duced perhaps by excessive peristalsis due to the passage of the large amount of fæcal matter; (2) fatty acids produced by bacterial action on cellulose; or (3) bacterial synthesis. The fat itself is largely true' fat, for McCance[6] found little unsaponifiable matter present; moreover, I have found fairly close agreement between the fat determination by the van de Kamer and ether extraction Soxhlet methods, indicating the proportion of sterols, phosphatides, etc., present, to be very low.

(4) *Differences in fæcal fat excretion shown by humans on a standard diet.* From Table 1 it will be observed that the long-term subject, in the normal fibre intake and 60 gm. fat intake period, excreted 3·25 gm. fat daily. On returning to this diet, at the end of the investigation, it was found that the fat excretion remained steady at 2·8 gm. The same subject showed a 35 per cent change in fat excretion in an interval of four years when consuming the same test diet. This shows that changes in excretion do occur, although the assumption that the amount of fæcal fat excreted remains constant under ordinary dietetic conditions[5] may well be true for short periods. Sperry[11] found that the excretion of intestinal fat on a fat-free diet varied from dog to dog, and also in the same dog. It is therefore suggested that the wide differences in fæcal fat excretion found among humans on a standard diet[5,12] are due to differences in the amount of non-dietary fat excreted, rather than to differences in the capacity to absorb food fat. Of the non-dietary factors influencing the amount of intestinal fat excreted, little is known, though the work of Shapiro *et al.*[13], using labelled fat, suggests that alterations in the flow of bile may be of some significance.

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35/-

NUFFIELD FOUNDATION

PROSPECT AND RETROSPECT

THE fourth report of the trustees of the Nuffield Foundation* marks the end of the first planned period of the Foundation's activities. That period covers six years, of which the first (1943–44) was devoted principally to devising the programme to be followed in the next five. During these six years the Foundation has allocated grants of £2,124,175 from a total income of £2,712,838, divided among five main fields: £591,397 for the medical sciences; £289,750 for the natural sciences; £172,750 for the social sciences; £464,628 for fellowships and scholarships; £545,770 for the care of old people, while £59,880 went for miscellaneous projects outside the main programme. The present report is of exceptional interest not only for its appraisal of every major grant made during the period and the setting out of the principles of policy that have guided the trustees in their choice of projects, but also for the indication of their aims during the next quinquennium.

One of the chief objectives is, indeed, to promote not only the better investigation of problems but also the better integration of divergent specialized studies. Briefly, the policy in the medical sciences has been to promote the proper understanding, definition and maintenance, with the principal exception of rheumatism, rather than to seek cures for established diseases; in the natural sciences, to increase the resources available to man by fundamental research in physics; in the social sciences, to assist the disinterested study of human society and of men in society; in fellowships, to train promising undergraduates for teaching and research in subjects related to the Foundation's special interests and to develop a traffic of senior students and eminent men within the Commonwealth; in the care of old people, to survey and make known the needs of our increasingly elderly population and to create means to meet those needs. In furthering research and education in the medical, natural and social sciences, the Foundation has sought to select and support projects at the growing-points of each of these groups, with the motive of advancing knowledge particularly in those fields which seemed likely to yield some real improvement in the conditions of human existence. Mainly fundamental research has been supported, and for the next quinquennium the Foundation hopes to devote most attention to the advancement of biological and sociological studies which may contribute to the promotion of human health and welfare. In the field of biology, the Foundation will particularly welcome opportunities of supporting such studies as may increase our knowledge of the normal mechanisms of growth, differentiation and self-maintenance of living things. In the social sciences it is specially interested in bringing the non-economic studies—such as social anthropology or sociology in the narrow technical sense—up to the level of the more developed subjects like economics, and in increasing the integration of the various specialized subjects. In both fields the Foundation is prepared to support work aiming at the extension and application of known, and the search for new, aids to investigation.

Schemes likely to increase the number of able research workers in these fields of study or which would free existing research workers from unduly hampering and distracting commitments will also be considered, and the Foundation will try to assemble groups of experts in various subjects who are prepared to work together on the elucidation, by existing knowledge, of practical problems of far-reaching importance. Schemes of training fellowships and other awards will be continued, and the Foundation, through the National Corporation for the Care of Old People, will continue to contribute to their better care and the better satisfaction of their needs within the community. The Oliver Bird Fund will be devoted to fundamental research into the cause and nature of the disease-process of chronic rheumatism, and to an attempt under scientifically controlled conditions to assess the various known methods of alleviation.

* Nuffield Foundation. Report of the Trustees for the Year ending 31 March, 1949. Pp. 128. (London: Nuffield Foundation, 12 Mecklenburgh Square.)

Reviewing the grants for the natural sciences, the report notes that a total of £193,000 has been offered to five university departments for the early rebuilding of vigorous research teams backed by skilled technical services. At Birmingham, under Prof. M. L. E. Oliphant, the grant of £25,000 over five years has helped the Department of Physics to develop a new type of accelerator for producing very energetic protons for research in nuclear physics and to design apparatus and experimental procedure for accurate observation of the scattering of these particles. A grant of £60,000 over six years to the University of Glasgow has led to the development under Prof. P. I. Dee of an active school of research in the Department of Natural Philosophy, where a 300-million volt synchrotron is being built and a 30-million volt synchrotron for high-energy gamma rays and a million-volt D.C. generator for the acceleration of protons and deuterons have been installed. A further £1,750 has been added to the original grant of £25,000 for the biomolecular research laboratory under Prof. J. D. Bernal at Birkbeck College, London, where promising results have already been obtained on the enzyme ribonuclease and the virus of turnip yellow disease. A fine-focus X-ray tube has been developed for the study of very small crystals of biological origin and the first stage of work on optical focusing of X-rays completed. Work financed by a grant of £64,000 over eight years to the Clarendon Laboratory, Oxford, on the properties of matter at the low temperatures obtainable with liquid helium has been of special interest in the development of the theory of liquids, and that on the thermal conductivity of glass has led to results of theoretical and practical importance.

Besides the work in metallurgy at the Cavendish Laboratory, Cambridge, under Dr. E. Orowan's fellowship, the Foundation, in co-operation with the Institution of Mining and Metallurgy, has offered £20,000 for the endowment of a team of research workers under a suitable leader. Under the grant of £10,000 for five years, two studies are in progress at Cambridge, into water-flow in soils and into the mechanics of soil disturbance by the passage of agricultural implements. The two new grants made during the year are £2,000 to the Department of Human Anatomy, Oxford, for optical equipment for research on the biological applications of the reflecting microscope and £1,000 for a pilot survey in the north of England and in Inverness to discover how much information can be obtained from past and current records at the blood-transfusion centres, how best to handle the material, what is the scientific value of the results, and how the present registers of donors could be modified to make them as useful as possible for research purposes.

Reviewing grants to the medical sciences, the report points out that the industrial health and rehabilitation service started at Slough two years ago is linked for the prosecution of research in occupational health with the Universities of Oxford and London, and it is this aspect of the service's work that the Foundation's grant of £15,000 over five years is intended to support. Ultimately the Slough service may demonstrate a model for any industrial health service for small factories which the Government may plan to supplement the National Health Service. Besides £31,000 for training fellowships and scholarships in dentistry, the Foundation has made grants totalling £90,000 to four university schools to improve the scientific quality of dental research and teaching. The student health survey at the Institute of Social Medicine, Oxford, for which £10,000 was provided, has already revealed the risk of infection from previously undiscovered cases of active pulmonary tuberculosis present in the student community. Under the grant of £100,000 over ten years to the University of Manchester for research in chronic rheumatism, the clinical side of the work is now fully organised, and clinical research includes a controlled study of the value of X-ray treatment in ankylosing spondylites, and a parallel series of injection treatments in rheumatoid arthritis. Physiological studies are concerned with the genesis of pain. A grant of up to £2,090 has been made to enable the rheumatic unit in the Department of Medicine, Edinburgh, to engage whole-time staff for therapeutic trials, and one of £3,832 to the University of Manchester for the investigation of nasal catarrh has indicated the importance of allergy as the cause of many chronic cases.

In the field of social sciences, a grant of £10,000 to the Department of Applied Economics, Cambridge, for five years from 1946 is being used for research fellowships, while £1,000 a year for three years has been offered to the International Association for Research in Income and Wealth. The grant of £3,000 a year to the National Institute of Economic and Social Research has been renewed for a further five years, and a further £5,000 has been offered for social as distinct from economic research. A new grant of £5,000 payable over four years was made to the Northern Industrial Group for the expansion of its social and economic research, and a geographer and an economist have already commenced a study of West Durham. A five-year grant amounting to £15,000 has been made to Political and Economic Planning for further pioneering in that field, while a grant of £25,000 to the Population Investigation Committee has enabled that Committee to conduct demographic studies in Great Britain and other countries and to initiate field-inquiries into the maternity services and into the trend of intelligence among Scottish children. A grant of £10,000 was made to the Institute of Advanced Legal Studies, London, for a Nuffield Library of British Commonwealth law books, and another of £10,000 to the Administrative Staff College to be used over five years for waiving fees in approved cases.

The medical fellowships scheme is to be continued into the second quinquennium; but the fellowships are now open to the whole field of medicine, though the bias towards social medicine, child health, industrial health and psychiatry remains. Four fellowships in chronic rheumatism have also been awarded. The dental fellowships scheme is also being continued in the second quinquennium and effect is being given to a scheme for the direct exchange of a few American and British medical and psychiatric social workers. The visits of the first panel of medical visitors to the Colonies have been completed and the panel chosen for the second year. During the year, with the help of the Foundation under the scheme of visiting lectureships, Dr. J. Hammond and Prof. D. M. S. Watson have visited South Africa; Sir John Cockcroft is visiting South Africa, and Prof. C. E. Tilley, New Zealand. The fellowship and scholarships scheme for the advancement of extraction metallurgy provides a two-way traffic throughout the Commonwealth and Empire, and there are also two main schemes for Dominion travelling fellowships open to Canada, Australia, South Africa and New Zealand. The grant

for research on ageing to the Department of Psychology, Cambridge, has been renewed for a further three years, and Dr. T. Howell's work on the pathology of ageing and especially investigations into the incidence and manifestations of chronic bronchitis have been assisted by grants totalling £2,300 over three years. Grants made before the formation of the National Corporation for the Care of Old People are reviewed, and of the Foundation's grant to the Corporation, £440,000 has been found from income to date and the remaining £60,000 will be provided from the income of the first two years of the quinquennium. A grant of £4,000 was made to defray the expenses of the official delegates to the inter-Commonwealth conference of universities, and grants totalling £14,000 for five years were offered to enable the Caldecott Community in Kent to open an experimental reception centre for homeless and insecure children, while £9,000 has been granted to the Commonwealth (Agricultural Bureaux) Potato Collection for new greenhouses and laboratory.

RESEARCH COUNCIL OF ALBERTA

ANNUAL REPORT FOR 1948

THE twenty-ninth annual report of the Research Council of Alberta for the year 1948* includes the customary list of members and of staff and of publications of the Council. The bituminous sand studies were prepared for publication; but the separation plant at Bitumount was not put into operation, and although further work was done on the role of bituminous sand in the hot-water separation process, the study of the applicability of the general method of water-flooding to recover oil from the bituminous sands has been concluded as of no practical value.

The chemical and physical survey of Alberta coals continued, and it has been observed that the capacity-moisture contents of Alberta coals appear to follow a step-wise course, as the carbon contents increase and the oxygen contents decrease from immature to mature coals. The principles of operation of the New Stansfield report for low-temperature carbonization of sub-bituminous coals have been established, and investigations have been started on the briquetting quality of local asphalts and on the production from slack coal of a product suitable in size and quality for domestic and industrial purposes without the use of pressure.

The scope of the Gasoline and Oil Testing Laboratory was broadened to include the analysis of all types of petroleum products except greases. In the geological field, the principal projects were a search for high-grade clays and a detailed survey of mineral resources in specific areas with emphasis on water supply. A systematic study was made of soil conditions and the densities secured with the construction procedures being used on three new highway jobs.

Testing of catalysts for use in the synthesis of liquid fuels from carbon monoxide and hydrogen was discontinued in May 1948; but the Council will keep in touch with work being done elsewhere on the Bergius and the Fischer–Tropsch processes and on the gasification of coal for the synthesis process. A study of under-employment in the Alberta coal industry was commenced in May 1948, the soil survey of the Peace River district was continued and also the physical and chemical studies of wheat and oat straws; while the investigation of industrial processes that may be suitable for introduction into Alberta continues to be an important feature of the work of the Council.

* Research Council of Alberta. Report No. 54: Twenty-ninth Annual Report of the Research Council of Alberta, 1948. Pp. 27. (Edmonton, Alba.: King's Printer, 1949.)

RECENT EARTHQUAKES

DURING the period June 1–September 30 there were about forty major earthquakes, 140 moderate ones and some minor activity. The two greatest shocks during the period were probably those on July 10 in eastern Turkestan and on August 22 off British Columbia. Both reached instrumental magnitude 8. The former took place at 03h. 53m. 36s., G.M.T., from a focus with epicentre near lat. 39° N., long. 71° E., and was followed on the same day by four strong aftershocks and two moderate ones. The latter, at 04h. 01m. 12s., G.M.T., on August 22, took place from a focus with epicentre near lat. 54° N., long. 133° W., and was felt over a wide area in British Columbia. Minor damage was done. The earthquake caused a seismic sea-wave or *tsunami* which attained a height of two feet at Ketchican, Alaska, and for this earthquake the Hawaiian seismic sea-wave warning service was brought into operation (see *Nature*, October 1, p. 560). The shock of deepest focus for the month happened on June 12 from a focus 600 km. deep with epicentre near lat. 27° S., long. 64° W., in northern Argentina. An aftershock the next day with the same epicentre took place from the same depth of focus.

An earthquake on July 23 from a focus with epicentre near lat. 38·5° N., long. 26·5° E., near the west coast of Turkey was destructive in Izmir and Karaburin and in the island of Chios. In Chios four people were reported killed, fifty injured and more than two hundred houses destroyed. The shock attained instrumental magnitude 7. The earthquake in central Ecuador on August 5 (see *Nature*, August 13, p. 266) attained instrumental magnitude 7. On August 17 an earthquake with instrumental magnitude 6½, having an epicentre near lat. 39° N., long. 40° E., caused the deaths of 320 people, chiefly in the districts of Karliova and Bingol in north-eastern Anatolia.

In England on June 23 at about 8.14 p.m. and again at about 10.14 p.m., British Summer Time, the inhabitants of the districts around Queen's Cross, Dudley, Brierley Hill, Stourbridge and Wolverhampton felt earth tremors which were also recorded on the seismograph at Hagley belonging to Mr. H. V. Shaw.

Readings from seismograms have been received from the United States Coast and Geodetic Survey in co-operation with Science Service, the Jesuit Seismological Association (St. Louis, U.S.A.), Strasbourg and Zurich, and also from individual stations at Aberdeen, Belgrade, Cleveland (Ohio), De Bilt (Netherlands), Durham, Edinburgh, Kew, Stuttgart and Toledo.