



SATURDAY, OCTOBER 13, 1928.

CONTENTS.

	PAGE
South Kensington Museums and the Royal Commission	561
Science in Medieval Cipher. By Robert Steele	563
A Minor Mystery of the Pacific. By C. G. S.	565
A Critic of Modern Biology. By E. S. R.	566
Fundamental Principles of Radio Communication. By Dr. R. L. Smith-Rose	567
Our Bookshelf	568
Letters to the Editor :	
Markings on Diatoms and Resolving Power of Microscopes.—A. Mallock, F.R.S.	570
A Method of Preparing Sections of Fossil Plants contained in Coal Balls or in other Types of Petrification.—John Walton	571
Condition of Radium Salts after Storage in Sealed Glass Tubes.—A. G. Francis and A. T. Parsons	571
The Crystal Structure of Solid Methane.—Prof. J. C. McLennan, F.R.S., and W. G. Plummer	571
The Period of Human Gestation.—Prof. Raymond A. Dart	572
The Daily Terrestrial Magnetic Variations; and the Sun's Magnetic Field.—Prof. S. Chapman, F.R.S.	572
The Presence of <i>Phlebotomus chinensis</i> in Syria.—Dr. S. Adler and O. Theodor	572
The Dissociation of Pure Mercury.—R. S. Bradley	573
Unit of Acceleration.—Sir Oliver Lodge, F.R.S.	573
Geological Jargonese.—One who attempts to read "Nature" through	573
The Live Stock Industry and its Development. By Dr. J. S. Gordon, C.B.E.	574
The Synthesis of Cane Sugar. By Dr. E. F. Armstrong, F.R.S.	578
The Artificial Silk Industry	579
Obituary :	
Sir Horace Darwin, K.B.E., F.R.S. By R. T. G.	580
News and Views	582
Our Astronomical Column	585
Research Items	586
Homogeneous Catalysis. By Dr. Eric K. Rideal	589
New Buildings at the University of Leeds	590
Cotton Growing in the Sudan	590
University and Educational Intelligence	591
Calendar of Customs and Festivals	592
Societies and Academies	593
Official Publications Received	594
Diary of Societies	596

Editorial and Publishing Offices :

MACMILLAN & CO., LTD.,  
ST. MARTIN'S STREET, LONDON, W.C.2.

Editorial communications should be addressed to the Editor.

Advertisements and business letters to the Publishers.

Telephone Number: GERRARD 8830.

Telegraphic Address: PHUSIS, WESTRAND, LONDON,  
No. 3076, Vol. 122]

South Kensington Museums and the Royal Commission.

IT is seldom that the representations of scientific men have been so fully, amply, and speedily justified as in the recent report of the Royal Commission on National Museums and Galleries (Cmd. 3192, 2s. net), to which attention was directed in our issue of Sept. 29, p. 465. The present is an interim report dealing "with certain glaring defects of accommodation," and its concluding sentence expresses "the earnest hope that speedy action will follow our specific recommendations on urgent practical matters." These do not involve any question of principle or of policy, with which the Commission will deal in its final report. The growth of the institutions concerned is recognised as having been "severely checked, and economy has already been pushed beyond the point of prudent administration." These are strong words, but the Commissioners are essentially a business body and they issue a business report, admirably weighing the necessity for immediate saving of money as against the economical needs of education. The maintenance of national prestige is emphasised, and this is peculiarly important in these post-War days of increased intercourse by travel. It is not shopping potentialities, sport, or playhouses that primarily attract visitors to our metropolis, but it is historical associations, seen in buildings and design, and it is the importance of its great national collections. Their function is to be spiritually educational, and that this is of real value to practical business life few thinkers are now prepared to deny, while museums pertaining to science teach truths of far-reaching utility to commerce, to production, and to every phase of national life.

The actual proposals that concern us at the moment are mostly connected with biology, but we are glad to observe the recommendation of a small grant to complete the conference room of the Science Museum. This, together with the general tone of the report, we understand means that the Commissioners favour a more active educational policy on the part of the staffs of museums and galleries in making the value and importance of the national collections better known. Particularly in science is "exchange of ideas by personal discussion" of great importance, as the Prince Consort said on the close of the Great Exhibition of 1851. For extensions to the Natural History Museum the recommendation is a grant of £247,500, of which buildings representing £123,500 should be put in

hand at once. This total would have been increased had not the Treasury, through the Empire Marketing Board, previously assigned £30,000 for a building to relieve the congestion in the Entomological Department.

This grant gives practical recognition of the urgent importance to the agriculture of the Empire in the systematised study and identification of the vast mass of insects and other pests of crops and domestic animals. The amount recommended to be expended immediately is £50,000, while the total cost of the whole building is £95,000. Assuming modern methods of construction, this means the addition of an available floor space of about 25,000 square feet, while we venture to think that a properly thought out scheme for fifty or a hundred years would require twice this, namely, the construction of the whole block, and would be cheaper in the end. The further scheme is to replace the unsightly, inconvenient, and unsafe buildings to the north of the Museum by a block the full length of the Museum, of which a quarter would be built at once at a cost of £34,000 for the exhibition and study of whales, an extension of the new spirit building, at a cost of £49,000, replacing the older buildings. Lastly, a reconstruction of the Geological Department at a cost of £20,500, this involving the basement and existing workrooms, will do much to relieve the present congestion, and certainly should precede the building of the east wing, although this is required. Left over as of less immediate importance is the rest of the northern block (£124,000), but we trust that its building will follow.

Correlated with the above scheme is the removal of the Geological Survey and its Museum from Jermyn Street to Exhibition Road, a new home on the north part of the Natural History Museum site with access to both the Science and the Natural History Museums. It is essential that this Museum should maintain its own entity, for it illustrates British stratigraphy and economic aspects of geology, and as such is both the working collection of the Survey and the reference collection of many local collectors from every part of Great Britain. At the same time, its relationship with the Natural History Museum is clear, and the directors of both may be trusted to see that there is harmonious scientific working between their independent institutions. The proposal is financially a 'straddle,' for the value of the Jermyn Street site is estimated to provide the cost of a new building.

We see no proposals as to the oft-debated  
No. 3076, Vol. 122]

question whether botanical collections should be maintained both at the Natural History Museum and at Kew. There are such difficulties in amalgamating the two herbaria—and both must be preserved—that there is no likelihood of any saving of public money. Kew is a priceless possession for the plants that are alive; and it has many small museums, mostly economic. At the same time, there is need for an attractive, systematically arranged exhibition of plants, and it should not be beyond the resources of the Natural History Museum to provide this, instead of relegating the Department to attics.

On the whole question of the proper utilisation of museums, the Commissioners show their predilections in reference to the suggested new Museum of Practical Geology: "the proposed arrangement, which provides for less, though better designed display on the exhibition floors and at the same time for greatly improved facilities for storage and study, is in accordance with the best modern ideas of Museum organisation." It is useless to attempt to exhibit every kind of animal and plant. Where it is done, the ordinary visitor is wearied, while the specialist cannot see under a glass case the characters he seeks. Molluscan shells are the boxes containing animals, and corals are the stools of anemones. Birds and other land vertebrates are doubly interesting if exhibited in their natural surroundings, and merely sample skeletons need be shown. All kinds of animals and seaweeds go to make up a water environment. Only in a few cases can a museum show lines of evolution or the results of heredity. For the rest it is more attractive to display exhibits "in a life enhancing way, instead of in the depressing, confusing, fatiguing, and life-diminishing way in which they are now mainly to be seen" (Evidence, p. 303). Show cases can be altered as interest and discovery demands, but this means that a museum must have a staff of artistic technicians, and in this respect the National Museum is deplorably weak. A museum has to teach, and a definite part of the show space must be devoted to this end. Only a limited number of the masterpieces of creation can be shown; overcrowding is psychologically fatal. The public taste can be cultivated, and, if the public is not attracted, let it be clearly recognised that the exhibits or the methods employed are at fault. Why should not periodic displays illustrative of the recent advances and discoveries in biology rival similar exhibitions in the neighbouring Science Museum?

Research is essential, but for this the worker has to penetrate to rooms where he can have suitable

light and can handle specimens. He is the person who, by his gifts and published research, has largely made the collections what they are. A museum with such collections, properly named, is the only place where the post-graduate student in systematics can at the present time adequately train himself for research. Large numbers of specimens are requisite, for without them mistakes of fundamental importance will occur. Frequently, the scientific problems that arise can only be solved in the field, and in the future adequate provision will have to be provided, so that members of the staff may study their groups in their natural environments and at the same time collect so as to enrich the National Museum.

The responsibility of science is to see that new museums or additions to old museums are designed towards definite ends. It is certain that systematic collections of all the animals and plants of the world must be deposited and permanently preserved at certain centres, preferably national. These collections will have to contain a series or at least several specimens of each species, but to-day it is not beyond the capabilities of science to estimate the requirements even of the National Museum as to space for this purpose. New buildings should be sectional and easily extensible, their rooms so far as possible interchangeable. Well and preferably north lighted research accommodation is essential, and all buildings must be fire-proof.

The exhibition galleries of a museum should present a noble and characteristic frontage and be artistically designed, but it is probable that its hive of research workers would be more comfortable and efficient in factory buildings than in noble halls. The permanent staff of the Natural History Museum is totally inadequate for its necessary scientific work, and science must take care that the money required for brains is not squandered in bricks and mortar. Some of the evidence leads us to believe that it is possible that some rearrangement of the present buildings into those suitable for exhibition as apart from study and research would prove that the exhibition space is at present adequate. Let us then build for the real needs of science, and this would appear to be the views of the Commissioners, for they have mainly suggested ideas for what will ultimately be simple interior buildings, not decorative structures. We would welcome a fuller plan than that presented in their Report.

The Royal Commissioners have begun their task well, and we look forward to the publication of their

full report in a year or two, by which time we trust that what they have recommended as urgent will have been put in hand. They still have many knotty questions to solve, chief of which is perhaps the relationship of the Natural History Museum to museums in many British countries. Clearly its function is to represent the Empire, but the progress of research in each Dominion and Colony requires a systematically arranged collection of its own animals and plants as well as an attractive exhibit to stimulate public interest. Scientific development demands that the ties between all such museums should be drawn close by the freest possible interchange of material. The problem is one that to some degree concerns all galleries and museums, and we trust that the Commissioners will suggest a policy. Clearly, the more the educative and scientific machinery of the Empire can be organised as one whole, the more stable will that Empire become.

#### Science in Medieval Cipher.

*The Cipher of Roger Bacon.* By Prof. William Romaine Newbold. Edited with Foreword and Notes by Prof. Roland Grubb Kent. Pp. xxxii + 224 + 38 plates. (Philadelphia: University of Philadelphia Press; London: Oxford University Press, 1928.) 17s. net.

IN 1912, Mr. W. M. Voynich discovered in Italy a manuscript entirely written in cipher—a small quarto of 116 leaves, of which eight are missing and some are folded. It measures on the average about nine inches by six. Its history has many gaps, but Mr. Voynich is, we believe, right in his conjecture that it was sold by Dee to the Emperor Rudolph at the close of the sixteenth century, attributing it to Roger Bacon, and that it was probably “the book containing nothing but hieroglyphics” of which Dee’s son spoke to Sir Thos. Browne. The usual methods of dating a M.S. fail us: the writing cannot be placed, the vellum is coarse for the thirteenth century, but not impossible, the ink is good. Only the drawings remain, and owing to their complete absence of style the difficulty of dating is but increased; it is strange that the draughtsman should have so completely escaped all medieval or Renaissance influences. The cipher has been attacked by several experts in the ordinary methods, and has not yet been read.

It is known that Bacon was interested in ciphers, and made some use of them. A simple one is attached to one of his early works, the “Tractatus