THURSDAY, MARCH 11, 1920.

The State and the National Museums.

WHILE reconstruction in almost every direction is in the air, there is a very real danger that the needs of our national museums may escape notice. The time is, indeed, more than ripe for the State to consider with all due care whether their value to the community might not be vastly increased were there some system of co-ordination between them, the connecting links being of sufficient flexibility to allow each of them to perform its proper work without the irksome trammels that accompany undue centralisation. In the course of two reports issued by the late Ministry of Reconstruction, certain suggestions are made for achieving this end; to them we shall refer later. The proposal which we put forward is not very different, but we consider it to be a more complete solution. To apprehend more correctly the nature of the problem, it will be necessary first to set out briefly the origin and the present position of the principal national museums.

Perhaps without exception the museums came into being, not as parts of some wide and comprehensive scheme, but casually and at haphazard because some particular contingency arose and had to be met. The oldest and most famous of them—the British Museum—was founded in 1753 for the purpose of housing and conserving the valuable collections which had been bequeathed to the nation by Sir Hans Sloane, a great antiquary and collector in his day. In the following century the growth of the collections was so great, fed as they were by donations, bequests, and parliamentary grants, and, as regards the library, by the operation of the Copyright Act, that it became necessary in the early 'eighties to transfer the natural history collections to the new buildings at South Kensington which had been erected for their reception. But the rate of growth of the collections tended ever to increase, and additional accommodation was soon urgently needed at both branches of the museum. It was only just before the outbreak of war that a new wing was opened at Bloomsbury by the King and Queen, while the plans which had been prepared for relieving the congestion at South Kensington had, owing to the war, necessarily to be held in abeyance, and it is uncertain when it will be possible to proceed with them.

The original Act of Parliament constituting the museum provided for its governance by a body of trustees; this arrangement still remains, and no exception could be taken to it were it not for the fact that election to the standing committee of the British Museum has come to be regarded as a distinction to be awarded on quite irrelevant grounds, and that, owing in the past to the little attention given to science in the public schools, this process has not in general led to the selection of trustees most suitable for the Natural History Museum. Despite the actual physical distance between the two branches of the British Museum, and the great difference in the character of the work carried on at the two institutions, they are still officially regarded as one museum, and the Natural History Museum is subordinated to the parent establishment, the official title of its director being Director of the Natural History Departments. There can, unfortunately, be little question that the development of the Natural History Museum has been grievously hampered by the persistent attempt made to fit it to a system devised for the older building, and especially for the great library, which has, in fact, always tended to overshadow the rest of the museum.

The institution which was at one time known as the South Kensington Museum originated in the collections which were purchased at the Exhibition of 1851 on account of the excellence of their art and workmanship. Half a century later the need for expansion had become acute, and plans for new buildings were put in hand, but in the reorganisation of this museum wiser counsels prevailed, and the Science Museum was created a separate institution, quite independent of the Art Museum, afterwards known as the Victoria and Albert Museum. The title of the former museum cannot be considered altogether happy, since it is concerned, not with science in general, but chiefly with engineering and applied mechanics. Both museums are administered by the Board of Education.

The Museum of Practical Geology was a necessary concomitant of the Geological Survey, which was instituted in 1832. Plans had been prepared for bringing this museum and the offices of the Survey to a new building to be erected near the Natural History Museum at South Kensington, but the war intervened, and many years are likely to elapse before they reach maturity. Up to a few months ago the Survey was attached to the Science Museum under the administration of the Board of Education, but it has now been transferred to the Department of Scientific and Industrial Research, the creation of which is one of the few beneficent results of the war.

The London Museum, now located at Lancaster

House, was instituted for the conservation of the antiquities of London. The Wallace Collection, bequeathed to the nation in 1897, is contained in Hertford House, which was acquired by the Government for the purpose. Both the last-named museums are under independent bodies of trustees. The Imperial Institute contains large collections of the economic products of the Empire, and a scientific and technical staff has been provided for their conservation and study; it is managed by the Secretary of State for the Colonies, assisted by an executive committee. Towards the close of the war the Imperial War Museum was founded for the preservation and custody of objects and records connected with the war. Besides the museums, there are the various picture galleries in London, all under independent bodies of trustees, and outside London there are important national museums at Edinburgh, Cardiff, and Dublin, all under their own authorities.

Owing to the overlapping of the scope of several of these institutions, there often arises duplication of work and competition for the acquisition of specimens. Thus similar ground is covered by certain sections of the British Museum and the Victoria and Albert Museum as regards art; by the Natural History Museum, the Geological Museum, and the Imperial Institute as regards minerals and rocks; by the Natural History Museum and Kew Gardens as regards the systematic study of plants. There is further overlapping in the range covered by the associated libraries—to some extent that is both desirable and inevitable—but at the same time no attempt is made to ensure that a copy of every important book or periodical is accessible in London.

The lack of co-ordination between the various museums was noticed by the Sub-Committee, under the chairmanship of Lord Haldane, which was appointed by the Reconstruction Committee in July, 1917, to investigate the machinery of Government, and confirmed in its appointment when the Ministry of Reconstruction began its brief existence. In its report published in 1918 (Cd. 9230) the following important paragraph occurs:—

"As regards the other national museums [*i.e.* other than the Geological Museum, the suggested transference of which to the Department of Scientific and Industrial Research was approved] . . . , we think that the responsible authorities might consider with advantage the possibility of entering into regular arrangements, by means of a body representative of each of the museums, and established for the purpose, whereby the spheres of the respective museums should be arranged with a view to the avoidance of competition for objects, and to the development of each museum to the full as a centre of education and research. From the latter point of view it would no doubt be desirable to secure that the Board of Education, and the general organisation for research and information, . . . should be associated with any movement in this direction."

In this connection we may refer also to the third interim report by the Adult Education Committee, which was also appointed by the Ministry of Reconstruction, in its report on libraries and museums (Cd. 9237, 1919), in which it is urged that "the powers and duties of the Local Government Board regarding [the local] public libraries and museums should be transferred forthwith to the Board of Education." Those interested in such institutions promptly took steps to register their strong disapproval of the course proposed; with that dissent we are in full accord. It must be remembered that it is the business of the Board of Education to allocate parliamentary grants to schools and other teaching institutions, and to see that the range of the curriculum of the studies at them adheres to the official regulations, and not to take part in the actual practice of education. A department of which the vision is restricted by the blinkers of sub-heads and schedules is not often able to take a broad view on questions of learning and research.

In our opinion the best solution of the difficulty would be to expand the present Department of Scientific and Industrial Research into a Ministry of Learning and Research, and to bring under it the national museums and picture galleries, as well as the national institutions engaged in research. To ensure proper co-ordination and continuity of policy, the administration of the proposed Ministry should be entrusted to a board of trustees, comprising representatives of the standing committees appointed to control each of the constituent establishments.

We recognise the complexity of the question, and our readers must not assume that we consider the solution which we offer to be beyond criticism and discussion. In the House of Lords on March 3 Lord Sudeley suggested that the Government should appoint a committee on museums and galleries "to consider and recommend how these institutions can be further adapted to public needs, and especially be made throughout the country of far greater use for public benefit and instruction." His lordship made it clear, in the course of the speech with which he intro-

duced the motion, that he had in mind the ordinary member of the public, and particularly the child in the elementary school, and appeared to be under the impression that the expert was already sufficiently well cared for. An instructive feature of the debate is the almost entire absence of any reference to science in general, or to the Natural History Museum in particular. Another revealing point is suggested by a passage in Lord Crawford's reply for the Government, in which, in reference to Lord Bryce's proposal that a central scientific department of the Government should be set up, he said: "Among the purposes for which the Scientific and Industrial Research Department was set up . . . is actually that of acting as a central advisory body on any scientific question in relation to any Government Department"; for, apropos of this statement, we must observe that, whereas every administrative Department is represented by at least one assessor to the Advisory Council, that Department appears to be unaware of the existence of the Natural History Museum. Lord Sudeley's motion was eventually by leave withdrawn; nevertheless, we hope that the matter will not be allowed to rest there. We think, indeed, the question of sufficient importance for the consideration of a Royal Commission, the terms of reference of which should include the system of remunerating the specialist, who at present enjoys a much lower scale of salary than the administrator of corresponding standing, and we strongly urge the Government to appoint one with the least possible delay.

Mathematical Cosmogony.

Problems of Cosmogony and Stellar Dynamics. By J. H. Jeans. Being an essay to which the Adams prize of the University of Cambridge for the year 1917 was adjudged. Pp. viii + 293 + v plates. (Cambridge: At the University Press, 1919.) Price 21*s*. net.

IN a well-developed science two branches are broadly to be distinguished. In the one, an existing state of things is investigated. The subject of research is events immediately connected, forms, functions, and the laws which govern them. The other branch generally marks a later stage, and, basing itself on the results of the first, seeks to reconstruct from the present as complete a picture as possible of the past and even of the future. As in the conception which underlies the theory of relativity, the present, which is the limited subject of experience, is merely a section in time from which a higher manifold is to be deduced. When the subject-matter is biological, the outcome is a theory of evolution. When it coincides with the domain of astronomy, the result is more specifically recognised as a scheme of cosmogony.

There are at least three methods by which attempts have been made to formulate such a scheme. The first, and most trivial, is to seize on some remarkable phenomenon, like Saturn's rings or a spiral nebula, and to see in it a clue which can be followed up more or less plausibly with the help of an exuberant and unfettered imagination. Progress on that line is naturally as limited as it is precarious. The second method is illustrated in its highest form by the work of Sir W. Herschel. It is the way of comparison and classification. The Draper classification of stellar spectra by Pickering is an apt modern example. Without preconception, except such as readily vanished in the light of fuller experience, almost all the stars fell into an ordered sequence, which became more complete and continuous as the material accumulated. To connect the ascertained sequence with a time scale was natural. But the problem has not proved quite so simple as at one time it appeared. In general, when the process is exceedingly slow and the section of experience correspondingly thin, the very direction of the scale is ambiguous, and the method requires to be supplemented by some additional principle. A third method remains. This consists in the study of models having a definite specification as nearly as possible in accordance with cosmic examples, but always within the power of analysis to discuss. The behaviour and development of such a model are traced to their logical consequences with full mathematical rigour, and only after this has been done is an attempt made to find their counterparts in the actual universe. This is the profoundly difficult but promising method adopted by Sir George Darwin, by Poincaré, and by Mr. Jeans in the work under notice.

It is curious how great are the difficulties which surround problems capable of the simplest statement. Three balls are thrown in any given way in empty space. All the intractable difficulties of the problem of three bodies are involved in discussing the subsequent motion under their mutual attractions. Or again, to take the fundamental problem of the present subject, a mass of liquid is stirred into rotation and left to find its shape under its own attraction. What figure will it assume when isolated in space? The following quotation from Thomson and Tait may be worth recalling:—

"During the fifteen years which have passed since the publication of our first edition, we have never abandoned the problem of the equilibrium