the world will remember him as a leader of the anti-Fascist movement in the universities. His student life in Cambridge coincided with the struggle of the Spanish people against Fascism and he was the principal leader in building up the student anti-Fascist movement in Great Britain. After David Guest and John Cornford were killed fighting for the Spanish Republic, Nahum took the place of the latter as leader of the Communist Party in the University.

During this period he spent vacations in Paris working as a leading member of the committee of the World Student Association and became known to thousands of foreign students. In his third year, as president of the Cambridge University Socialist Club, he led the struggle among students against non-intervention in Spain, Japanese aggression and the Munich policy of appeasement. In the same year he obtained his first class in Part II Physics.

In subsequent years he continued his work among students both in the National Union of Students, as chairman of the Science Faculty, and as chairman of the University Labour Federation.

In his short life he never failed to put into action his belief that the universities must not isolate themselves from the life of the community and that university people have a vital interest in the progressive movement. At meetings called by the University Labour Federation in different parts of the country, students are pledging themselves to work, train and fight against Fascism as never before as the greatest tribute they can pay to the memory of Ram Nahum. J. D. BERNAL.

NEWS and VIEWS

Centenary of Sir James Dewar

ON September 20 occurs the centenary of Sir James Dewar, one of Great Britain's greatest experimentalists, occupying as he did for forty-six years the chair of chemistry at the Royal Institution and for thirty-six years guiding its destinies both by his position and his discoveries. Dewar added greatly to the lustre of the Institution, and by his many investigations, especially those on the liquefaction of gases and the attainment of high vacua, gained for himself a place among the leading chemists and physicists of his time. Born at Kincardine-on-Forth, he studied under Playfair at Edinburgh and Kekulé at Ghent, and at the age of thirty-three was made Jacksonian professor of experimental philosophy at Cambridge. Two years later he was chosen to succeed Gladstone as Fullerian professor of chemistry at the Royal Institution and after another ten years was made superintendent. The year he went to Albemarle Street had seen the experiments of Cailletet in France and of Pictet in Geneva on the liquefaction of the so-called permanent gases.

Following in the footsteps of his great predecessor, Faraday, Dewar in the early eighties began his own researches on gases which were to lead to many striking results. He first publicly exhibited liquid air, he obtained liquid oxygen and then liquid hydrogen in considerable quantities; in 1892 he invented and freely gave to science and the world the Dewar vacuum flask and in the early part of the present century discovered, as H. E. Armstrong said, "the marvellous power of charcoal to absorb gases at low temperatures " which " will render the period of 1900 to 1907 ever memorable". But Dewar's studies on gases, low temperatures and high vacua are but a part of his researches, which ranged from water to explosives, from atomic weights to spectroscopy, from the properties of soap bubbles to the temperature of the sun. He was elected a fellow of the Royal Society when he came to London in 1877, and lived to receive honours from scientific bodies at home and abroad. In 1904 he was knighted by King Edward. Above all else the welfare of the Royal Institution was his great ambition and anxiety, and after his death which took place on March 27, 1923, a bronze plaque portrait of him was placed on the staircase of the Institution he had served so long and so well.

Sir James Ivory, F.R.S. (1765-1842)

JAMES IVORY, the Scottish mathematician who died at Hampstead a hundred years ago on September 21, had the distinction of being among the first to introduce into Great Britain those methods of mathematical analysis which, from the time of Leibniz and the Bernouillis, had been gradually developed on the Continent. The only mathematical appointment he held was that of professor of mathematics at the Royal Military College then housed at Marlow, in Buckinghamshire. This post he held from his thirty-ninth to his fifty-fourth year. The son of a Dundee watchmaker, he was born in 1765, studied for six years at St. Andrews and Edinburgh and was then, in 1786, appointed a teacher in a school at Dundee. In 1789 he abandoned teaching to become partner in a flax mill, and it was on the dissolution of the partnership in 1804 that he came to Marlow. He gained a wide reputation for his mathematical and astronomical papers in the *Philosophical Transactions of the Royal Society*. He received several medals, including the Copley Medal of the Royal Society, and with several other men of science was knighted in 1831. He was a corresponding member of the Paris Academy of Science.

Soviet Scientific Films

A NUMBER of Soviet scientific films were presented at the Imperial Institute Cinema on September 12 by the Society for Cultural Relations with the U.S.S.R. in conjunction with the Association of Scientific Workers. The films, which covered a wide range of subjects, were of absorbing interest and high technical quality. They included novelties in Soviet scientific and technical practice besides the popularization of well-known facts for children and adult lay audiences. The former featured some excellent photographs of the Black Sea Express, a two-keeled motor sea-glider for passengers, with a speed of fifty miles an hour, Prof. P. Kapitza's miniature turbine for producing cheaply liquid oxygen, and a clever device for protecting workers at the forge from heat with a screen of running water which absorbs the infra-red radiation. An artificial fledgling, made by children, which automatically opens its beak and projects the food inserted by the unwitting mother bird into a bottle of formalin, enabling a complete register to be made of the foods consumed by various birds and their consequent effect on crops, gave an example of how children can contribute to scientific knowledge. A film illustrating the effect of energy expenditure on blood circulation and showing the function of the spleen, and a clear exposition of Lena Stern's method of treating shock extended the programme to the field of medicine.

The final film, "Experiments on the Revival of Organisms", was undoubtedly the most impressive. After a brief and exceptionally clear pictorial explanation of the function of the heart and lungs, the film leads up from the artificial setting in motion of an individual organ, the heart, to the revival of a dog's severed head and finally to the revival of the animal itself, from which the blood has been completely drained off and the heart-beats and respiration of which had ceased for ten minutes. The blood is re-circulated by means of an artificial circulatory system, the 'autojector', the deceased animal heaves its first sigh, heart-beats and respiration begin to register, and, after a short time, the autojector is disconnected and life proceeds. Within a few days the dog is its normal self again and, as the film shows, "lives happily ever after". The producers are to be congratulated on the skill and beauty of this film, which, while maintaining full scientific clarity throughout, nowhere offends the æsthetic senses, opens up an unlimited perspective of scientific advance and cannot fail to instil into the most unimaginative minds a profound respect for scientific effort and achievement. The commentary to the films was prepared by Prof. J. B. S. Haldane.

Mr. Arthur Elton, in his opening remarks, dwelt on the systematic way in which the popularization of science is treated in the U.S.S.R. and stressed the necessity of a scientific approach on the part of the whole population in the interests of the maximum war effort. This view was expanded in an introductory lecture by Dr. M. Ruhemann, who pointed out that, in the U.S.S.R., the diffusion of scientific knowledge and a scientific approach to life has always been considered a matter of urgent necessity, whereas we have tended rather to regard it as a luxury. Reviewing Soviet methods of popularizing science, in books, newspapers, in children's clubs and on the collective farms, he directed attention to the lack of scientific and technical knowledge among young people in Great Britain, due to a large extent to an antiquated school curriculum, and to the tragic consequences which this is bound to have on the efficiency of our Forces in a highly mechanized war. Mr. D. N. Pritt moved a vote of thanks to the speakers and the promoters of the meeting, which was so well supported that large numbers had to be turned away. A repetition of the exhibition is being considered.

Imperial Institute

THE extensive facilities available at the Imperial Institute, London, S.W.7, for the rapid supply of technical information relating to the trade, occurrence and utilization throughout the world of all kinds of raw materials, and the scope of the intelligence service are not so well known as they should be. The Institute's staff includes tropical agriculturists, chemists, chemical technologists, economic botanists, economic geologists, mining engineers, mineralogists and statisticians, and, when desirable, the Institute seeks the advice of members of its fifteen consultative committees. Further help is also afforded by numerous trade contacts. The Institute also has an extensive reference library and a technical index covering most of the relevant trade and scientific publications issued during the past thirty years. The Institute can deal with inquiries relating to sources of supply of, and other information relating to, raw materials and semi-manufactured products whether of animal, plant or mineral origin in all countries, cultivation of crops and the soil and conditions under which they have to be grown, methods employed in mining, smelting and dressing minerals for the market, and so on. Analysis and testing of samples of raw materials is undertaken in the laboratories of the Institute. Inquiries should be made in the first instance to the Intelligence Section of the Plant and Animal Products Department or of the Mineral Resources Department, according to the nature of the subject concerned. No charge will be made for services to Departments of the United Kingdom Government or other Governments of the Empire contributing to the general funds of the Institute unless a particular inquiry involves a volume of work so great that it cannot be undertaken by the existing staff.

The Rockefeller Foundation

DURING 1941 the Rockefeller Foundation appropriated more than nine million dollars for public health, medical sciences, natural sciences, social sciences, humanities and a programme in China. The work in public health received the largest appropriation—2,450,000 dollars. Medical sciences came next with 2,120,000 dollars. The Foundation distributed 1,938,300 doses of yellow fever vaccine to the United States Government and 1,972,386 doses to Africa. Including the total sent to India, Brazil and Singapore, the Foundation gave a grand total of 4,260,680 doses of its own manufactured yellow fever vaccine. The Paris office of the Foundation closed in July 1941, and there are now no Foundation representatives on the Continent of Europe, though an office is being maintained in London. The Far Eastern office was removed from Shanghai to Manila late in 1940. Important studies are being carried out in Malta, in Trinidad and on the Burma Road.

Detection of Cracks in Engineering Materials

A VALUABLE development in the use of fluorescent light is its application to the detection of flaws or cracks in engineering materials, and a demonstration showing its effectiveness was recently given by Colloidal Research Laboratories, 66–70 Petty France, London, S.W.1. Their 'Glo-Crack' system, as it is named, marks a great advance on existing methods and makes the detection of the least visible form of crack as nearly as possible a certainty. The articles to be examined are first immersed for a short period in a hot bath of fluorescent material. They are then transferred to a second bath containing a solution which removes all the fluorescent material except that which is entrapped in any flaws or cracks. This part of the process is very much the same as the familiar one of degreasing and, as a secondary advantage attached to the new process, it may be mentioned that the hot bath is actually an efficient degreasing agent.

After this preparation, each article is examined under ultra-violet light and every small flaw or crack glows with the characteristic colour while the remainder of the specimen remains dark. In this