

so much a matter of common and vital interest at the present time that it needs no emphasis here. The work of the College was specifically mentioned in Mr. Churchill's original statement on the atomic bomb, when for the first time the leading part played in the matter by Sir George Thomson's Committee

was made known. Physics at the Imperial College begins its second century in most auspicious circumstances, and, granted the support to which its record entitles it, the future should witness no abatement of its influence both in pure research and in the application of physical knowledge in the widest possible field.

NEWS and VIEWS

Atomic Energy and Scientific Freedom

SINCE the opinions on atomic energy expressed in the leading article beginning on p. 547 were written, several important pronouncements in this connexion have been made. In the past, statements have been published from many sources and some of these, especially those attributed to Mr. Truman, have not only misled the general public, but have also caused irritation to many men of science in general and those who have kept in touch with research in atomic physics, especially since 1934, in particular. M. Molotov's claim in his speech in Moscow, on November 6, that the Soviet Union will soon "have atomic energy and many other things" will come as no surprise to men of science. On the other hand, it will probably stimulate second thoughts in others (and there are many) who have been inspired to believe that while the so-called 'secrets' of the atomic bomb remain vested in Britain, the United States and Canada, the world is safe.

Prof. M. L. Oliphant's vigorous speech at Birmingham on November 3 was also timely. As he stated, it is not possible to "deal with this job by a secret meeting between Mr. Attlee and President Truman. This is so big, so important, and so vital to the world, that it has to be done in the open". The recent statement from the Soviet Union confirms Prof. Oliphant's view that the value of the 'secret' held by the Allies is about six months effort on the part of any industrial country. A more vigorous and concerted effort on the part of all men of science to keep science free and intercourse between men of science open and world-wide is essential if the science of atomic energy, and most probably other branches of science eventually, are not to sink into the slough of international political intrigue. Science must not be allowed to become a tool in the hands of anyone, certainly not a part of any nation's foreign policy, for if ever it does then the consequences may prove to be the most serious in the history of science, indeed of the world.

At a joint conference of the World Unity Movement and the Council for World Airways (both organizations with offices at 20 Buckingham Street, London, W.C.2) held at the City Literary Institute, London, on November 2, Sir Leonard Hill, Prof. Lancelot Hogben, Dr. Kathleen Lonsdale, Prof. Lionel Penrose and Mr. Ritchie Calder, among others, spoke on the implications of the recent developments of atomic energy in relation to international affairs and the freedom of science. The following resolution, moved by Mr. Caradog Jones, was passed by the meeting: "Believing that no scientific knowledge should or can willingly be kept secret this Conference urges that the development of atomic energy be made subject without delay to international control and that the advice and co-operation of scientists be sought in order to devise the best means to exploit its use under a world authority solely and fully in the interest of the world community".

Nobel Laureates in Medicine

Men of science will welcome the announcement that the Nobel Prize for Medicine for 1945 has been awarded jointly to Sir Alexander Fleming, Sir Howard Florey and Dr. E. Chain. Sir Alexander Fleming is now professor of bacteriology in St. Mary's Hospital Medical School, London. During the First World War, when he was working upon the bacteriology of septic wounds, Fleming became convinced that the chemical antiseptics then in use were often very harmful to the leucocytes which attack bacteria, and he discovered, in 1922, lysozyme, an antibacterial ferment which occurs in many animal tissues and secretions. In 1924 he showed that, if the antileucocytic power of an antiseptic is greater than its antibacterial power, it is not likely to be therapeutically valuable. When, therefore, he published in 1929, six years before the announcement by Domagk of the discovery of the sulphonamides, the discovery of penicillin and an account of his early trials of its antibacterial action, it was evident that he had provided us with an antibacterial agent which was not only powerfully antibacterial against some of the most pathogenic of organisms, but was also not toxic to the all-important antibacterial leucocytes and also not toxic to the animal infected with them. Attempts made at that time, however, to extract a form of penicillin which could be used therapeutically were not successful, and it seemed that this remarkable antibacterial agent would be denied to man.

The stage had, nevertheless, been set for the later work at Oxford of Sir Howard Florey and Dr. E. Chain, and it is interesting to note that the earlier work of these two investigators, like that of Sir Alexander Fleming, had predisposed them to make the particular and all-important contribution to the main problem which they made. Sir Howard Florey is now professor of pathology in the University of Oxford. Since the 1920's he has been interested in problems of bacterial inhibition and he has studied Fleming's lysozyme. The original discovery that some organisms produce substances which inhibit or prevent the growth and multiplication of other organisms was made by Pasteur and Joubert in 1877, and in 1899 Emmerich and Loew had extracted pyocyanase from *B. pyocyanus*. When the Oxford work on antibiotics began in 1938, pyocyanase and penicillin were selected for study. Florey now had at hand the assistance of Dr. E. Chain, University demonstrator in chemical pathology at the Sir William Dunn School of Pathology, a man whose studies of enzymes and of the isolation from natural sources of substances which are physiologically active has earned him distinction. Dr. Chain (though of Russian extraction) was born in Berlin and received his early training at the University there. He came to Britain in 1933 and was appointed to the staff of the Sir William Dunn School of Pathology in 1935.

The success of this collaboration is now well known.

Less well known—outside scientific circles, at any rate—is the full story of the remarkable work of the team of experts which was afterwards formed at Oxford for the study of the production, therapeutic use and mode of action of penicillin. Some day perhaps we shall have the human, as well as the scientific, story of this work and we shall then realize to the full the achievement of the many men and women who, working under the three leaders whom the Nobel Prize so deservedly honours, have given to mankind, not only penicillin, but also the whole volume of the later work on antibiotics which has opened a new chapter in the history of the fight against disease. To these others their leaders have often acknowledged their debt.

United Nations Educational and Cultural Organisation : Scientific Delegates

AMONG the delegates to the United Nations Conference now meeting in London to discuss the establishment of an Educational and Cultural Organisation (see pp. 553–561) are the following men of science: *United Kingdom*, Dr. E. F. Armstrong, adviser to the delegates of H.M. Government; *Canada*, Dr. R. C. Wallace, principal of Queen's University, Kingston, formerly professor of geology and mineralogy in the University of Manitoba, and Dr. J. G. Malloch, chief scientific liaison officer (London) of the National Research Board of Canada; *United States*, Dr. Harlow Shapley, director of Harvard Observatory (due to arrive shortly), and Dr. George Stoddard, the child psychologist and commissioner of education for the State of New York; *France*, Prof. Joliot-Curie and Prof. Auger, both professors of physics in the Sorbonne; Prof. H. Laugier, professor of physiology in the Sorbonne, and Prof. Wallon, professor of psychology in the Collège de France; *China*, Mr. Li Shu-Hua, physicist in the Research Institute of Peiping, and Mr. Wang Ging-Shi, director of the Chinese Institute of Psychology, (the head of the Chinese delegation, the geologist Mr. Chu Chia-Hua, is not likely to arrive in time); *Netherlands*, Prof. H. R. Kruyt, professor of physical chemistry in the University of Utrecht; *Belgium*, Prof. G. Magnel, professor of civil engineering in the University of Ghent; *Norway*, Dr. Olaf Devik, physicist, and Dr. Ellen Gladitsch, chemist; *Poland*, Prof. Mikolaj Olekiewicz, professor of biological and mathematical statistics in the University of Lublin; *Turkey*, Prof. Omer C. Sarc, professor of economics in the University of Istanbul, and Prof. Ratip Berker, professor of mechanical engineering in the University of Istanbul.

New Television System

ON October 31, Messrs. Pye, Ltd., gave a demonstration at Cambridge of a new television system recently developed by a research team under Mr. D. I. Lawson. The novel feature in this system is the utilization of the 'fly-back' times in the scanning sequence, during which the transmitter would otherwise be idle, to accommodate short pulses the duration of which can be modulated by the sound accompaniment of the television programme. At the receiving end, these width-modulated pulses are filtered out of the total transmission by an amplitude-selection process. Thus a single frequency channel is made capable of conveying both the vision and sound simultaneously; hence the name 'Videosonic' which has been given to the system.

With the standard type of 405-line scanning in use in Britain before the War, the fly-back time is 10 microseconds, occurring 10,125 times a second. This pulse-repetition frequency limits the audio-frequency range to something less than a high-fidelity standard, but a subsidiary demonstration showed that a 1,000-line system would enable a very satisfactory audio-frequency range to be transmitted. The use of a single channel has obvious advantages in view of the demand for space in the radio spectrum, but from the commercial point of view the chief potential advantage of the 'Videosonic' system is the cheapening of television receivers. The system also offers some interesting possibilities for future development; in particular the location of twin pulses in the fly-back space could be used for stereophonic sound, and the superposition of a sequence of amplitude changes on the width-modulated pulses might be used as a means of controlling a triple-scanning sequence for television in colour.

Danish Research Expedition

ON November 1, the Danish research vessel *Atlantide* left Plymouth en route for the coast of West Africa. The ship left Copenhagen on October 3 and, after being held up by bad weather, reached Plymouth on October 30. The vessel, a three-masted schooner which once sailed under the well-known name of *Shenandoah*, is owned by the Danish sculptor, Mr. Viggo Jarl, who has lent her to the Danish Government for marine research and is paying all expenses. Dr. Anton Fr. Bruun of the Copenhagen University Museum, who has made many cruises in the *Dana*, is leading the expedition; he has with him two young Danish zoologists, Jorgen Knudsen of the Royal Danish Veterinary College, and Torben Wolff. The British Museum (Natural History) is represented by Dr. F. C. Fraser, and the vessel will pick up Dr. G. R. Howat, Government chemist, at Accra. The route to be followed covers the whole of the coast of West Africa to the Cape, and includes the Ascension Islands and St. Helena. The expedition is intended primarily to make a zoogeographical survey along that coast. Sections will be made outwards from the coast to deep water at intervals, the main region of interest lying between the Congo and Walfisch Bay, an area from which little collecting has been done. The vessel is equipped for collecting with Petersen and Feen grabs, shrimp trawls and plankton nets of various sizes; she also carries a small harpoon gun. The voyage is expected to last about eight months, and it is hoped that much valuable material will be collected for the Danish and British Museums. This is the first marine expedition to leave the coasts of Europe since the War ended, and the Danes are to be congratulated on acting so promptly in starting the exploration of the sea once more.

Queen Victoria Memorial, Salisbury, Southern Rhodesia

THE annual report, for the year ended March 31, 1945, of the Queen Victoria Memorial, Salisbury, Southern Rhodesia, indicates that owing to the difficult conditions with which publishers in Great Britain are faced, the limitation of the number of copies of books, and the irregular arrival of mails from overseas, the supply of books for the library continues to decrease. In the meantime, the demand for certain cultural and technical literature is being met so far as is possible, but no improvement in the