THE INTERNATIONAL EDUCATION BOARD

BY R. WEATHERALL,
ETON COLLEGE

THE International Education Board was set up in 1923. The idea behind it was to help to make good some of the ravages of the War of 1914–18. The money, which amounted in all to nearly twenty-eight million dollars, was provided by John D. Rockefeller, jun., who with characteristic modesty imposed no conditions on the manner in which it should be spent, except that it should be used for "the promotion and advancement of education throughout the world.*" The inspiration with regard to the policy which should be followed came almost entirely from the late Dr. Wickliffe Rose, under whose guidance the Board has achieved something which for its breadth and diversity must be unique in the technical progress of the world.

What is education? In Rose's mind it became for the most part, not the dissemination of certain accepted ideas and cultural patterns, for that he felt might well be left to the various national Governments, but the desire to forward the understanding of the natural world by the best possible means. The claims of educational training, particularly training for agriculture, were not overlooked, but they played a subsidiary part in the comprehensive scheme which he put forward for the support of the best research institutions and the most promising scientific workers, whose work was being held up for lack of funds. His primary object was to add to the total stock of human knowledge, and his scheme he looked upon as "tactics in the campaign against human ignorance." No considerations of national prestige were allowed to stand in the way, and except for agriculture, no attempt was made to strike a balance between the competing claims of the different branches of science, for in Rose's view, "all knowledge is inter-related, and if we help in any one field we help in all the others." So it came about that the greatest scene of the Board's activities lay in Europe, including the British Isles;. but a small number of individual projects in the United States received some of the largest grants, while smaller ones found their way to such places as South Africa, China, the Philippines and New Zealand.

In all, "fifty-seven universities, research centres, and other institutions were provided with new buildings, equipment, endowment and other material aids; and 603 individuals, chosen for their promise of future usefulness, were assisted in their higher education, given opportunity to study under world authorities in their chosen fields, introduced to new pastures of research under conditions which at the time seemed favourable to their development. Through grants for these various purposes, thirty-nine countries, representing Europe, Africa, Asia, Australasia, and the Americas, were aided."

A visit of Dr. Rose to Europe in 1923 initiated a scheme under which the whole world, but particularly war-worn Europe, was scoured for young scientific workers showing exceptional promise, whose studies were held up through lack of means. After careful scrutiny these were granted travelling fellowships for a year, which enabled them to profit by the best scientific experience available in the world in their own particular line. Within the five years, 1923–28, an exchange of workers and of scientific ideas took place on an unprecedented scale.

But this scheme of fellowships in science would have been held up by the cramped facilities existing in many of the leading research institutions. Realizing this, the International Education Board made available large sums to be spent upon buildings, equipment and endowment. One of the first institutions to benefit in this way was the Institute of Theoretical Physics at Copenhagen, under Niels Bohr. There facilities for research and for teaching were greatly augmented. Grants from the Board also made it possible to provide new accommodation for the Institute of Physical Chemistry at Copenhagen, where J. N. Brönsted had won international fame, and had attracted many students from foreign lands.

The University of Göttingen received very material help. Its pre-eminence lay in the spheres of physics, mathematics and mathematical physics. In 1926 assistance from the Board led to the enlargement of the Physical Institute, and enabled a large number of visiting students to work under the distinguished leadership of James Franck, Max Born, and Robert Pohl. The same year also saw a considerable sum going to build and equip a new Mathematical Institute, which provided far better facilities for the work and teaching of such distinguished mathematicians as Hilbert, Hermann Weyl, Richard Courant, Landau, Herglotz, Felix Bernstein, Paul Bernays, Otto Neugebaur, and

* Education on an International Scale: a History of the International Education Board, 1923–1938. By George W. Gray. Pp. xiii+114. (New York: Harcourt, Brace and Co., Inc., 1941.) 2 dollars.

Emmy Noether. Thanks to the International Education Board, Göttingen became truly pre-eminent in its own particular field.

Proceeding along the same lines the Board came to the aid of the laboratory for low-temperature research under Kamerlingh Onnes, at Leyden, and supplied much-needed equipment with which The Svedberg of the University of Uppsala might pursue his investigations into protein structure. In Paris the Board founded and endowed a professorship in mathematical physics, and allotted further sums for the erection and upkeep of the Institut Henri Poincaré. One small donation, with pleasant associations, amounting to five hundred dollars a year, for a short period provided Einstein with the services of an assistant in making a fresh approach to the mathematics of the quantum theory.

In Stockholm grants from the Board completed the sums necessary for the erection of a Biological Institute. These grants were forthcoming chiefly because of the distinguished contributions which von Euler had made to the chemistry of fermentation. The Board also made itself mainly responsible for the finance of the new Institute of Cosmical Physics at Tromsö, for the Institute of Physics and Chemistry at Madrid, and for the new research outpost of the Jungfrau High Altitude Institute on the Sphinx, the rocky spur adjoining the Jungfraujoch in Switzerland. Much attracted by the zeal and energy of Prof. José Castillejo, Dr. Rose placed great hopes on the new Institute in Madrid. Smaller subventions went to the Universities of Utrecht, Vienna and Warsaw.

In the field of astronomy a comparatively small sum financed the preparation of a bibliography of books, papers and other publications in all languages referring to the minor planets. A considerably larger grant was made to Harvard University to be spent in moving the southern astronomical station from Peru to Mazelspoort, near Bloemfontein in South Africa, and for improving its equipment. There the 60-inch Rockefeller reflector was erected, and as a consequence, the surveying of the southern stellar hemisphere, and in particular of the outer galactic systems, has been considerably extended, to the tune of about five thousand photographic plates each year now pouring into Harvard from South Africa.

But perhaps the one project which will endure as the most symbolical monument to the policy and achievements of the International Education Board is the 200-inch telescope on Mount Palomar. This project required boldness in its conception, it needed very careful preliminary survey work, it depended upon the solution of many intricate problems in applied physics, and it could be carried through only with the expectation that large sums would be forthcoming to bring it to completion. Six hundred thousand dollars, for example, were spent on experiments with fused quartz for the mirror before the decision was reached to use a special form of Pyrex glass. As a result of careful estimates the International Education Board decided in 1928 to set aside six million dollars for the whole project, including the necessary housing and site, as well as the astrophysical laboratory and shops at Pasadena. Of this sum a balance of four hundred thousand dollars remained unspent at the beginning of 1941 to meet the final expenses of construction and installation: fine testimony to those who drew up the original plans.

The biological sciences were not neglected. At the same meeting at which it was decided to finance the 200-inch telescope, a large-scale building programme was agreed upon to bring all the scattered and greatly overcrowded faculties in botany, zoology and general physiology at Harvard University into one single Department of Biology. Not only were material facilities greatly increased and given new dignity, but the co-ordination of these allied branches of biological science promises to have far-reaching results. Mainly at August Krogh's instigation, something similar had been achieved some years earlier at Copenhagen, where grants from the Board assisted in the foundation of an Institute of Physiology to serve for the study of physiology, biochemistry, and biophysics. Thus Copenhagen received assistance from the Board for three separate institutes, each world famous.

Edinburgh was the recipient of generous donations from the Board for its Department of Research in Animal Breeding under F. A. E. Crew; and for housing and equipping the Zoological Laboratories on a new site. The Jardin des Plantes in Paris was given a grant for the re-housing of its priceless herbarium. Assistance was given to the Marine Biological Station at Naples to get it going again after the disturbances of the War of 1914–18, and smaller donations went to the Marine Biological Station at Plymouth, the Botanical Conservatory of Geneva, the French Society of Biology at Paris, the University of Utrecht and the University of Cracow.

Even the claims of scientific publications were not overlooked. A grant was made to the University Foundation in Belgium to help in making good the losses in books and periodicals suffered in the War of 1914–18. Funds were also made available to nurse a number of technical journals in Italy through the critical post-war years. A grant to the International Bureau of Weights and Measures provided an important new measuring instrument, a set of reference books, and a much-

needed addition to its overcrowded building. Similar grants assisted in the publication of two volumes of the Annual Tables for the International Committee of Annual Tables of Constants and Numerical Data in Paris, and for a set of International Critical Tables for the National Research Council in the United States.

In agriculture alone was any attempt made to finance broad experiments in education. Based upon what had already been achieved in the United States, the first of these projects to be set going was a scheme of rural clubs in Denmark. This included farm clubs for boys, and similar ones in gardening and domestic economy for girls and women. Within a short time requests were received to establish schemes in Sweden and Finland. Help was also forthcoming for the Village Association in Hungary, and for the Fram-Kursus Institute in Oslo, which provides correspondence courses in forestry and agriculture. But in the sphere of agriculture a far wider range was achieved through the system of travelling professorships and agricultural fellowships. These together covered thirty-nine countries, and five States in the United States, ranging as far away as China and New Zealand. Some of these fellowships were arranged on an exchange basis, with most happy results.

The University of Cambridge received most generous treatment from the Board. Preliminary plans to finance a Department of Entomology were expanded to cover the extension, rebuilding, equipment and support of laboratories for agriculture, and the associated sciences of botany, physiology and zoology, in a co-ordinated scheme. To round off its benefactions to Cambridge, which in all totalled nearly three million dollars, the Board gave a handsome donation to the new University Library.

One promising development was the sponsoring of a co-operative undertaking between Cornell University and the University of Nanking. Cornell agreed to assign each year one of its professors in the Department of Plant-Breeding to spend several months at Nanking, and the International Education Board met all expenses not otherwise provided for. This arrangement came to an end in 1931, by which time trained Chinese workers were available, and the idea of scientific crop improvement had spread to other parts of China.

Other donations for agricultural purposes included sums to enable the International Institute of Agriculture in Rome to carry through the world census of crops and livestock in 1930, and to extend its library facilities. A small donation made it possible for J. O. Veatch to make a detailed demonstration soil survey of a certain part of Scotland. Assistance was also forthcoming for agricultural institutes in Poland, Hungary, and Austria; for the Agricultural College at Hohenheim in Germany; for the Willie Commelin Scholten Laboratory at Baarn, Holland; for the Central Institute of Agricultural Research at Stockholm; for the Institute of Agronomical Research at Paris; and for Rothamsted Experimental Station at Harpenden. A grant to the University of Sofia completed the sums necessary for the erection of a College of Agriculture, which at the beginning of the present War was the "most competent and active outpost of scientific agriculture in the Balkan States."

The humanities were not forgotten, but the policy here was to make large grants to three selected institutions. One of these grants went to the American Academy in Rome, and was used for extensions, for increasing the number of fellowships, and for the permanent endowment of its library. Another made it possible for the American School of Classical Studies in Athens greatly to extend its work, and to excavate the ruins of the ancient Athenian Agora, which has now yielded priceless archæological finds. The largest grant of all rounded off the pioneering work of Dr. J. H. Breasted by providing a truly magnificent building for the Oriental Institute at the University of Chicago: an institute which has become the centre for Oriental studies in the United States, and has set before itself a stupendous programme in archæological investigations.

In the sphere of education as commonly understood generous support from the International Education Board led to the foundation of the International Institute for Foreign Students working at Teachers College, Columbia University. This Institute has been much concerned with the psychology and culture of foreign peoples of non-European civilizations. It has been of great value in developing a new educational outlook in different parts of the world, to which places students have been able to carry back first-hand experience of Western civilization. A timely donation from the Board helped to bring about the re-organization of Negro education at Atlanta University, with better provision for graduate and professional training. Other grants were made to the Phelps Stokes Fund for educational survey work in British West Africa, and to enable African educationists to visit the United States. Support was also given to educational activities in Liberia, including the foundation of the Booker Washington Agricultural and Industrial Institute at Kakata, modelled on the Tuskegee plan of practical education.

Twenty-eight million dollars is a large sum of money. It is small compared with the amounts

available for spending week by week, whether for war or for peace, in the leading countries of the world. The bare summary of what the International Education Board was able to achieve is fine testimony to the vision and understanding of those who were responsible for devising its policy and carrying it out. With them men counted for more than things, but they realized that even pre-eminent men cannot work without things, of which they deserve the best that are obtainable.

Now, some of the work of the Board is already in ruins. Buildings have been demolished, men of science driven from their homes, prohibited from pursuing their investigations, and some even put to death. In ever-widening circles across the world, all that the International Education Board stood for is in a state of dissolution and suspense, borne down by the forces of nationalism and ignorance which it strove to eliminate. As men of science we may reflect that even that is a natural phenomenon. Reaction and war have come upon us because we have not yet learned to understand and control those mass movements of mankind which are called national policies.

In drawing up his plans Dr. Rose paid next to no attention to the social sciences. That in its way was characteristic of the period and country in which he lived and worked. His feeling was that in these sciences no clear principles are to be found. The principles may still be wanting. Their lack is the measure of how much is waiting to be done ; for it is useless to go on piling up technical information if knowledge of man himself lags so far behind. We may question the economics which rendered so much scientific progress dependent on the fortune of one man, while realizing that without his aid technical science would have made less rapid strides. When the clouds of war lift again, let us hope that still larger endowments will be forthcoming for the progress of knowledge, the fount of all education, and that they will be used to make the threat of war remote, not by force but by international understanding directed to the good of all mankind.

OBITUARIES

Eng.-Captain J. Fraser Shaw

ENG.-CAPTAIN J. FRASER SHAW, of the Fuel Research Station, Greenwich, died at his home at Chislehurst on July 23.

As an engineer in the Navy he specialized in the burning of fuel and he took part in the organization of the courses for naval cadets who had to qualify in engineering. Later he was responsible for courses of instruction on oil fuel and turbines. He was present at the Battle of the Falkland Islands and his record throughout the campaign was a brilliant one. He was mentioned in dispatches and after the Battle of the Falklands was promoted immediately to the rank of commander. It may be recorded that he was a magnificent athlete and played for his country at Rugby football, being popularly known as "Rugger Shaw".

The knowledge Shaw had gained upon the use of liquid fuels was recognized towards the end of the War of 1914–18, when he was appointed liaison officer between the Admiralty and the Ministry of Munitions (Mineral Oil Production Department). During this period of his service he obtained a wide knowledge of all processes for the production of oil from indigenous materials, and in view of this special knowledge he was seconded from the Navy to take charge of the Fuel Research Station during its erection. He continued his service until 1922 when he resigned his commission to take up the appointment of chief engineer of the Fuel Research Station and liaison officer with the Admiralty.

As chief engineer of the Fuel Research Station he was responsible for the organization of most of the programmes, and in particular all investigations which were carried out on a large scale. He was interested in the scientific and technical aspects of the carbonization programme, and especially processes for the production of oil by low-temperature carbonization and hydrogenation. In association with Dr. King he read a paper before the Institution of Gas Engineers and received the Gold Medal of the Institution. A year later he described in a Fuel Research Technical Paper the details of the low-temperature carbonization plant which had been designed and erected at the Station and for which he had been largely responsible. His long experience in the burning of oil in the Navy gave him a special interest in methods of heat transfer and in particular the burning of coal in a pulverized form. In order to realize the essence of his work it may be noted that some of the experimental plants at the Fuel Research Station are on such a scale that the results may be applied directly in industry, and it was the object of the organization to translate the observations made in the laboratory into plant which could be operated in industry. He possessed in a remarkable degree a capacity for improvising plants on an intermediate scale by which the inherent features of a process could be investigated in the first place on this scale before proceeding to the erection of a large-scale unit.

Shaw was a most enthusiastic and kindly leader and he brought together the industrial men who had to operate the large-scale units and the directing staff into the harmony which is necessary when laboratory observations have to be translated on to a large scale. His name will not be found on the title-page of many of the publications of the Fuel