and Raman spectra of ethylene dibromide, ethylene chlorohydrin, propyl bromide and dichloroethylene have been investigated in the solid phase at the temperature of liquid oxygen as well as in the liquid state. Other investigations have covered the optical anisotropy of organic crystals such as anthracene, *m*-dinitrobenzene, tetrachloronaphthalene and phloroglucinol dihydrate; the magnetic properties of molybdenite crystals; and the Kerr effect in glass.

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## HEALTH SURVEY IN INDIA

THE Singur Health Centre, which is attached to the All India Institute of Hygiene and Public Health, Calcutta, carried out a general health survey of the Unions of Singur, Bora, Balarambati and Raganpur, a predominantly Hindu area of 33 square miles with a total population of 68,000 people, situated about 22 miles from Calcutta, during January-August 1944. The report of this survey, which is obtainable from the Institute, is summarized in an article in *Science and Culture* (11, 489; 1945-46) by Dr. R. B. Lal, who also addressed the Calcutta Rotary Club in February 1946 on the same subject.

The scientific worker of to-day, said Dr. Lal, is not content to wrest secrets from Nature; he also wants to know why the results of scientific research are not used to improve the lot of those masses of people who still live in a primitive way. Dr. Lal's efforts to establish a well-planned health service in the area surveyed will command the support of all public-spirited people.

The area is much overcrowded. About 65 per cent of the people have less than 36 sq. ft. of floor space and the housing conditions are poor. This probably accounts for the high incidence of hookworm disease, especially among males. Anæmia is a striking feature. The chief causes of death are dysentery, pneumonia, the typhoid fevers and malaria. The survey was carried out in a non-malarial season, but malaria needs special attention. *Anopheles philippensis* is believed at present to be the only vector of malaria in the area, but other species may also be involved. "The Bengal Famine does not seem to have affected this area in 1943 . . . but evidence of stress was seen later." Less than 50 per cent of the population are between the ages of sixteen and fifty-five, so that the active population includes children and old people. The proportion of active people is, however, low. In India as a whole, 44 per cent of the population contribute to the family income; but in Bengal only 29 per cent do so and in the Singur area 31 per cent; the difference is due to the fact that women in the