

force when the examination system was initiated and the conditions prevailing at the present time, and that extensive changes are necessary in order to bring these examinations into harmony with modern developments of educational thought and practice. The Board clearly realises that the annual examination must not be the dominant factor in education. The examination must be subordinate to the teaching. Further, the yearly test, to be of any value, must be mainly an "internal" one, in which the teacher plays an important part. At the present time, the examinations conducted by the Board are purely "external" examinations, carried out by an outside body which is out of touch with the teacher and the students, and necessarily unacquainted with the actual conditions under which the educational work is carried out.

The Board, however, is not yet prepared, "as regards all students, to hand over entirely to the teaching staffs . . . the functions which the Board at present discharge in regard to the testing and certification of the attainments of individual students, although a partial transfer of such responsibility has now become possible." In the future, the Board will leave the examination of, and the issue of diplomas to, full-time day technical institution students to the teachers concerned, subject to regulations to be previously submitted to and approved by the Board. Full-time day students will not in general be permitted to attend the evening science examinations. The examination of all first stage evening or part-time students is also handed over to the institutions. Further, "the Board intend to invite the assistance of some teachers in technical schools as members of the examining boards to be constituted for the reorganised examinations."

Coming to the examinations themselves, the principal changes enumerated in the circular are the following:—

(a) A number of the examinations formerly held by the Board will be discontinued. These examinations are mainly in subjects which have attracted comparatively few candidates in the past (e.g. nautical astronomy), and in certain branches of natural science, such as botany and biology, which have usually been taken only by candidates reading for university degrees. The examinations to be retained by the Board are divided into five groups as follows:—

(1) *Group A.*—Pure and Applied Mathematics:—Practical plane and solid geometry, pure mathematics, practical mathematics, theoretical mechanics (solids), and theoretical mechanics (fluids).

(2) *Group B.*—Engineering:—Machine construction and drawing, applied mechanics (materials and structures), applied mechanics (machines and hydraulics), heat engines, building construction, and naval architecture.

(3) *Group C.*—Physics:—Heat, magnetism, and electricity.

(4) *Group D.*—Chemistry:—Inorganic chemistry and organic chemistry.

(5) *Group E.*—Mining and metallurgy:—Coal mining, metallurgy.

It may, perhaps, be regretted that the Board proposes to cease its examinations in subjects such as agriculture, hygiene, and physiology, in view of the national importance of these subjects, the rapid development of public interest in them, the increasing provision of facilities for instruction, and the absence of any generally recognised and easily accessible system of examinations in these subjects if the Board's examinations be withdrawn.

(b) Up to the present the Board has held four examinations in each subject, arranged as follows: 1st stage, 2nd stage, 3rd stage, and Honours. In the future, the Board will not conduct elementary examinations corresponding to the first stage, as it is felt that these examinations are now unnecessary, the "inspection" by the officials of the Board on their visits to the classes being sufficient to test the efficiency of the teaching. The Board will only hold two examinations in each subject, termed "Lower" and "Higher" examinations respectively. The standard of the Lower examination will be approximately equal to that of the present Stage II., while that of the "Higher" examination will be intermediate between Stage III. and Honours.

The main objections which may be urged against the withdrawal of the Stage I. examinations are:—(1) The present Stage I. syllabuses are a valuable guide to many teachers, especially perhaps to those interested in the more

directly technical subjects and to those employed in the smaller, isolated technical schools; (2) the lack of uniformity in the elementary stages of technical instruction caused by the absence of syllabuses followed by schools all over the country, thus hindering the transfer of students from one institution to another. These obvious disadvantages may probably be best overcome by consultation between the representatives of the teachers and the Board of Education inspectorial staff, with a view to arrive at a common measure of agreement respecting courses, curricula, and the standard of work to be aimed at, especially in the earlier years of a student's work.

(c) Practical examinations, such as those in chemistry and metallurgy, will be discontinued, but candidates for admission to the Higher examination in subjects other than practical geometry, mechanics, &c., "will be required to furnish a certificate of having completed a satisfactory amount of laboratory work, and to submit his laboratory note-books signed and certified by the teacher."

Elaborate regulations, which will probably be found somewhat burdensome in actual practice, are outlined in the circular with regard to "grouped course certificates and diplomas, and conditions of endorsements." The Board will not, in general, issue certificates to students who have passed a given single examination. The Board will, however, endorse certificates or diplomas granted by school authorities upon the satisfactory conclusion of well-balanced courses of study, and "they trust that a certificate or diploma, endorsed by the Board under the prescribed conditions, will be recognised by all concerned as having at least a definite minimum value and standard."

"Grouped courses" are classified by the Board into two main classes: (1) evening or part-time day courses, (2) full-time day courses. Each of these is again subdivided into three groups: (a) junior courses (14 years to 16 years of age), (b) senior courses (16 years to 18 years), (c) advanced courses (18 years to 20 years).

Generally speaking, the proposed regulations as outlined in the circular mark a distinct advance upon the arrangements in force at present. In the main, the alterations are in the direction of freedom for the teachers, a greater elasticity permitting more modifications to suit local educational and industrial requirements, and the placing of examinations in a relatively less important position. The circular holds out to technical teachers the promise of speedy action by the Board of Education in regard to two important matters which they have long pressed upon the attention of the authorities at Whitehall, namely, the cooperation of the teachers in the drawing up of syllabuses and the conduct of examinations, and the improved organisation and coordination of all grades of technical education.

J. WILSON.

THE BRIGHTON CONFERENCE OF THE MUSEUMS ASSOCIATION.

THE attendance at the Brighton meeting of the Museums Association, held on July 10-15, was large and representative, delegates being present from forty-two museums at home, as well as from the American Museum of Natural History (New York), the Australian Museum (Sydney), and the Deseret Museum (Salt Lake City, Utah). The presidential chair was occupied by Mr. H. M. Platnauer, of York. Mr. Platnauer was one of the original founders of the Museums Association, which was inaugurated at York twenty-two years ago.

In his presidential address Mr. Platnauer strove to answer the question "What is a museum?" and showed by his remarks that he conceived all museums, whether of science, art, or history, to have a broad and educational function. He deprecated the idea that a provincial museum should be purely local, would not agree that the function of an art museum is merely to make a pleasurable appeal to the emotions, and suggested that museum arrangements should convey the facts of natural evolution and human progress by exhibits arranged in more than one dimension of space.

Mr. H. S. Toms had prepared an account of the Brighton Museum, with special reference to developments since the last meeting of the association in Brighton twelve years ago. It was plainly indicative of great progress, and

embodied some very useful practical hints on the care of collections.

Mr. J. A. Charlton Deas introduced the subject of national art loans to municipal museums, pointing out the great and growing need for making the artistic treasures of the nation more accessible to the dwellers in the provinces.

The value of museum guides, catalogues, and other publications was dealt with by Mr. Thomas Sheppard under the title "Pastimes for Curators." He described the manner in which the eighty or more publications issued by the Hull Museum had been prepared, and showed how they kept public interest in the collections alive and frequently led to desirable acquisitions.

Dr. J. A. Clubb read a paper on the purpose and arrangement of an index museum, in which the idea was elaborated of making the entrance hall of the museum a philosophic introduction to those fields of human knowledge covered by the museum collections. The validity of the word "index" in this connection came in for some criticism, but it was generally agreed that some form of introductory collection, broad in conception and treatment, is an absolute necessity in all large museums. By the multiplicity of their collections and specimens such institutions bewilder the uninitiated visitor, who should be enabled to get a clear grasp of what the institution is aiming at by some lucidly sketched outline.

As a new departure in the work of the association, a public lecture was given during the conference. The lecturer was Dr. F. A. Bather, F.R.S., who took for his subject "Open-air Folk Museums." The lecture consisted chiefly of a description of the open-air museum founded at Skansen, Stockholm, by Arthur Hazelius. Dr. Bather gave an outline of the object of such museums, and emphasised the urgent need for promoting some such scheme in Sussex, and thus preserving the fast disappearing relics of its extremely picturesque past.

A further paper by Mr. W. Ruskin Butterfield on folk museums dealt specially with the material at present available in Sussex, and showed how rich Sussex still is in picturesque old dwellings, involving much delightful folklore.

Mr. Arthur Smith showed how collections of photographs might serve the purpose of recording the history and progress of the surrounding district. Many places have collections of photographs and prints secured merely for the purpose of what may be called a survey, but Mr. Smith emphasised the fact that this is not sufficient. Photographs ought to be taken so as to show clearly, for instance, the original and altered condition of a street or building, so that a person looking at them may realise the nature and extent of the change which has taken place.

Evolution in archæology was dealt with by Mr. R. A. Smith, of the British Museum, who described the succession of developmental characters exhibited by such articles of human manufacture as stone implements, pottery, brooches, and primitive British coinage in a lucid and informing manner. He strongly advocated the arrangement of antiquities on evolutionary lines wherever possible.

The evolution of English pottery during the eighteenth century was the subject of a paper by Mr. H. Stuart Page. He argued that the adoption of an intelligent system of classification on lines which he set out in some detail would enable the involved story of English pottery to be illustrated by a carefully selected series of examples showing the gradual development in materials, processes, and technique. It was a matter for speculation how long the English potters would have continued contentedly in their antiquated methods of producing coarse heavy ware but for the introduction of Oriental china, brought into the country by tea-drinking habits. The beauty of this ware—all the more emphasised by the rudeness of the English production—created a remarkable infatuation, and the English potters sought to rival it. Their history then becomes one of laborious costly experiment, absorbing lives and fortunes. Ignorant of chemistry, they were, in fact, groping in the dark. The eventual result, however, was the acquisition of a technical skill which, whatever be the artistic quality, holds its own among the ceramic productions of the world.

Mr. E. Rimbault Dibdin read a paper on the functions and scope of a municipal art museum, in which he showed that there exists in England a very confused idea of the way in which to make an art museum of value. He urged that special efforts should be made to attract curators and directors of art institutions, and to assign a special day to the discussion of the questions of function, scope, conservation, arrangement, lighting, and the hundred and one other practical problems which face the administrator of art collections.

A small trade exhibition organised in connection with the conference was of considerable practical interest to curators.

During the meeting visits were paid to the Worthing Museum and Library, to the Booth Museum, to Hastings Museum, to Sedlescombe Museum, and to Battle Abbey. The association concluded its business by accepting the invitation of the Board of Agriculture and Technical Instruction for Ireland to meet in Dublin in 1912, and by unanimously electing Count Plunkett, director of the Irish National Museum, through whom the invitation was conveyed, to the presidential chair for the ensuing year.

THE FRENCH AEROTECHNICAL INSTITUTE.

ON July 6 the Aërotechnical Institute of the University of Paris, which has been founded by the generosity of M. Henry Deutsch de la Meurthe, was inaugurated at St. Cyr. Its object is entirely scientific, and is to study all problems of aviation and aërostation relative to the support of bodies in the air, both at rest and motion, from the double point of view of theory and practice. Under the presidency of the vice-rector of the Paris University, with M. Deutsch de la Meurthe and the dean of the faculty of sciences of the Paris University as vice-presidents, the council includes all the famous names in French aëronautics, as follows: MM. Armengaud, Barthou, Baumès, Blériot, Bouttieaux, Cailletet, Carpentier, Eiffel, Estienne, Hugon, Janet, Jouguet, Kapferer, Koenigs, Le Cornu, Loreau, Maurain, Marchis, Painlevé, Picard, Sauvage, Soreau, Surcouf, Urbain, Voisin, Weiss.

The area occupied by the buildings and grounds is 72,000 square metres, of which the principal part has been reserved for building purposes. The remainder includes a strip 25 metres by 900 metres, with an additional piece of some 462 metres in length, which has been conceded by the Minister of War. Moreover, 4000 metres have been set apart for the erection of aëroplane sheds, workmen's houses, &c.

In the central hall are the following:—

- (1) A large fan, two metres in diameter, fitted with various adjustments, and an aërodynamical balance for measuring wind-pressures on surfaces.
- (2) A wind tunnel furnished with a fan for the study of the reaction of the air on surfaces, the air-current being capable of maintaining a uniform speed of 20 metres a second.
- (3) An aërodynamical balance.
- (4) A wind tunnel similar to that built by Col. Renard for studying the stability of model hulls or planes.
- (5) An apparatus for measuring the friction of various surfaces moving through air of various pressures at gradually increasing speeds.
- (6) A dynamometrical installation for measuring the thrust of stationary propellers.
- (7) An installation for the study of helicopters.
- (8) A protected chamber for testing the resistance of propellers at very high speeds. (Although it would be difficult to attain to bursting speed, it will be possible to run them at a considerably higher rate of revolution than the normal.)
- (9) A test bench for motors.

In the chemical laboratories researches will be made in the study of light gases, of fabrics for balloon envelopes and aëroplane coverings, and of varnishes.

The physical laboratories will be concerned with the improvement and application of instruments used in aërial navigation, and the physical properties of light gases.

The photographic section will be occupied in obtaining records of experiments made; a special department will test all materials used in the construction of flying-machines and dirigibles; and the usual meteorological instruments are provided.