

can have no scientific basis for the proper management of grassland as feed for animals. He praised very highly the pioneer work of Hosier with his milking bails, and went on to say that a two-compartment system of agriculture, based on huge areas in permanent grass and rough grazings, and lesser areas in arable land, affords the minimum of insurance against weathering catastrophe, and makes impossible a virile and adventuring agriculture throughout the country.

Mr. James Mackintosh said that the chief change in dairying has been the increase in the demand for milk for liquid consumption. In 1875, Morton estimated that only one third of the milk produced in England and Wales was used for liquid consumption. Rew, in 1892, raised the proportion to two thirds. In 1938, of the total milk production, some 68 per cent was consumed as liquid milk, and in 1943 no less than 90 per cent was directed to the liquid milk market, and only 10 per cent was made into produce. Mr. Hudson has now said that another 350 million gallons a year will be needed before rationing of milk can be discontinued. Mr. Mackintosh discussed in turn such influences on milk production as the introduction of imported foods, of improved methods of feeding, of modern methods of housing milking cows, of milk recording, and of regulations made by Government and other bodies. This was a comprehensive and very much appreciated review of progress and development.

Prof. R. G. White, dealing with British livestock during the last fifty years, believes that the most obvious advance has been in the control of disease, particularly with regard to sheep. He referred to the influence exerted by the importation of cheap phosphatic fertilizers for grassland, and of cheap feeding stuffs, on livestock, and also on the effect of changed standards of living. He commented on the fact that although Great Britain is a relatively small country, there are a large number of local breeds of sheep and cattle; while he does not see any great need for starting new breeds, he would be sorry if any of the old local breeds disappeared before we obtained much fuller information than we have at present about them and their suitability for their special environments and functions. He, too, spoke of the striking development of milk production, saying that fifty years ago about 20 per cent of our cattle were of the purely beef type, and less than 10 per cent of the purely dairy type. Now, he estimates, the figures are 25 per cent purely dairy and 15 per cent purely beef. On the subject of breeding, Prof. White said that as regards the immediate major problems of breeding policy we can still do nothing better than follow on the lines of Bakewell, nearly two hundred years ago—ruthless selection, inbreeding, followed by more ruthless selection and progeny testing. We have, however, a great advantage over Bakewell in that we understand to a great extent the effect of inbreeding. We know its value, and we realize the dangers and obstacles which are to be avoided.

A paper by Mr. E. L. Crossley described the way in which spray-dried milk powder, the demand for which in war-time has enormously increased, has been packed so as to stand up to tropical conditions for a much longer period. Specially made tins are exhausted of air after being filled with milk powder, and then supplied with nitrogen gas at a pressure of 2 lb. per sq. in. The process is simple in theory, but in practice many difficulties have to be overcome,

for the vacuum employed is a low one, and the nitrogen itself must be of at least 99.7 per cent purity. This gas-packing process has extended the keeping quality of full-cream spray-dried milk to seven years in temperate climates and to at least three years in the tropics.

Mr. V. C. Fishwick submitted data from experiments with pigs to show that nutrition during the early life of the piglet has a considerable influence upon the breeding capacity and milk production of the gilt. If she is badly fed during the first twelve weeks of her life, she is liable to develop a short frame and a heavy fore end, and her capacity to produce pigs and milk is liable to be reduced. These conclusions can probably be applied to other farm stock; he suggested that the high price of milk encourages calf rearsers to use little milk and unsuitable calf-rearing substitutes, so that the calves are raised on too low a plane of nutrition, with detrimental results on the animal's capacity to produce milk.

An unusual case of crop failure due to the presence of excess amounts of zinc in the soil was described by Mr. F. Knowles. A field in Essex had apparently been used as a dump for the disposal of dross from a munitions factory operating during the War of 1914–18, and when ploughed up for cropping during the present War, cereals and other crops would not grow. The trouble was traced to large amounts of zinc and copper in the soil, and experiments made in pots and in the field showed that the trouble could be overcome by liming the ground. Prof. T. Wallace contributed a paper summarizing our present knowledge of mineral deficiencies in soils and crops.

Other papers were read by Mr. F. H. Garner and Dr. Dillon Weston on the growing of field beans and on the fungus diseases to which the crop is subject. There was also a useful discussion in the Biology Section on modern methods of pasture evaluation, the principal speakers being Mr. William Davies and Mr. J. Lambert, of the Grassland Improvement Station, Stratford-on-Avon. A small committee was set up to go thoroughly into the question of technique.

THE BRITISH COUNCIL ANNUAL REPORT

THE annual report of the British Council for the year ended March 31, 1944, covers the tenth year of the Council's work and indicates not only the part the Council has played in the war effort but also its value as an instrument for the no less difficult days of peace to come. Cultural relations are not competitive but reciprocal, and no Government can look with equanimity on the prospect after the War of international competition in this field.

The British Council, with the President of the Board of Trade, initiated a Conference of Allied Ministers of Education in London, and with the Board has borne the burden of its administration, and will continue to do so until it can hand over such responsibilities to a United Nations organization. Plans for providing schools and universities with the necessary books, stationery, laboratory apparatus, radio sets and film projectors were among the subjects discussed by the Conference. Four lines of development are picked out for special mention in the report: the start of effective work in China, the increasing importance of medicine, the growing interest in British music and the services rendered to the Armed Forces

of the United States of America in Britain. In connexion with the first, the report pays a well-deserved tribute to Dr. Joseph Needham, who has been working in China for the past eighteen months. Of these developments, those in regard to medicine, more particularly in contacts in this field with Turkey and the U.S.S.R. and the work in China, are the features of primary interest to scientific workers. The report notes that the Americans in Great Britain are making considerable use of the Council's facilities for professional contacts.

With regard to activities in the British Commonwealth and Empire, the appointment of Sir Harry Luke to the West Indies and of Prof. William Macmillan to West Africa has meant the beginning of serious work. Mr. Malcolm Guthrie has completed the preliminary survey of East Africa. At Malta a new institute was opened in the island of Gozo by Lord Gort. In the British West Indies, the circulation of *Monthly Science News* was largely increased, and the *British Medical Bulletin* was distributed to leading medical men in the area. An extensive library scheme is being sponsored for the islands with Trinidad as the centre.

A visit of British surgeons to the Soviet Union was sponsored by the British Council together with the Medical Research Council, and arrangements were made by the Medical Department of the former. American and Canadian authorities were represented. The visit gave many opportunities for the exchange of information on Soviet and British surgical methods and medical research, and the Mission was particularly impressed with the Soviet hospital organization and methods, and with the practice of early specialization in dealing with war casualties and the extremely efficient arrangements for blood transfusion. Books on many subjects have been dispatched for presentation to Soviet institutions, and further supplies of scientific material were sent to the scientific, agricultural and medical sections of the V.O.K.S. More than a thousand reprints and papers published by British scientific men during the past four years have been forwarded, and steps have been taken to centralize in the Science Museum Library, at South Kensington, London, any Russian scientific material received in Great Britain*.

By the summer of 1943, the Council was able to commence work in North Africa, and the supply and dispatch of more than 65,000 volumes of British books to libraries in Algeria, Morocco and Tunisia has been arranged. Events have made the Council almost the only means of cultural contact between Britain and Sweden, and difficulties of transport from September onwards did not prevent its work from rapidly increasing. The exchange of periodicals, mostly scientific, between Britain and Sweden is considerable, and would be much larger if transport allowed; transport also limits the contact between Britain and Sweden in the field of research. Sir Lawrence Bragg, the only lecturer from the Council to visit Sweden during the year, proved a most popular visiting lecturer and spoke on electron microscopy at four university centres and to five Anglophil societies. Dr. Dudley Cheesman gave a series of lectures on scientific development in Britain at the Wenner-Gren Institute.

The Council's work in Turkey continues to expand proportionally. The number of British professors holding chairs at the University of Istanbul, on the

* Russian periodicals received at *Nature* office also are eventually sent to the Science Library.

recommendation of the Council, is now ten, and there are three at the University of Ankara (see *Nature*, October 21, p. 509). The expansion in teaching was accompanied by an extended programme of special lectures, and the Council had four distinguished visiting lecturers in Turkey during the year—Dr. B. Ifor Evans, Dr. H. R. Hamley, Dr. S. J. Davies and Mr. J. Steegman. A Turkish version, translated locally, of the *British Medical Bulletin* was published for the first time during the year, as well as a locally compiled and translated *British Engineering Bulletin*, *British Agricultural Bulletin* and *British Law Bulletin*.

In pursuance of the valuable but difficult project of translating British Standard Specifications into Turkish, B.S.S. No. 132 (Steam Turbines) has been published in England during the present year. Six further specifications have been approved for translation and are completed and awaiting publication, and the translation of fourteen other specifications is being technically checked. Three distinguished Turkish medical men, Prof. B. Tugan, Dr. Avni Aksel and Dr. B. N. Taskiran, visited Britain as the Council's guests and inspected various aspects of medical organization and research.

The Anglo-Egyptian Union is so successful that membership has had to be restricted owing to the lack of accommodation. Membership of the Council's Centre in Brazil increased by fifty per cent during the year, and the distribution of *Monthly Science News* has now risen to 4,000 copies, with large numbers of new requests.

The report includes the full results of Dr. Joseph Needham's valuable scientific work in China; Mrs. Needham later joined her husband. The activities of the Council's cultural scientific position in China commenced on February 24, 1943, when Dr. Needham reached Kunming (Yunnan). Within a fortnight of his arrival, it was reported that co-operation with scientific organizations and individuals had begun and that he had visited more than a dozen universities and research institutes and factories in the vicinity, lecturing on his own field and on topics of general scientific and social interest. Three weeks later he reached Chungking, and on April 3 submitted to the British Ambassador a detailed memorandum on Sino-British scientific relations and cultural co-operation, setting forth the services which might be rendered by a science co-operation officer in China, outlining the possible future developments of such an office and raising the question of technological, as distinct from cultural scientific, aid from Britain to China. Academia Sinica has now agreed to second a scientific worker to assist in matters relating to the Cultural Scientific Office, and the Ministries of Health, National Scientific Resources, Agriculture and Education are willing to co-operate. Dr. Needham left Chungking on August 7 on a round trip of 4,000 miles and has now visited more than a hundred scientific institutions in China. Since returning to Chungking he has continued the work of organizing and developing the Cultural Scientific Office. Dr. Needham's valuable and interesting articles published in *Nature* during the summer of 1943 are evidence of his activities.

Of great importance to the Chinese war effort and for the development of all branches of science in China is the supply of information and constructive ideas on the problems arising in pure and applied science. The Council's Office constitutes the link between the Chinese Ministry of Health and the

Medical Research Council in Great Britain, between the Chinese Ministry of Economics and Natural Resources and the Department of Scientific and Industrial Research, etc.

A fund has been set up in India for the maintenance of a Scientific Supply Service, so that the essential needs of Chinese research institutions, etc., many of which are engaged on war work, may be met. Six copies of current issues of some seventy-five British scientific journals are regularly sent to China for distribution by the Cultural Scientific Office, and it is hoped to arrange for a Chinese edition of *Monthly Science News* to be published in Chungking. *Monthly Science Abstracts and Reviews* and copies of *Endeavour* are distributed through Academia Sinica. Six positive micro-film copies of each of these seventy-five scientific journals are being sent regularly to China for distribution by the International Committee for the Supply of Scientific and Cultural Reference Materials, and this organization also handles all American supplies of micro-films. British scientific films are being supplied to the Department of Educational Cinematography of Nanking University, and a number of offprints of scientific papers from British journals have been transmitted to China at the author's wish or on request from Chinese workers. The number of text-books and monographs on scientific subjects which have reached China in response to requests passed on by the Council's Office runs into hundreds. Thirty manuscript papers in English by Chinese workers have been submitted for publication through the Chungking Office to editors of British scientific journals, and a panel of translators from Chinese to English has been assembled so that scientific papers of special interest can be translated or abstracted. A grant has been made for the preparation of abstracts in English of Chinese publications on chemical matters, and at least four hundred current Chinese scientific publications have been distributed through the Council to British scientific workers and science libraries. A science news letter, *Acta Brevia Sinensia*, giving an account of current Chinese scientific activities, is duplicated and distributed by the British Council in Great Britain. Prof. E. R. Dodds returned from China in the summer of 1943 after a successful tour of the university centres. Mr. E. Hughes has been in China since May 1942 and was remaining until the end of September 1944. Prof. W. L. Renwick, who reached China more recently, has already submitted a report on the fine arts in China.

WORK OF THE ROYAL ARMY VETERINARY CORPS

MAJOR A. V. FRANKLIN, writing in the *Veterinary Record* (447, Nov. 18, 1944), tells one of the most interesting and humane stories of this war. As a result of the progressive mechanization of our armed forces before the War, the Royal Army Veterinary Corps was very considerably reduced, and some prophets decided that it would never be revived. How wrong they were they will learn from Major Franklin's article. When a cavalry division was formed for service in Palestine, veterinary units of the Royal Army Veterinary Corps were organized to attend to its animals. Mobile units were also serving, at the outbreak of the War, the two cavalry

regiments stationed in Palestine. Other veterinary units were attached to Indian and Cypriot mule pack transport companies operating in France. This was the extent of the British Army veterinary services until the end of 1940.

In 1941, however, a striking change occurred. The duties of the Army Remount Service were transferred to the Royal Army Veterinary Corps, which thus undertook the purchase, training and maintenance of animal reinforcements, as well as the care of the animal sick and injured. In the difficult country of Eritrea and Greece, where pack animals played such an important part, the Royal Army Veterinary Corps had ample opportunity to prove its efficiency. In Greece many veterinarians were taken prisoner and some heavy casualties were incurred. One of the saddest tasks was the rescue, by the mobile section stationed at Alexandria, in veterinary charge of the Polish Carpathian Brigade, of hundreds of mules in the North African desert. The Italians fleeing before Lord Wavell had left them there without food, water or attendance and their condition was deplorable; but they were soon restored by proper veterinary care. In Syria, several regiments of yeomanry operated with their own veterinary officers and also two mobile veterinary sections. It was here that the Royal Army Veterinary Corps showed the efficiency of its remount organization. Horses of all kinds were taken over from the Vichy French, classified, examined for disease, branded, shod and generally conditioned before they were re-issued for service with the Allies. Here also many horses and mules were found deserted by their attendants without food or water and often in a pitiable condition. While this task was being completed, yeomanry and cavalry regiments were being mechanized and their horses were taken over and trained for transport work.

In 1942, the Royal Army Veterinary Corps was given the task of meat inspection and administration of the livestock depots from which the Army's meat supply was derived. The stock were inspected both before and after slaughtering, and this service was so beneficial that it was extended throughout the Middle East. The existing slaughter-houses were often so insanitary that the Royal Army Veterinary Corps designed and built new ones with adequate rail and road facilities. The serious danger of transmission to man of certain animal parasites which are very prevalent in bovines was removed. Later, the Corps undertook the actual selection of the beasts provided by local contractors, who soon learnt that inferior stock would not be accepted. Often, indeed, they could not supply beasts of sufficiently high quality, and the Royal Army Veterinary Corps established its own livestock depots, first in Syria and later throughout the Middle East, in which cattle, sheep, goats and pigs were reared and supplied to the Forces. Patients in the hospitals received white meat in the form of rabbits from the Corps' rabbitries. One of these depots, carrying a stock of 1,500, was able to produce 150 animals a week. The commanding officer of this depot has reported that, in Syria, parasitic disease in sheep and goats caused the deaths of one million animals in one winter alone, a loss which amounted to three million pounds sterling, or one quarter of the annual budget of the country.

In Italy, the Royal Army Veterinary Corps had perhaps its most difficult task. Many of us have heard about the mules used in this extraordinary campaign; but we have not all realized how much our men