

embryology. He was one of the original members of the Aberdeen University Anthropological Society, to which British archæology is indebted for its contributions by excavation to early studies of the osteology of the 'beaker-folk'. For many years Prof. Low has been an active member of the anthropological section of the British Association.

Oxford's Programme of Development

A YEAR ago the University of Oxford appealed to its friends for endowment on a scale appropriate to the part it is called upon to play in the world of learning to-day. The response was £426,000. This sum, with the new foundation of Nuffield College for the study of the social sciences, will provide for many of the needs which were mentioned in the appeal. It is strongly felt, however, that further development should take place, and for this a new appeal, which will remain open until July 31, has recently been made. The sum now asked for is £250,000. The most urgent need at the moment is the creation of a general research fund, both for the humanities and for the natural sciences. In the past ten years the number of research students at Oxford has doubled, and throughout the University there is a keen spirit of research. To endow a promising piece of research, whatever it may be, whenever an original line has been struck out, a research fund of £100,000 is regarded as essential. For the development of research in archæology it will be necessary to complete the extension of the Ashmolean Museum, and for this £15,000 will be required. It is felt also that as soon as possible the Departments of Physiology and Botany should have new laboratories. Towards the costs of these £60,000 and £40,000 are required. Lastly, another £35,000 is needed to complete and maintain the new physical chemistry laboratory that is to be erected. These sums make up the £250,000 which is being asked for.

Transatlantic Steam Navigation

IN connexion with the centenary of the inauguration of regular steam passages between Great Britain and the United States by the four steamers *Sirius*, *Great Western*, *Royal William* and *Liverpool*, which all crossed and recrossed the Atlantic in 1838, a special exhibition has been arranged at the Science Museum to illustrate "One Hundred Years of Transatlantic Steam Navigation". The central feature of the exhibition is the magnificent model of the *Queen Mary*, the model being 22 ft. long. The gallery also contains models of the *Normandie*, the *Conte di Savoia* and other notable vessels of recent years. Of greater historic interest, however, are the newly made models of the *Sirius* and *Great Western*. The former ship was of only 703 tons gross and was never intended for work in the Atlantic, but she was the first steamer ever to cross the ocean from east to west using her engines as the main motive power. Her voyage began on April 4, when she left Cork, and ended on April 23, when she tied up in New York harbour. The *Great Western*, designed by the famous engineer Isambard Kingdom Brunel, was of

1,340 tons and it was she which demonstrated in unmistakable manner the possibilities of steam on the ocean. The original drawings of the ship are shown beside the model, and also various interesting documents. Other ships shown are the *Great Britain* and the *Great Eastern*, the *Britannia*, first of Cunard vessels, the *Scotia*, the last of the paddle vessels on the Atlantic, the *Servia*, the first steel liner, and the *Philadelphia*, the first large twin-screw ship on the Atlantic. The exhibition was opened on March 16, and will remain open until the middle of September. An illustrated handbook has been prepared by Mr. H. P. Spratt, the Museum officer who has arranged the exhibition.

Hadrian's Wall

SOME major problems of the Roman Wall of Hadrian would appear to have been brought to a solution by recent excavations of the Durham University Excavation Committee, of which an account was given on March 11 before the Society for the Promotion of Roman Studies by Mr. I. A. Richmond of King's College, Newcastle-on-Tyne, co-director of the investigation with Mr. F. G. Simpson, of the Cumberland Excavation Committee. It is found that the lack of uniformity between the remains in different sectors of the Wall, which has been the main difficulty of the archæologist, is not due to haphazard work, but arises from deliberate changes in plan as the Wall was in course of erection, as well as to the differences in material available for building. From Newcastle to the Irthing the builders began with a wall of stone 10 ft. thick (afterwards reduced to 7½ ft. to expedite the work), erecting barracks for patrols in large courtyard gateways piercing the Wall at every mile, and hence called 'milecastles'. Over the north gate of each and at every 540 yards was a turret. This section of the Wall was then extended eastward to Wallsend; and a narrow stone wall built to the westward between milecastles 49 and 53; but in the main westward extension from the Irthing to Bowness-on-Solway, limestone for grout was lacking, and a turf wall took the place of the stone wall. It was supplied with stone turrets of distinctive type and milecastles of wood. This turf wall was replaced by a stone wall later in the century.

TACTICAL considerations now took the place of time and material, which had previously determined changes in plan. When the Wall was completed, eight forts were embodied in the line, holding either 500 cavalry or a nominal 1,000 infantry. Thus was formed a front line force capable of taking the offensive in overwhelming strength. It had been found that the Wall, designed originally as a patrol line, could be better used for concentrated garrisons, and thenceforward the emphasis was on forts rather than milecastles. Next in order comes the Vallum, the earthwork of which the ditch is the main feature, south of the Wall, the purpose of which has been the subject of much controversy. Mr. Richmond is of the opinion that it demarcates the military zone of the Wall and its

dependent structures and also served as a barrier against southern marauders. Further excavation may show whether this view is to be regarded as final.

Toxicology of Narcotic Drugs

In his presidential address before the Society of Public Analysts delivered on March 4, Dr. G. Roche Lynch discussed "The Toxicology of the Narcotic Drugs", embodying observations regarding the barbiturates, thio-barbiturates, straight-chain ureides and morphine, based on his own record of cases. He pointed out that the barbiturates, of which seventeen are now on the market, can be divided into two main groups, one of which produces light narcosis of long duration and the other deep narcosis of shorter duration. The individual barbiturates differ greatly in the rate at which they are destroyed in the body; some are destroyed so rapidly that it is rarely possible to recover more than minute quantities of them from urine or tissues. The extent of their use is illustrated by the fact that 18 million tablets of one of them, and that not the most common, are produced annually. The habit of taking them at night regularly is widespread, especially among women; but in keeping them within reach as a means of inducing sleep there is a danger that, after one or two tablets have been taken, a state of 'automatism' might supervene, in which a person, more or less unconsciously, might take a further number, with serious results. For purposes of treatment, the analyst should be able, by examination of urine, to ascertain within a quarter of an hour whether or not a barbiturate had been taken; but for purposes of evidence in court a complete identification with melting point determination is desirable.

Broadcasting Television

In a discussion in the House of Commons on March 11 of the supplementary estimate for £360,000 for the B.B.C., Major Tryon made some very satisfactory remarks. He pointed out that in this year's report there were two entirely new features. First there was the expansion of television which accounted for an additional £295,000, and also about £15,000 proposed for broadcasting news in foreign languages. The latter sum was not included in the original estimate as it was not a part of the policy of the Government. He said that Great Britain was the first country in the world to have a public television service. It had been found by the Television Advisory Committee that further experiments must be made before new recommendations could be accepted for extension. That was a scientific inquiry, and he was sure that the House would like to pay tribute to the men of science who had made this wonderful discovery, and to the B.B.C. and its engineers for bringing it into working order. He also expressed the gratitude of the Government to the Television Advisory Committee, under the chairmanship of Lord Selsdon, who had been given great help in scientific matters by Sir Frank Smith. The additional

sum required for television was provided simply. In the future 8 per cent of the licence revenue should go to the B.B.C. to help with the additional work. Television had only lately been started and the cost had been very heavy. If the service was to be efficient there must be a greater accommodation of studios, etc. The technical standards of television had been stabilized for three years, and that gave security to producers of sets and encouraged them to make more sets and more cheaply. This grant would foster the growth and development of an infant industry in which we were at present leading the world.

The British Broadcasting Corporation

THE eleventh annual report of the British Broadcasting Corporation, which covers the year ended December 31, 1937, refers to the completion of the first year of operation of the London Television Station, and the year's experience is regarded as having justified the confidence in the future of television which led to its establishment. Financial uncertainty which had complicated further plans was relieved towards the end of the year by the Treasury's acceptance of the view that the costs involved should be met by a grant from the balance of net licence revenue retained by the Treasury. The adoption of the Marconi-E.M.I. transmitting standards as a single system in February made it possible to widen the scope of television programmes during the year, notably in outside broadcasts. Reference is also made in the report to the work of the Talks Advisory Committee, to attempts to promote closer contact with listeners and various experiments in technique. The Engineering Section of the report refers to developments in Empire service and to the obstacle which lack of sufficient wave-lengths continues to present to the planning of extensions to the home service. Further progress in experimental studio design has been made, and improved methods were adopted in the acoustical treatment of studios under construction. The results of research on the performance of short-wave directional aerials were successfully applied in the design of the Empire station. The total income for the year amounted to £3,356,074, of which 85.67 per cent was derived from licences and 14.32 per cent from publications. Of this income, more than 51 per cent was expended on programmes and nearly 18 per cent of the remainder on engineering. £200,000 were transferred to capital account, an amount insufficient to cover the year's expenditure on fixed assets. The report stresses the impossibility of building up any reserve funds in liquid form, although this is most essential while income is still increasing.

Promotion of International Co-operation

THE annual Bulletin of League of Nations Teaching, just issued by the secretariat (No. 4, December 1937), deals with the teaching of the facts and principles of international co-operation, this subtitle indicating that its scope has been extended to cover a wider field than the activities of the League