

those taking mathematics as an auxiliary to economics or biology, and includes, as an option, statistical method. This is an innovation of the greatest importance. The 'Ordinary' is roughly the present higher school certificate course for a 'Principal' subject, but again statistics may be taken if desired. The 'Further' and 'Higher' are suitable for candidates for university scholarships. Astronomy may be taken instead of some of the more advanced mechanics in the 'Further' course.

The Committee recognizes the great diversity of the needs to be catered for, and has tried to make the syllabuses as flexible as possible. Criticism and comment will be welcomed, and a revised edition of the syllabuses will, if necessary, be issued in the light of experience and of suggestions received. It is hoped that the Oxford and Cambridge Joint Board, the Cambridge Local Examinations Syndicate, and the Cambridge colleges will accept the syllabuses as a basis for their examinations. Approval has already been expressed by the Institute of Actuaries, and it is hoped that other professional bodies and the Services will also find them suitable.

National Museum of Wales

AN important aspect of the annual report for 1943-44 of the National Museum of Wales is the evidence it provides of a council fully conscious of the Museum's educational function, which even under war-time conditions has been considerably developed. Lectures, demonstrations, special exhibitions, loans to research workers and schools, and the provision of facilities, material and instruction for teachers and students engaged in specialized work are striking examples of the valuable work being carried out by all departments. For the future, the opportunities provided by Section 100 of the 1944 Education Act for closer co-operation between schools and museums have been recognized. Accordingly the Council, in collaboration with the Welsh Department of the Ministry of Education, has already given consideration to the matter in relation to Welsh schools. Other authorities responsible for the conduct of museum affairs in a post-war world would do well to note this action. The Council also reports that its Memorandum on Museum and Art Gallery Services in Wales and Monmouthshire (summarized in the 1942-43 Report) has been forwarded to the Minister without Portfolio by the Welsh Reconstruction Advisory Council. With it the latter has sent a communication asking the Minister to give special attention to the importance of extensions to the National Museum being recognized as part of the official schedule of post-war reconstruction work; the provision of Government funds for an open-air museum as an essential auxiliary to the National Museum, and the establishment of a museum grant committee, there being a particular need for a grant for technical assistance to local museums in Wales.

Among the many other activities reported by the Council the following are noteworthy. Department of Botany: continuation of research on atmospheric pollen (see *New Phyt.*, 43, 49, 1944, and *Museums J.*, 44, 146, Dec. 1944). Department of Zoology: completion of a detailed list of all the mammalian remains of historic interest, and the continuation of the bibliographical indexing of Welsh species. Department of Archaeology: continuation of survey work on ancient buildings in Monmouthshire, and the preparation of a report on the antiquities of West Gower (at the request of the Ancient Monu-

ments Department of the Office of Works). Department of Geology: the provision (in response to many inquiries on various aspects of geology) of information relative to raw materials, water supply, drainage and roads. The Museum has made many interesting and valuable acquisitions during the year, and it should be noted that the important collection of Celtic antiquities found in 1943 in a bog near Holyhead, Anglesey, is now in the custody of the Archaeological Department. A full bibliography of the publications of the National Museum of Wales is a useful appendix to this report.

Museums and Post-War Educational Developments

THE annual report of the Manchester Museum (University of Manchester), while stating that the usual museum activities have been carried on during the year 1943-44, points out that its functions in relation to future educational developments can only be properly fulfilled when provision is made for an increase of technical staff, and for adequate working accommodation. As the report states, these needs are common to museums throughout Great Britain. At the present time, however, there are few or no signs that such needs—together with many others—will be met in the near future. No doubt the solution of the problem might be hastened if the Ministry of Education were to recognize in a more practical manner the considerable educational potentialities of these institutions. In the meantime, for lack of growing space, a valuable public service is unable to progress beyond its 'germination' stage.

Temperature Control

THE lecture on 'The Practical Side of Fine Temperature Control' delivered by L. T. Townson and R. Barrington Brock to the Society of Chemical Industry in May of last year is now available in pamphlet form as No. 11 of the review *Service to Science* issued gratis by Messrs. Townson and Mercer. Ltd., of 390, Sydenham Road, Croydon. The lecture dealt with constant-temperature baths, particularly for medium temperatures, and concentrated attention mainly on water baths, which the authors point out are superior to air baths both because of the low heat capacity of air and also, they say, because its low density gives it little inertia, and enables vortices, with consequent temperature differences, to form more easily. The first matter which the authors stress, and on which they give experimental evidence, is the importance of stirring. They believe that paddle stirrers are not sufficiently effective, and that the whole of the liquid must be caused to flow through the bath; this involves the use of a second chamber of some sort, either entirely separate, or formed within the bath by means of false sides or some similar device. Other points which are discussed in the lecture are the effect of thermostat lag, the advantages and disadvantages of proportional control and the effect of heat losses. It is apparently not always realized that these lead to permanent differences of temperature in the bath. In this connexion, lagging is discussed, and the advantages of reflecting metal sheets as insulation are pointed out.

Biological Unit for Vitamin A

VITAMIN A is unique in that the unit by which it has been defined has been measured with reference to a precursor, β -carotene, and not to vitamin A itself. This biological unit based on β -carotene as standard is cumbersome and subject to gross errors.