

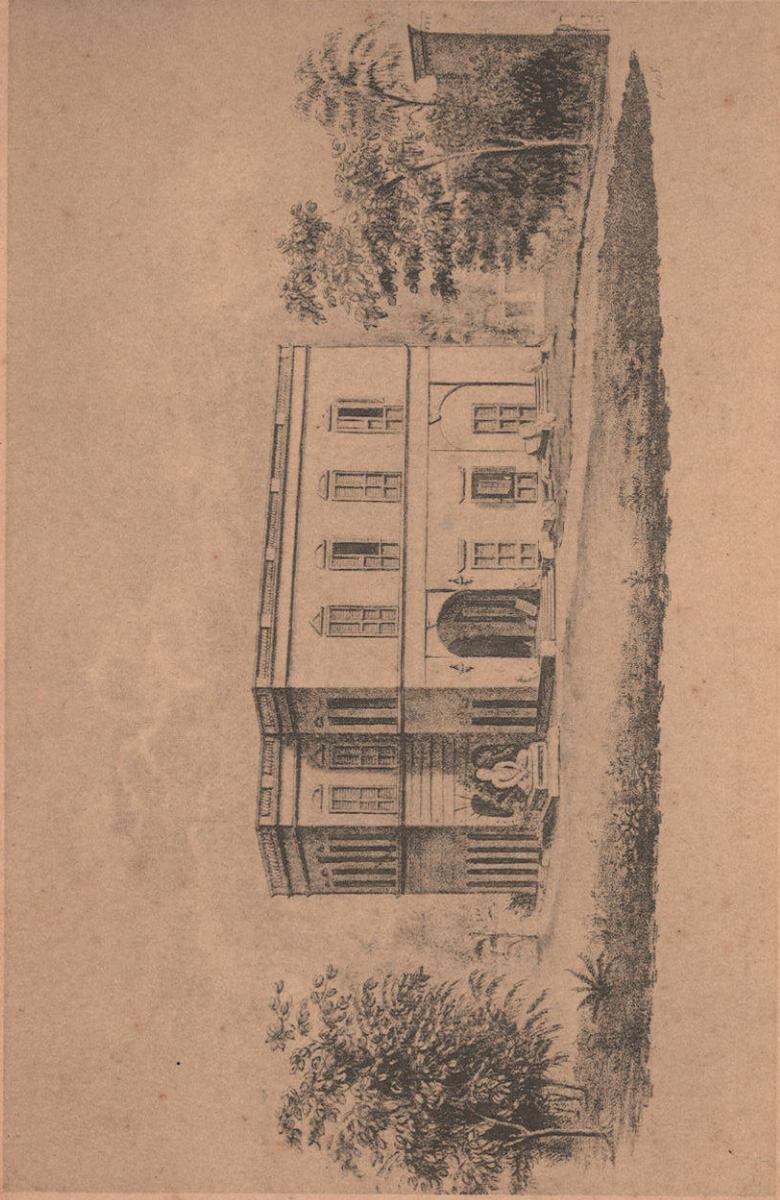


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**Rooms of the Asiatic Society in 1828.**  
(From a lithograph by Savignac and Pearson.)

INDIAN MUSEUM.



# THE INDIAN MUSEUM

## 1814-1914.

*“Resolved accordingly that the Asiatic Society determine upon forming a Museum for the reception of all articles that may tend to illustrate oriental manners and history, or to elucidate the peculiarities of art and nature in the East.*

*“That this intention be made known to the public, and that contributions be solicited of the undermentioned nature:—*

- “Inscriptions on stone or brass.*
- “Ancient monuments, Muhammadan or Hindu.*
- “Figures of the Hindu deities.*
- “Ancient coins.*
- “Instruments of war peculiar to the East.*
- “Instruments of music.*
- “The vessels used in religious ceremonies.*
- “Implements of native art and manufacture, &c., &c.*
- “Animals peculiar to India.*
- “Skeletons or particular bones of animals peculiar to India.*
- “Birds peculiar to India, stuffed or preserved.*
- “Dried plants, fruits, &c.*
- “Mineral or vegetable preparation peculiar to Eastern pharmacy.*
- “Ores of Metals.*
- “Native alloys of metals.*
- “Minerals of every description, &c., &c.”*

From a Resolution of the Asiatic Society of Bengal (1814).



CALCUTTA :

PUBLISHED BY THE TRUSTEES OF THE INDIAN MUSEUM  
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### PREFACE.

THIS book has been prepared in commemoration of the hundredth anniversary of the foundation of the Asiatic Society's Museum, which subsequently developed into the Indian Museum as it now exists.

Different chapters have been written by different authors, all intimately connected with the whole or parts of the Museum, and no attempt has been made to produce uniformity between the chapters. If the work and constitution of the Indian Museum are to be understood it must be realized that it is not a single homogeneous organism, but rather an association of scientific and artistic sections bound together by a common aim in so far as the public galleries are concerned, but otherwise with different functions and even dependent financially on different departments of the Government of India.

Thus the geological collections are for the most part the property of the Geological Survey of India, for which the Trustees (who have but recently assumed even visiting powers in the geological galleries) are bound by Act to provide accommodation, and the Geological Survey is subordinate to the Imperial Department of Commerce and Industry. The archaeological collections have been lent by the Trustees to the Director General of Archaeology in India, who makes his own financial arrangements for their preservation and display in the Museum with the Education Department of the Government of India, the Trustees again exercising mere visiting powers in the galleries in which the collections are shown to the public. A similar arrangement has been made in respect to the Industrial Section with the Director of the Botanical Survey of India, an officer of the Imperial Department of Revenue and Agriculture; while the Art Section, which

## PREFACE.

remains nominally under the control of the Trustees and draws its funds partly through them from the Government of India and partly direct from the Government of Bengal, has its officer in charge in the person of the Principal of the Calcutta School of Art, a member of the Bengal Education Service. Only the Zoological and Anthropological Section remains solely and entirely under the control of the Trustees, who arrange for its financial support with the Imperial Education Department. The head of this section bears the title of Superintendent of the Indian Museum and is Secretary to the Trustees.

It is thus evident that the highly complex organization of the Museum must be reflected at different angles in the case of the different sections. It seemed best, therefore, in devising the plan of this volume to allow each section to give expression to itself through the pen of one of its own officers, rather than to produce a uniform history that would give to each and all a uniform representation of accurate detail but possibly fallacious aspect. A certain repetition is involved in this scheme; but, at any rate, the reader interested or mainly interested in one phase of museum development will find his subject treated by an author who has made a practical study of it, and in the Chairman's introductory chapter<sup>1</sup> the whole is focussed to a common point.

Information as to the Acts that deal or have dealt with the Museum as a whole, the present bye-laws, trustees and members of the staff past and present, visitors and publications will be found in the appendices at the end of the volume.

<sup>1</sup> The lecture of which this chapter is a slightly modified embodiment was published in the Calcutta Review in 1914. In its present form it was issued by the Trustees as part of a pamphlet distributed to guests at the Centenary celebrations.

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## CHAPTER I.

### INTRODUCTION.<sup>1</sup>



TO APPRECIATE the history of the origin and growth of the Indian Museum, we must travel back to the last quarter of the eighteenth century, when, after the establishment of British supremacy in this Province, Sir William Jones, one of the profoundest scholars, who have devoted their life to the service of India, founded the Asiatic Society in 1784, and with the boldness which characterized his genius, stated that the bounds of its investigations would be the geographical limits of Asia and that within these limits, its enquiries would be extended to whatever is performed by Man or produced by Nature. Sir William Jones, however, in his inaugural address did not expressly refer to the foundation of a Museum as part of the activities of the Society, which, at the time and for many years afterwards, had no habitation of its own. But curiosities sent in, from time to time, by members, began to accumulate, and in 1796 the idea was started that a suitable house should be erected for their reception and preservation. Donations were invited, but the plan proved premature, and it was not till the beginning of 1808 that the Society found itself in a position to occupy the

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<sup>1</sup> The History of the Indian Museum : An inaugural address delivered by the Hon. Justice Sir Asutosh Mookerjee, Kt., C.S.I., LL.D., D.Sc., Chairman of the Trustees, on November 28th, 1913, in the Museum Lecture Hall.

premises erected at the corner of Park Street on land granted by Government. Six years later, definite effort was made to give effect to the intention to establish a Museum, when, on the 2nd February, 1814 Dr. Nathaniel Wallich, a Danish Botanist, who had been taken prisoner at the siege of Serampur but released in recognition of his scientific attainments, wrote a letter to the Society in which he strongly advocated the formation of a Museum and offered not only to act as Honorary Curator but also to supply duplicates from his own valuable collection to form a nucleus. The proposal found ready acceptance with the members of the Society, and it was determined to establish a Museum to be divided into two sections, one which would now be called archaeological, ethnological and technical, the other geological and zoological. The Librarian of the Society was placed in charge of the former section, while Dr. Wallich was appointed Superintendent of the latter. The scope of the Museum was defined in the widest possible terms, as an institution for the reception of all articles that might be sent to illustrate oriental manners and history, or to elucidate the peculiarities of Art or Nature in the East. Contributions were invited and specimens were solicited so that the Museum might include "inscriptions on stone or brass, ancient monuments, Hindu or Mahomedan, figures of Hindu deities, ancient coins, ancient manuscripts, instruments of war peculiar to the East, instruments of music, vessels used in religious ceremonies, implements of native art and manufacture, animals peculiar to India, dried or preserved, skeletons or particular bones of such animals, birds stuffed or preserved, dried plants and fruits, mineral or vegetable preparation peculiar to Eastern Pharmacy, ores of metals, native alloys of metals, minerals of every description," and other like articles serviceable to history and science. The Museum thus inaugurated thrived rapidly under the guidance of its enthusiastic founder Dr. Wallich, and individual collectors, amongst whom may be mentioned Col. Stuart, Dr. Tytler, General Mackenzie, Mr. Brian Hodgson, Capt. Dillon and Babu Ramkamal Sen, readily placed at the disposal of the Society interesting and curious objects collected from various parts of the country. After the resigna-

tion of Dr. Wallich, paid curators were appointed from time to time for longer or shorter periods on salaries ranging from Rs. 50 to Rs. 200 a month. In 1836, however, the Society, whose resources had, a few years earlier, been crippled by the failure of the bankers, Palmer & Co., found itself in financial difficulties and memorialized Government for a grant of Rs. 200 a month from public funds to enable it to meet the salary of the curator. The memorial, which was written by Sir Edward Ryan, then Chief Justice of the Supreme Court and President of the Society, impressively set forth the absolute necessity for the foundation and superintendence, quite as much for the furtherance of Science as for the instruction of the Indian fellow subjects of the memorialists, of a public depository of the products of Nature in India and the surrounding countries, properly preserved, properly arranged, and properly applied. But, although the prayer of the memorial was limited to a grant of the modest sum of Rs. 200 a month, the Governor General in Council expressed their inability to accede to the request without reference to the Court of Directors, who were, as was pointed out, incurring considerable expense in keeping up a Museum and Library at the India House. It was conceded, however, that a Museum in this country could not be established by voluntary subscriptions nor maintained in the creditable and useful condition necessary for the attainment of the object desired, unless aided liberally by the Government, in like manner as similar institutions in Europe were supported from the public treasury. The members of the Society, however, were persistent in their demand, and presented a second petition for a temporary grant, pending reference to the Home authorities on the subject of the extension of the Museum and its conversion into a public institution; fortunately, this application was granted.

Dr. J. T. Pearson of the Bengal Medical Service was appointed curator and was succeeded, after a brief tenure of office, by the distinguished ichthyologist, Dr. McClelland. Meanwhile, the memorial of the Society for the formation of a National Museum at the cost of the State had been sent to the Home authorities, strongly supported and recommended

by the Government of India. But the difficulties of communication in those days were so great that it was not till 1839 that the Government could obtain a reply from the Court of Directors in London. The Court sanctioned a grant of Rs. 300 a month for the salary of the curator and the maintenance of the Museum, and also authorized the Government of India to make grants from time to time for special purposes. Dr. McClelland, who had with great ability temporarily filled the office of curator, now resigned, and was succeeded by Mr. Edward Blyth, who had been selected by Dr. Horace Hayman Wilson in England. He proved himself ultimately to be an even more distinguished ichthyologist and naturalist than his predecessor.

Edward Blyth took up his duties as curator in September, 1841 and devoted himself to the duties of his new office with remarkable zeal; but as he was not a geologist, he found himself embarrassed in the management of the geological collections, which, at the time, were second in importance only to the archaeological collections of the Society. The difficulty of the situation was, however, successfully met by reason of the timely action which had already been taken by the Government of India. In 1835, the Government of India, encouraged by the satisfactory working of the coal-mines at Raneegunj and anxious to develop the mineral resources of the country (to which attention had been drawn by Dr. Helfer and other scientific officers), had decided to found a Museum of Economic Geology in Calcutta. This Museum was actually opened in 1840.

Shortly afterwards, in May 1841, Captain G. B. Tremenhoe, who had been sent to England to secure a nucleus of a Museum of Economic Geology, returned to Calcutta with a large and valuable collection of specimens. These were deposited in the Society's rooms, and the Government of India sanctioned an additional grant of Rs. 250 a month for a separate curator. Mr. Piddington was appointed curator of the Geological collection inclusive of the specimens which were the property of the Society and which Mr. Edward Blyth had found it difficult to arrange. The Museum of Economic Geology thus constituted continued to occupy the

premises of the Society till 1856, when the portion of the collection owned by the Government of India was removed and housed at No. 1, Hastings Street, in connection with the Geological Survey of India, then recently established. The Government, at the same time, expressed their readiness to receive the specimens owned by the Society; but this could not be done; for the Society, though fully alive to the fact that the collection was likely to be better preserved, better laid out and better taken care of by the members of the Geological Survey, refused to sanction their removal on the ground that the dissociation of a part of the Museum—and that the least expensive, highly valuable as it was—might not only prove injurious to the interests of the Society, but possibly postpone indefinitely the great object which the Society had cherished since 1837, namely that of seeing a national museum established here on a scale worthy of the Metropolis of British India.

The transference of the Museum of Economic Geology, however, immediately relieved to some extent the steadily increasing pressure on the limited space in the premises of the Society, and, for a short while, more room became available for the display of the archaeological and zoological collections. But the latter had grown with surprising rapidity under the able management of Blyth, with the enthusiastic co-operation of the members of the Society; and it became fairly apparent that their further growth would before long be arrested by reason as well of the restricted space as of the limited funds at the disposal of the Society.

In view of these circumstances, in 1856, the members of the Society decided to submit a memorial to the Government of India for the establishment in Calcutta of an Imperial Museum, to which they expressed their readiness to transfer all their extensive collections except their library. The dark days of the Mutiny, however, most inauspiciously intervened, and the consideration of the proposal was necessarily postponed. Two years later, the question was revived and a representation was submitted to Government in which the Society pressed for the foundation of an Imperial Museum at Calcutta.

The Government of India, though fully ready to recognize its duty to establish in the Metropolis an Imperial Museum for the collection and exposition of specimens of Natural History in all its branches and of other objects of interest, physical, economical and historical, declined to entertain the project on financial grounds. At the same time, the Government of India renewed its offer to relieve the Society by taking over the geological and palaeontological collections.

The members of the Society, however, were insistent and decided to memorialize the Secretary of State for India in Council. The effort was successful, and, in May, 1862 the Government of India announced that, in their opinion, the time had arrived when the foundation of a public Museum in Calcutta, which had been generally accepted as a duty of the Government, might be taken into consideration with regard to its practical realization. Negotiations which now followed between the Government of India and the Asiatic Society were protracted till the middle of the year 1865, when it was arranged that the Society should make over to the Board of Trustees for the proposed Museum the zoological, geological<sup>1</sup> and archaeological collections, and the Government should provide suitable accommodation for the Society in the Museum building, the portion allotted to the Society to be in their exclusive occupation and control. Legislative sanction was accorded to these conditions by the Indian Museum Act of 1866, and the valuable collections of the Society, accumulated during half a century by a long succession of enthusiastic members, were formally transferred to a Board of Trustees of which Sir Barnes Peacock, then Chief Justice of Bengal, was appointed President. The members included the Bishop of Calcutta, the Vice-Chancellor of the University and the President and three other representatives of the Asiatic Society. But although the negotiations had been carried on smoothly and harmoniously and had received legislative sanction, difficulties of a grave

<sup>1</sup> The geological collections were not transferred actually to the Trustees but to the Geological Survey.

order emerged as the erection of the Museum building made slow progress. It was realized before long that the building as planned could not possibly find accommodation for the Asiatic Society in addition to the Geological Survey and the Natural History Museum; it further became apparent that if the Asiatic Society were squeezed into the Museum building, its position as an independent body would be liable to be seriously affected. The Society consequently expressed its unwillingness to enter a building where accommodation was insufficient and freedom of action was liable to be cramped. The position thus created was one of great embarrassment, but the difficulty was solved by a committee consisting of one of the most sagacious administrators and one of the acutest scientists in the country, Sir Ashley Eden and Dr. Thomas Oldham. Upon their joint recommendation, the Government of India paid to the Asiatic Society a sum of one and a half lacs of rupees as compensation for its claim to accommodation in the projected Museum building. Doubts were expressed at the time as to the propriety of the course thus adopted, but after the lapse of nearly half a century, no one will venture to dispute that the arrangement has been highly beneficial to both the institutions and has fostered their growth and development.

We have now arrived at the stage at which the Museum ceased to be the property of the Asiatic Society of Bengal and was transformed into an Imperial Institution, but it was not till 1875 that the Museum building, one of the largest in this city, became ready for occupation.

As may be anticipated, the transference of the zoological and archaeological sections to the new building, and the arrangement of the specimens was a work of much labour and anxiety. This was successfully accomplished by Dr. John Anderson, who formerly held the Professorship of Natural Science in the Free Church College at Edinburgh, and was appointed the first curator on the 29th September, 1866, immediately after the Statute by which the Museum was established had been passed. A few years later Dr. Anderson's designation of Curator was changed to that of Superintendent, and he was also permitted by the Board of

Trustees to hold the Professorship of Comparative Anatomy at the Calcutta Medical College in addition to his duties in the Museum.

In the work of organization of the Museum in the new building, Dr. Anderson was ably assisted by Mr. James Wood-Mason. Dr. Anderson had foreseen, as early as 1867, that the assistance of a competent naturalist was essential to enable him effectively to arrange and organize the zoological section, and on his representation, the Government sanctioned an additional post of Assistant Curator, subsequently designated Deputy Superintendent. Considerable difficulty was at first experienced in the selection of a qualified assistant, but two years later, in 1869, the Trustees were fortunate to secure the services of Mr. James Wood-Mason, who had been selected for the post by Professor Huxley and Sir Joseph Hooker. Mr. Wood-Mason proved himself a very capable and devoted worker and ultimately succeeded Dr. Anderson as Superintendent when the latter retired in 1886.

The exacting work of reorganization of the Museum upon which Dr. Anderson and Mr. Wood-Mason were engaged, occupied them for over two years, and thus, although the Museum building was ready for occupation in 1875, it was not till the 1st April, 1878 that the gallery containing the collection of birds and the archaeological gallery were thrown open to the public; a few months later, in December, 1878 the public were admitted to the mammal gallery.

I shall not detain you with a detailed statement of the changes effected in the constitution of the Board of Trustees from time to time by the Legislature. It is sufficient to mention that in 1876 a new Statute was passed, by which the Statute of 1866 was repealed and the number of Trustees was increased from 13 to 16. In 1887 the number was further raised to 21 and opportunity was given to the Trustees to co-opt additional members. Finally, so recently as 1910, a new Statute was passed by which all the earlier enactments were repealed and the number of Trustees was fixed at 17. For the passing of this Act we are indebted mainly to the energy and scientific statesmanship of Sir Thomas Holland, Chairman of the Trustees from 1906 to 1909.



Museum Buildings from the Maidan,  
1914.

Three fundamental alterations in the constitution of the Board of Trustees were introduced by the Statute of 1910 and deserve special mention. In the first place, the officer in charge of each section of the Museum became a Trustee ex-officio, and was thus placed in a position to take part in the deliberations of the Trustees. In the second place, three members were allowed to be elected by Public Bodies, viz. one by the University of Calcutta, one by the Bengal Chamber of Commerce and one by the British Indian Association. In the third place, the number of representatives of the Asiatic Society, which by the Statute of 1866 was fixed at four and was raised to five in the Statutes of 1876 and 1887, was reduced to one. The effect of the changes thus recently introduced will, it is confidently expected, secure the more effective and harmonious administration of the Institution in the future.

I shall now pass on to a brief review of the development of the Museum since 1875, when the collections of the Asiatic Society were transferred to our new buildings. As already explained, the Museum, at the time, consisted, in the main, of the zoological, geological and archaeological collections. In June, 1882 the Government of India enquired from the Trustees whether accommodation could be provided in the Museum building for certain Economic products. The Trustees regretted their inability to accommodate such a collection, but expressed their readiness to favour an extension of the Museum building for the purpose suggested. Before effect could be given to this proposal, the Great Exhibition of 1883 was held in Calcutta. In 1884, after the Exhibition had been closed, it was suggested that the industrial collections, which had been brought to the Museum for the Exhibition, and under the designation of the Bengal Economic Museum, had been housed in temporary sheds on the site now occupied by the School of Art, might appropriately be amalgamated with the Indian Museum. The times were favourable for the acceptance of this scheme, which was rapidly advanced, and on the 1st April, 1887 the Economic and Art Section, which had formed a separate Institution under the

direct control of the Government of Bengal, was placed under the Trustees, with Mr. T. N. Mookerjee, a recognized authority on Indian Artware, as the first assistant curator in charge of the new department.

The establishment of this new section at once made it essential for the Government seriously to grapple the question of additional accommodation which had been first mooted in 1882. The result was that in 1888 the construction of the wing in Sudder Street was commenced, and in 1891, Mr. Thurston, who was then officiating for Dr. Watt, the Reporter on Economic Products, found himself in a position to remove to the new building all the collections of economic products, artware and ethnology. The art gallery itself was opened to the public in September, 1892 and the ethnological gallery in January, 1893, but the economic court was not opened to the public till several years later, viz. in 1901, when Sir George Watt, the head of this section, retired and was succeeded by Mr. I. H. Burkill, now Director of the Botanical Gardens at Singapore.

The Museum which, as we have seen, had originally started with the zoological and archaeological sections had thus had engrafted upon it, in course of time, the economic and art section, while the collections in the possession of the Geological Department occupied a somewhat anomalous and undefined position. The time had now evidently arrived, at which it was essential to secure the proper co-ordination of the institution as a whole and to ensure its harmonious growth in the future, that a comprehensive view of its scope and functions should be adopted. Consequently, in 1904 Sir Herbert Risley, then Chairman of the Trustees, proposed that the Museum might be divided into five sections, namely, zoological and ethnological, geological, archaeological, art, and industrial. This distribution ultimately received the sanction of the Legislature in 1910.

I have now dwelt briefly upon the history of the extension of the Museum buildings rendered necessary by the establishment of the new economic and art section. I shall pass on for a moment to a somewhat different aspect of our

activities. As early as 1889, the need for extended accommodation for work and study rooms in the zoological and archaeological sections made itself keenly felt. A proposal to construct rooms on the roof of the main building was pronounced impracticable. Consequently, in 1891 the Board of Trustees pressed upon the Government of Bengal to fulfill their pledge to build an additional wing to the Museum, as it had agreed to do six years earlier.

Three years later, the local Government consented to provide for the accommodation of the offices, studies, laboratories, and store-rooms of the Museum and of the Geological Survey of India; this was accepted by the Trustees in satisfaction of all their outstanding claims. The building operations were commenced and carried on with a rapidity unknown in the annals of the Indian Museum, and in the following year the magnificent new east wing was completed and was available for use as soon as the internal fittings could be provided.

The pressure upon the public galleries meanwhile continued steadily to increase, and in 1904 a fresh scheme for the extension of the Museum building on the Chowringhee Road, which had been under prolonged consideration, took definite shape. The scheme was warmly welcomed by the government of Lord Curzon, and a handsome grant was generously provided to meet the cost of this extension. In 1911, this new wing of the Museum was practically completed, and its two lower floors were fitted up as public galleries; the top floor of the recently erected range of buildings, which houses the offices of the art and the archaeological sections, and the zoological section, and, finally as a lecture hall for the whole institution.

It is impossible within the time at my disposal to lay before the audience even a meagre account of the vast collections in the Indian Museum. But I must attempt a rapid survey of the various sources from which our collections have been derived. The zoological collections have been derived mainly from five different sources. In the first place, we have the original specimens collected by the

Asiatic Society of Bengal, mainly under the guidance of their energetic and devoted curator Edward Blyth. These possess an exceptional value as the original documents on which the descriptions of a very large number of Indian animals were based.

In the second place, we have the collections made by the Surgeon-Naturalists on board the Royal Indian Marine Survey Ship 'Investigator,' the zoological work whereof was initiated at the instance of the Asiatic Society of Bengal in 1875.

The first Surgeon-Naturalist was Dr. Armstrong who held the post from 1875-79, when he was succeeded by Dr. Giles. The latter was followed in 1888 by that distinguished scientist, Colonel Alcock, who subsequently became Superintendent of the Indian Museum. The 'Investigator' collection is of unique importance, as we have here specimens of the Abyssal Fauna of the Indian Seas, the majority of which come from depths varying from 100 to 1900 fathoms.

In the third place, we have the invaluable collections made in connection with official frontier expeditions. These include specimens obtained on most of the important military and political expeditions that have taken place during the last forty years on the Northern and Eastern frontiers of the Indian Empire, from the Persian Boundary Commission of 1870 to the Abor Expedition of 1911. On most of these expeditions, a medical man was specially instructed to collect zoological specimens, and, with the exception of the Lassa Expedition (euphemistically called the Tibet Frontier Commission of 1903), the majority of the specimens collected have been deposited in the Indian Museum. It is a hopeful sign that on the occasion of the Abor Expedition, a zoologist was officially deputed to collect specimens and information regarding the fauna and anthropology of the country traversed.

In the fourth place, private donors, too numerous to be individually mentioned, have ungrudgingly enriched our collections; but I cannot allow the present occasion to pass without special mention of the names of two distinguished

officers of the Geological Survey, whose contributions are of abiding value, I mean Ferdinand Stoliczka and William Blanford.

In the fifth place, we are indebted to several of our officers for the contribution of valuable specimens to our collections. Two of our Superintendents, Dr. Anderson and Dr. Alcock, accompanied military or political expeditions beyond the frontier as doctors and naturalists, the former on two expeditions to Yunnan in 1868 and 1875, and the latter on the Pamir Boundary Commission in 1896; while our Assistant Superintendent, Mr. Kemp, joined the Abor Expedition of 1911 in the sole capacity of naturalist. These scientific workers made the fullest use of their exceptional opportunities, and the collections thus secured have proved to be of unique value; while the increased facilities for scientific tours latterly afforded to the members of our zoological staff has helped us greatly to make notable additions to our collection, more particularly of aquatic animals.

When we turn to our geological collections,<sup>1</sup> we find that they have been derived mainly from two sources. We have, in the first place, specimens collected by the members of the Asiatic Society of Bengal in the old days, and in the second place, the specimens collected by the officers of the Geological Survey since its foundation in 1851. The history and development of this department have proceeded generally on the same lines as those of the zoological collections. But there is this fundamental difference between the two: the geological collections represent the result of a policy supported by a comparatively large scientific staff, and, as a consequence, the geological collections are even more adequately representative of the Indian Empire and its frontiers than the zoological collections. I must not, however, venture upon even a superficial survey of the contents of the geological collections, as that would practically imply an attempt to write a history of the operations of the Geological Survey of India during the last sixty years.

<sup>1</sup> In the Geological Section of the Museum the Trustees merely possess visiting powers, which they assumed in 1910.

We next come to our archaeological collections, which are of unquestioned value to every serious student of Indian antiquities. The most considerable, and possibly the most attractive, portion of the specimens still consists of the statues, sculptured stones, inscriptions and coins collected by the members of the Asiatic Society of Bengal or presented to that Institution by investigators in all parts of the country, before the establishment of the Indian Museum as a separate institution maintained from the public funds. Every student of Indian antiquities, who has in any degree made himself familiar with the contents of the "Asiatick Researches" and of the "Journal of the Asiatic Society," will recollect that the names of many early contributors are closely connected with the specimens lent by the Society to the Indian Museum and now located in its buildings. Of this distinguished band of contributors, the name of General Alexander Cunningham stands out pre-eminent; and to him we owe the removal and preservation of the Bharut Stupa Rail, now one of the finest and most interesting existing relics of early Indian architecture. It is only necessary to add that since the archaeological section was placed under the Director General of Archaeology in 1910, many valuable coins, statues and other objects of interest have been deposited in Calcutta; amongst these, possibly the most notable addition to our collection consists of two stone figures, of a bull and a lion respectively, which date from the time of Asoka, and now stand erected at the entrance to the Museum.

Before I leave the archaeological collections, I cannot but make a passing reference to our extensive collection of coins, many of them lent by the Asiatic Society of Bengal, which were first catalogued by Mr. C. J. Rodgers and which have only recently been exhaustively described<sup>1</sup> by such numismatists as Mr. Vincent Smith and Mr. Nelson.

Our industrial collections also are of exceptional importance and form an extremely interesting group of objects. Some of these are specimens of industrial arts collected by

<sup>1</sup> At least one other volume of the recent catalogue is still to appear.

the members of the Asiatic Society; but, as I have already indicated, a substantial portion of these exhibits was transferred to the Museum only after the close of the Calcutta Exhibition of 1883-84.

Until quite recently, the ethnological collections also were included in the economic section; they comprise weapons, implements, clothing, and other articles used by the various Indian tribes and races, and also life-size models of typical individuals of these tribes which were carefully prepared on the occasion of the Calcutta Exhibition. Some of the models of mechanical appliances can be traced as far back as 1828, while a collection of Javanese weapons is said to have been presented to the Asiatic Society at an even earlier period by Sir Stamford Raffles, who was British Governor of Java in 1815. Perhaps the most notable single addition to this collection is the fine set of Indian musical instruments presented by our distinguished fellow-citizen Raja Sir Sourindra Mohun Tagore.

Finally, we have the art collections, which have a history entirely different from that of the exhibits in the other sections. Some of these were transferred from the Industrial Section as recently as 1910, but a very considerable proportion is the property of the Government of Bengal and owe their preservation to the energy and enthusiasm of successive Principals of the Calcutta School of Art; this observation applies with special appropriateness to the pictures, which were selected principally by Mr. E. B. Havell and Mr. Percy Brown.

There is only one other aspect of our activities to which I propose to invite your attention, namely, the distinguished part taken by this institution in the noble cause of the advancement of knowledge. It would be difficult to overestimate the importance of the biological and geological research strenuously carried out by our officers, though it is by no means easy to assign, except in the case of zoology, the precise share of credit for such work to the Indian Museum as distinct from the related scientific departments of Government. It may be maintained, without risk of

contradiction, that all the research work not only in zoology and geology but also in meteorology and archaeology, now undertaken by different Government Departments, owes its origin in the activities of the Asiatic Society of Bengal, and for many years the Museum in the rooms of the Society was the chief centre of such work in this country. The study and investigation of Applied Science, more particularly Botany and Chemistry, also had a similar origin.

The history of the development of the different sections of the Museum, since they came under our control, has, however, been so varied that it is only in zoology that it is possible to establish a claim for anything approaching a monopoly for the Indian Museum. The geological section, from the time of the foundation of the Geological Survey, has been incorporated therewith; the economic or industrial section has always been associated with the office of the Reporter on Economic Products to the Government of India, or, as he is now designated, the Economic Botanist to the Botanical Survey; the archaeological collections have been lent to the Director General of Archaeology in India.

The zoological section, on the other hand, has never been amalgamated at any time with an Imperial Survey Department, though we are now within measurable distance of the official recognition of the undoubted claims of zoology as a science pre-eminently useful and important, and of the foundation at no distant date of an Imperial Zoological Survey. The result of the position thus accidentally held in the past by the zoological section has been that the research work accomplished by our officers in this department is embodied in the long series of monographs and in the periodical publications issued by the Trustees of the Indian Museum. The "Records of the Indian Museum," which constitutes a Journal of Indian Zoology, has now reached its ninth volume, while the "Memoirs," of which four volumes have been hitherto published, include many original papers of first-rate importance, embodying the result of much patient and laborious investigation. The highly technical nature of these publications has served effectually to conceal their contents from the public, who are apt to judge

of the importance of a Museum solely from the specimens exhibited in the public galleries; but it is a source of legitimate pride and satisfaction to all interested in the future development of our work that the excellence of the original investigations carried out by our officers has spread the reputation of this Institution far and wide, into every centre where the knowledge of zoology is cultivated, and its claims as a science fittingly recognized.

I have now placed before you what, I am afraid, cannot but be described as a somewhat imperfect history of the foundation and growth of the Indian Museum; I have narrated to you, how a century ago a small band of scholars, engaged in the study of the history, languages and antiquities of this country and determined upon the investigation of its natural products, laid the foundation for a Museum in this city, entirely with the limited private means at their disposal; how it took the ruling authorities thirty years to realize their undoubted responsibilities in this direction, notwithstanding persistent and oft-repeated reminders; and how once the duties of the Government in this matter were fully appreciated, arrangements were readily made for the establishment and gradual development of an Imperial Museum worthy of the Metropolis of the Indian Empire.

I naturally feel tempted at this stage to ask myself, whether the institution thus founded, developed, and nurtured has fulfilled its mission. I have no desire on the present occasion to enter upon an exhaustive discussion of the true functions of a Museum in relation to the community at large; but a brief consideration of the question may not be entirely useless. It is now generally recognized that a Museum is an institution for the preservation of those objects which best illustrate the phenomena of Nature and the works of Man, for the utilization of these in the increase of knowledge, and for the culture and enlightenment of the people. A National or Imperial Museum must, consequently, be equipped adequately for the fulfilment of three principal functions, viz. first, for the accumulation and preservation of specimens such as form the material basis of knowledge

in the Arts and Sciences; secondly, for the elucidation and investigation of the specimens so collected and for the diffusion of the knowledge acquired thereby; and, thirdly, to make suitable arrangements calculated to arouse the interest of the public and to promote their instruction.

As regards the first two of these functions, the Indian Museum has no reason to reproach itself. We have taken adequate steps for purposes of record; that is, to preserve, for future comparative and critical study, the material upon which investigations have been made in the past, or which may confirm, correct, or modify the results of such studies. We have also taken measures for the advancement of learning, inasmuch as we have aided learned men in the work of extending the boundaries of knowledge, by affording them the use of material for investigation, laboratories, libraries and appliances. Nor have we been slow to stimulate original work in connection with our own collections and to promote the publication of the results reached by our investigators.

But I regret to confess, with a feeling of disappointment, that when I examine the history of the Indian Museum from the point of view of its third function as a possible powerful instrument for the instruction of the public, I cannot say that the fullest measure of success has been achieved. In so far as this third function is concerned, the Museum may be regarded, first, as an adjunct to the class room and the lecture room; secondly, as a bureau of information; and thirdly, as an institution for the culture of the people. A considerable measure of successful work has been accomplished in each of these directions, within the limited means at our disposal; but these aims are matters of vital importance for the promotion of which further determined effort must be made.

If we desire to furnish to the advanced or professional student, materials and opportunity for laboratory training; if we desire to aid the teacher of elementary, secondary, or technological knowledge in expounding to his pupils the principles of Art, Nature and History; our scientific staff must be materially strengthened; it would be disastrous to the success of the Indian Museum as an instrument for the

Advancement of Learning if our officers were seduced from their legitimate work of extending the boundaries of knowledge.

Again, it is unquestionably our duty to do our best for the culture of the public, through the display of attractive exhibition-series, well-planned, complete, and accurately labelled; and thus to stimulate and broaden the minds of those who are not engaged in scholarly research.

Here also, for lack of funds, we have not been able to arrange our public galleries as effectively as those of the great Museums of England, America and other civilized countries. But I am bound to observe that the extent of our effort in this direction has not always been correctly appreciated, and the numerous guide-books which have been prepared from time to time with considerable labour, have not very often received the recognition they deserve. I desire, consequently, to emphasize the urgent need for the improvement of our public galleries, and, generally, for the adoption of all necessary means to enable us to fulfil adequately our function as one of the most powerful agencies for the culture of the public and for the instruction of the advanced or professional student. For this purpose, we can confidently claim the assistance, not merely of the Government, but also of the generous and enlightened aristocracy throughout the country. It is not creditable to us that the Indian Museum should occupy the singular position of a great institution of which the paramount claims upon the community at large should scarcely if ever have been duly recognized. We have never lacked a constant succession of distinguished workers, and it is a matter of legitimate pride and satisfaction to all of us that the interests of the Museum are entrusted to a band of devoted and enthusiastic investigators, amongst whom we are at present able to count scholars of the stamp of Mr. Hayden, Mr. Hooper, Dr. Spooner, Mr. Percy Brown, Major Gage, and last but not least Dr. Annandale, who has been most unfalteringly jealous to maintain the high tradition of the institution.

The accomplishment of our work is safe in their hands; what they require is adequate funds for the full development

of the institution, as also genuine recognition of their labours, not only by the State but also by the educated and cultured public.

## CHAPTER II.

### *THE ANTHROPOLOGICAL COLLECTIONS.*

The study of anthropology, to use the term in its widest sense, was encouraged by Sir William Jones under several headings in his inaugural address to the Asiatic Society of Bengal, and it is probable that many of the specimens that had already accumulated in the Society's possession when Dr. Wallich wrote proposing the formation of a regular museum would now come under this heading. In the Asiatick Researches for 1814 there is a reference to the presentation by Mr. J. Brown of a "set of side arms belonging to the inhabitants of Nepal, consisting of one cutlass, a knife and a steel and flint for striking fire, in a leathern case," and to various gifts including "a brass standish and pen case" from Mr. Robert Home, the artist. Some of these objects are still in the Museum, in which a set of Javanese knives and daggers said to have been presented by Sir Stamford Raffles is also preserved.

Unfortunately, as is so often the case in old museum collections, a large proportion of the oldest specimens have lost their value owing to the fact that they were not properly labelled at the time they were received, or that the labels have since been lost. An interesting little book or rather portfolio of lithographs published in 1828 enables us, however, to trace some specimens. This work bears the title "Asiatic Museum Illustrated. Part I. Comprising Figures of all the Models that were presented to the Museum by Miss Tytler..... By Messrs. Savignhac and Pearson". Apparently Part II was never issued. Part I includes a portrait of Sir William Jones, a drawing of the Asiatic Society's rooms in Park Street (reproduced as the frontispiece of this volume) and figures of a number of models of Indian implements, appliances, conveyances and buildings, made under the supervision of Miss Tytler, a relative of the well-known naturalist, Colonel R. C. Tytler. A few of these

models still exist and others evidently formed the prototypes of models on a larger scale constructed at a later date.

In 1838 the rooms in which the Asiatic Society's collections were preserved were described as "damp, dark and dirty," and it was to remove this reproach that the Society first appointed a curator. About this time a large proportion of the older specimens evidently disappeared. In 1849 Dr. Rajendra Lala Mitra was commissioned to produce a catalogue of the "curiosities" in the possession of the Society, all objects not included under the headings "Zoological" and "Geological" being so classed.

This catalogue enumerated 7 busts, 81 pictures, 130 weapons, 490 manufactured objects of industrial service, 41 raw economic products, 66 musical instruments, 370 images of brass and stone, 32 architectural objects, and a series of inscriptions and manuscripts.

In 1868 the catalogue was revised in manuscript and the following figures were given:—

Armour and weapons	..	..	370
Manufactured industrial objects	..	..	725
Raw economic products	..	..	55
Musical instruments	..	..	68
Images of brass and stone and architectural objects	..	..	641

It was also noted that a large number of specimens obtained before 1849 had been lost. No difference was drawn at the time between ethnological and archæological specimens. The two allied branches of science were, however, distinguished when the specimens were removed to the existing museum buildings.

Dr. John Anderson took a great interest in the ethnological specimens handed over by the Asiatic Society and was anxious that the section of ethnology should be adequately represented in the new museum. In his first Annual Report (January, 1867) he says:—

If the Ethnology of India is to be illustrated in the Galleries of the new building each leading tribe should have its physical features portrayed by male and female crania and pelvises, and by coloured casts taken from life, and its civilization delineated by the clothing of the

tribe, and by its manufactures whether for household purposes, agriculture, the chase, defence, ornament, amusement or religious worship.

From 1866 onwards presentations of ethnological specimens continued to be added to the collections and were acknowledged in the Annual Reports of the Museum. These included several objects from the Andamans, such as a dancing-board, food-dishes, a landing-net and fish-basket, bottles and flints; also Naga spears and bows; a Bhutia trumpet and leaf sandals; famine-foods; a model of a Ceylon canoe; Garo cloths; ornaments and arms from Chittagong, Cox's Bazar, Nagpur, Burdwan, North Arrakan and the Midnapore Sonthals.

In 1875 a large collection of musical instruments was presented by Rajah Jotendra Mohun Tagore, Babu Sourindra Mohun Tagore and Mahrani Sarnomoyia. Many of these had been sent to the London Exhibition of 1874, and were ultimately presented to the Indian Museum in commemoration of the visit paid to Calcutta by His Royal Highness the Prince of Wales (Edward VII).

During this year the ethnological specimens were formally transferred to the Museum from the Asiatic Society, but the cases and fittings were not ready for them until some years later. In 1878-79 the Annual Report states:—

The last of the original grant is now being laid out on the Ethnology Gallery, but the sum falls so far short of what is wanted that the cases under construction will not admit of the cases being arranged and the Gallery opened to the public.

In 1880-81 the Superintendent reported:—

A few cases were supplied to the Ethnological Gallery three years ago, but as they were quite insufficient for the purposes for which the Gallery had been set apart, no attempt has been made to arrange the existing collections which have been simply stored in these cases.

Next year (1881-82) the Trustees were supplied with Rs. 50,000 for new fittings. With this sum the large gallery intended for the ethnological collections was fitted up with cases and was ready to receive the objects for the exhibition of which it had so long been reserved. But a further delay prevented the arrangement of the ethnological collections. On the completion of the fittings the Industrial

and Arts Exhibition of Calcutta was being organized, and at the request of the Lieutenant-Governor the empty gallery was temporarily placed by the Trustees at the disposal of the Exhibition Committee. Dr. Anderson took the opportunity on this occasion to speak in the Annual Report on the neglect of the subject in India:—

The subject of Ethnology in many of its departments has hardly been touched, when we consider the exhaustive manner in which the science is handled by the great Museums of the leading capitals of Europe, some of which can already boast of more complete collections of ethnology of India than the Calcutta Museum itself. The Governments of Austria, Germany and Italy have specially deputed capable ethnologists to India to collect objects for the Museums of Vienna, Berlin, Dresden and Florence; France already possesses the most unrivalled ethnological collection in the world. In a few years South Kensington Museum will also have better illustrations of certain departments of ethnology than this Museum, because an officer has been recently specially deputed to collect specimens of Indian arts and other kindred objects for that institution. A year or eighteen months would suffice to overtake a considerable portion of India. The value of such a collection from a purely scientific aspect would be inestimable, while the light it would throw on the habits and customs of the people, their grade of civilization and on the study of art among them would be of the highest value to the state.

What Dr. Anderson wrote more than thirty years ago is still true, notwithstanding the existence for some years of an official Ethnographical Survey of India..

After the Calcutta Exhibition some of the temporary buildings on the south of the Museum were made available for the collections of the Bengal Economic Museum, and the ethnological objects and various donations of industrial articles presented by foreign exhibitors. These formed a subsidiary Museum. In 1885-86 the ethnological collections were made over to the newly-appointed officer in charge of the Bengal Economic Museum and the combined economic, ethnological, art and industrial collections belonging to the Government of Bengal were handed over to the Trustees of the Indian Museum on 1st April, 1887.

At this time the ethnological collections were exhibited in the masonry buildings forming part of the quadrangle of the old St. Paul's School, and more lately occupied by the Bengal Secretariat Press. They were well protected, but for

the most part were very crowded in small rooms and passages and were very incomplete. Until additional protected space was available, it was not possible to complete them or arrange them in a more satisfactory manner, so as to give readily a good general idea of the principal races and tribes inhabiting the different parts of India and more particularly of Bengal and Assam, their ways of living and indigenous arts or manufactures.

Mr. (now Sir Alexander) Pedler was in charge of the Economic and Art Museum from 1884, and in the Report for 1886-87 makes the following remarks on the state of the ethnological collections:—

This collection occupies a series of five rooms to the south of the Museum buildings, together with an enclosed verandah running along them; also it occupies two large halls to the south-east of the buildings near the tank, and lastly a large temporary hall to the east of two sheds.

The ethnological collection now in the Museum consists of two distinct collections. The first was made for the Calcutta International Exhibition in 1883-84, while the second was that formerly under the Trustees of the Indian Museum, but was handed over to the Economic Museum in 1885. These collections have been amalgamated to a certain extent, but in such a way that the two collections can be at once distinguished by their labels.

The ethnological collection belonging to the Bengal Government numbered 2817, while the collection handed over by the Imperial Museum extended to about 3700 specimens, or 6517 in all.

At length, in 1888, the Government of Bengal was able to commence the construction of the new building which it had in 1882 undertaken to erect. The wing was finished in 1891, and the removal of the collections of the Economic and Art Section was commenced; the Ethnological Gallery was opened to the public on January 1st, 1893. It is situated in the north-east wing of the Museum buildings and has an area of 7304 square feet.

The combined collections were at first arranged geographically. Life-sized figures or models of some particular tribe or of the population of a particular part of India were placed in the central cases, while objects such as arms, implements, clothes, ornaments, domestic utensils, musical instruments and articles connected with religious observances of the same people were placed in wall-cases opposite. The

ethnology of the Andaman and Nicobar Islands, Burma, Lower Bengal, Darjiling, Chittagong and Chutia Nagpur was particularly well represented in this manner; but considerations of space made it impossible to keep to the arrangement.

The models of racial types are still perhaps the most popular feature of the gallery. They were prepared for the Calcutta Exhibition under the supervision of the late Sir Herbert Risley and are believed to give a very accurate representation of the physical proportions of the different tribes of Northern India. The clothes, weapons, etc. are in most cases actual specimens. The whole series has recently been repaired by the son of the man who made the original casts.

The collection as a whole is now very crowded, and apart from the public gallery little storage-space is available. For some years it has been felt that the objects should be given more space in the show-cases, in which a more intelligent display should be made, and scientifically arranged comparative exhibits shown, as well as general and geographical ones, with explanatory labels.

In 1911 the ethnological collections were transferred from the Industrial to the Natural History Section, and the latter assumed the official style of Zoological and Anthropological Section. Anthropology was thus reunited, for the valuable collection of human skulls, made chiefly by the late Dr. John Anderson, had remained under the direct care of the Superintendent, while a set of the well-known models of faces, hands and feet prepared in India and Central Asia by the Schlagintweits had been transferred to the Industrial, or, as it was called at the time, the Economic Section.

The skulls have never been exhibited to the public, they are now systematically arranged in a small room situated at the end of the Bird Gallery. With them is a large series of human pelvises. Unfortunately, although these latter bones are all carefully numbered, the register to which the numbers refer has long been missing and consequently the *provenance* of the specimens cannot be traced, so that, unlike the skulls, they have little scientific value.

When the ethnological collections were placed under the present head of the zoological section, himself a student of anthropology, it was hoped that a rapid growth both in the number of specimens and in the work undertaken upon them would become possible; but the staff of the new section (four scientific men) proved all too small even for the increase that took place at the same time in the zoological work.

Within the last ten years there have been but two important accessions, namely the collection made in the course of the Abor Expedition of 1911-1912 by Mr. S. W. Kemp and Mr. J. Coggin Brown, and the magnificent series of Japanese and Bengali musical instruments presented at the beginning of 1914 by Raja Sir Sourindro Mohun Tagore in commemoration of the centenary of the Museum and as a proof of his loyalty to the Crown.

The Abor collection includes specimens of the somewhat scanty implements, clothing, utensils, etc., of one of the most interesting tribes on the North-East Frontier of India, and in particular of the curious bronze bowls which the Abors procure from the confines of Tibet and use as a kind of currency or emergency fund. Many of the objects included in the collection are illustrated in Sir George Duff-Sutherland-Dunbar's account of the ethnology of the Abors published in 1914 in the *Memoirs of the Asiatic Society of Bengal*.

The late Raja Sir Sourindro Mohun Tagore<sup>1</sup>, whose interest in and knowledge of Indian music in all its phases had a world-wide reputation, presented, with other members of his family (p. 23), to the Museum nearly forty years ago a collection of Indian instruments that rendered the collection as a whole perhaps more complete in this direction than in any other. His recent donation includes the complete set of instruments prepared in 1875 for the Bengali band that played before King Edward VII when he visited Calcutta as Prince of Wales. It also includes a set of Japanese instruments presented to the Raja by His Imperial Majesty the late Emperor of Japan. As many of the Japanese musical instruments probably had their origin in India,

<sup>1</sup> He died in June, 1914.

this gift is of peculiar interest. Mr. Stewart Culin, who is making a study of the Japanese court ceremonies, tells us that the set, although clearly made for the purpose of presentation, includes a copy of at least one very archaic type of stringed instrument.

It is not possible to claim for either the ethnographical or the strictly anthropological collections that they have ever formed the basis of research in the same manner or to the same extent as the zoological collections have done. Nevertheless, many of the specimens were presented in the old days on being described in the *Journal of the Asiatic Society of Bengal*; it is greatly to be hoped that the utilization of the Abor collection in connection with Sir George Dunbar's paper may initiate a revival of the practice.

Many of the skulls were sent to Scotland some years ago and described by Sir William Turner in his "Contributions to the Craniology of the People of the Empire of India," published in the *Transactions of the Royal Society of Edinburgh*, vols. XXXIX, XL and XLV; while a complete descriptive catalogue of the collection was prepared in 1909 in Calcutta by Mr. B. A. Gupté and issued by the Ethnographical Survey of India, which placed a large number of copies at the disposal of the Trustees for distribution to their regular correspondents.

The first requisite for increase in the utility of the ethnological gallery is the preparation of careful descriptive catalogues, which will teach not only ethnologists abroad, but also those connected with the Museum, something about the specimens. Proposals for the compilation of an account of the musical instruments have long been under consideration, but, so far, the difficulty of obtaining the services of an editor with both the necessary expert knowledge and the necessary leisure has proved insuperable. Until a special scientific officer who can devote his whole time to anthropology is appointed in charge of the gallery, there seems to be little hope of any great advance.

## CHAPTER III.

### THE ARCHAEOLOGICAL SECTION.

After the completion of the first block of Museum buildings, the authorities of the Asiatic Society of Bengal made over their entire collection of antiquities to the Trustees of the Museum, with the exception of inscribed copper plates and coins. The collection, as it stood in 1876, although important, was not a very complete one. The remains of the Bharhut stupa were not included in it; there were not more than a dozen Indo-Greek sculptures from Gandhara, and there were but few mediæval sculptures from Bihar. The most important groups in this collection were:—

I. Sculptures from Mathura. These included the Silenus group discovered by Colonel Stacy, the unique image of Hercules fighting with the Lion, a number of inscribed pillar bases of the Indo-Scythian period, and one or two fine Buddhist images of the Gupta period. With the exception of the Silenus group, all Mathura sculptures in the Society's collection were presented to it in 1862 by the Hon. G. F. Edmonstone, then Lieutenant Governor of the North-Western Provinces.

II. Sculptures from Sarnath. This series contained four elaborately carved stelae and a number of very fine Buddhist images of the Gupta period. The larger portion of this collection was received as a donation from Sir Alexander Cunningham in 1835-36.

III. A collection of Brahmanical and Buddhist images from Java. These were received by the Asiatic Society of Bengal as presents from its members at various times, but as no record of their arrival or presentation can be traced, neither the actual dates of presentations, nor the names of the donors, except in one or two cases, can be ascertained.

IV. A number of inscriptions on stones.

The archaeological specimens received from the Asiatic Society were placed in four rooms in the ground floor of the building.

Immediately after its foundation, the new Museum received three different collections from the Archaeological Survey of India, through its Director-General, Sir Alexander Cunningham. These were:—

(1) The remains of an ancient stupa and the railing around it from Bharhut, Nagod State, Central India.

(2) A number of bas-reliefs of the Indo-Greek School of sculpture.

(3) A collection of images and other antiquities found during the excavation of the temple courtyard of Bodh-Gaya.

At the same time the Museum received a collection of plaster casts of the bas-reliefs in the cave-temples of Udayagiri and Khandagiri in Orissa.

These additions to the collection of the Asiatic Society of Bengal made the new Museum the premier museum of Indian archaeology. Even now the remains of the Bharhut stupa, the collection of Gandhara sculptures, and the mediæval sculptures from Magadha are the most important collections in the Archaeological Section.

At the beginning, all departments of the Museum were placed under Dr. J. Anderson, the First Superintendent. The archaeological exhibits were arranged by him in the rooms set apart for archaeology on the ground-floor of the building. His arrangement was completed, and the archaeological galleries thrown open to the public, in 1878.

Dr. Anderson must have devoted a good deal of his time to archaeology. He had arranged the entire collection from Bharhut in one room, where he attempted to set up the different parts of the railing, and one of the gateways of the stupa, in their original positions.<sup>1</sup> In this work he was constantly helped by Sir Alexander Cunningham, then Director-General of Archaeology in India, and the late Raja Rajendra Lala Mittra. The reconstruction of the railing and gateway of the stupa involved the restoration in

<sup>1</sup> It was apparently intended at first to erect the railing outside in the quadrangle of the Museum, round a large *pipal*-tree that formerly grew there. The seal of the Trustees, the design of which is reproduced on the title-page of this book, is believed to perpetuate the intention in effigy.



Main Entrance of the Museum,  
1914.

many places of missing portions, which was very cleverly done in plaster.

The specimens from Mathura, Sravasti, Amrawati, and the Gandhara sculptures were arranged in the second room, while the collections from Sarnath, Bodh-Gaya and other places were placed in the long gallery on the south side of the Museum.

After completing the arrangement in the archaeological galleries, Dr. Anderson set himself to write a catalogue and handbook of the section, which was no easy task, considering that hitherto he had not studied Indian archaeology seriously. The catalogue compiled by him was published in two parts and remains to this day the most reliable and accurate account of the archaeological collections of the Indian Museum. His powers of observation were so keen that even where he has not succeeded in identifying particular specimens his description of them has enabled others to do so in different parts of the world. The catalogue was completed in 1882 and published during the course of the next year. In its preface Dr. Anderson acknowledges the help which he obtained from prominent archaeologists of his day. It can be gathered from it that prominent members of the Asiatic Society of Bengal, such as Raja Rajendra Lala Mitra, and officers of the Archaeological Survey, such as Sir Alexander Cunningham and the late J. D. M. Beglar, took great interest in the newly formed Museum. The actual division of the contents of the Archaeological Section into four departments, *viz.*, (a) Asoka, (b) Indo-Scythian, (c) Gupta and (d) Muhammadan with inscriptions, is, as Dr. Anderson himself acknowledges, due to a suggestion originally made by Sir Alexander Cunningham.

The Asoka Gallery contained specimens of greater antiquity than the first century of the Christian Era. These exhibited in the second room, called the Indo-Scythian Gallery, extended in date over the first two centuries after Christ. The specimens of the Gupta gallery were more recent in date than the third century A.D. Owing to the want of space certain objects had to be displayed in this gallery which should have been kept apart by themselves,

for example, the finds from the cromlechs of South India and the extensive collection of stone implements. To Mr. Beglar's suggestion was due the division of the entire collection belonging to historical periods, apart from objects of Muhammadan origin, into two groups: Buddhist and Brahmanical.

Dr. John Anderson retired in 1886, and after his retirement there was no qualified officer on the staff of the Museum to look after the archaeological collections. During this period specimens continued to pour in from all parts of India.

The coin collection was, however, started, to which the Government contributed very largely from the proceeds of finds of treasure trove.

Sir Alexander Cunningham had retired in 1885, a year before Dr. Anderson, and with his retirement the last link with the past was cut off. He had entered the Indian Army in 1831, and during the earlier years of his stay in India was the constant companion of James Prinsep. During his long service in the army, he had contributed a number of valuable papers to the *Journal of the Asiatic Society of Bengal*, mostly on topography and numismatics. After retiring from the army, and at an age when other men think of leaving India, he joined the appointment of Director of Archaeology, then newly created by Lord Canning. This appointment was shortly abolished by Lord Lawrence, and Cunningham returned to England to continue his researches in the hitherto unknown field of Indian numismatics. In 1870 he again came to India, to assume the newly-created post of Director-General of Archaeology, which he held for fifteen years. He retired full of years and honours at the age of seventy. There was no department of Indian antiquities which his master hand had not touched, and everything he touched, he touched but to adorn. Even now, in many subjects, he is still regarded as the leading authority. In the year of Dr. Anderson's retirement two other prominent members of the Board of Trustees, Dr. James Burgess and the late Raja Rajendra Lala Mitra, also retired.

During the six years that followed, the archaeological collections were much neglected. New specimens were

entered in the registers and numbered; but descriptions, labelling or fresh arrangement was impossible. In 1892, the Trustees appointed the late Babu Purna Chandra Mukherji as temporary archaeologist to the Museum. Purna Babu was mostly employed in collecting sculptures. In the same year the late Mr. C. J. Rodgers, Honorary Numismatist to the Government of India, began a catalogue of the coins in the Museum, which was finally published in four parts. At this time the coin cabinet of the Museum contained no more than forty-two varieties.

At this period of the Museum's existence Dr. A. F. R. Hoernle, Philological Secretary of the Asiatic Society of Bengal, generally directed the policy of the Trustees in antiquarian matters, and took great interest in the archaeological collections. He revised and corrected Cunningham's readings of the numerous votive inscriptions on the railing of the Bharhut stupa, which were published in a series of articles in the *Indian Antiquary*.

In the following year the Government of Bengal decided to transfer the contents of the Museum founded by Mr. A. M. Broadley in Bihar to Calcutta, and Babu P. C. Mukherji was instructed to supervise their removal. The entire collection of the Bihar Museum was added to that of the Indian Museum, and the material thus collected formed the basis of M. Foucher's excellent treatises on Indian Buddhist iconography. Even now the Indian Museum is the only museum in India where Buddhist iconography can be studied in detail. The Bihar collection also contained a large number of unique Hindu images; and if any one takes up the study of Hindu iconography seriously, he will have to rely mainly on the Bihar specimens in the Indian Museum.

In June, 1894, the services of Babu P. C. Mukherji were dispensed with. Since his appointment the work done by him chiefly consisted of collection of specimens; very little was done towards their classification or rearrangement.

In 1895 the Government of Bengal spent a large amount of money in preparing casts of all the known inscriptions of Aśoka, for the Indian Museum, and in securing for it a large number of Gāndhāra sculptures from a place called Lorian-

Tangai, in the Swat Valley. The addition of this collection to the Museum raised it to a very high rank among institutions which possess specimens of the Indo-Greek school of sculpture. The casts of Aśoka inscriptions were, at first, exhibited in a small room, built for this purpose, to the south of the main building of the Museum. This room had to be demolished in 1903 to make room for a new wing of the Museum, and the collection of casts was stored in godowns.

At this time the Trustees felt the need of fresh arrangement and classification of the specimens in the Archaeological Section. The Government of India, in consultation with the late Hofrath Dr. G. Bühler, Professor of Sanskrit in the University of Vienna, appointed the late Dr. Theodor Bloch as First Assistant to the Superintendent of the Indian Museum in 1895. Hitherto, the first assistant had been a zoologist, but the Trustees, with the sanction of Government, decided to appoint a competent oriental scholar to this post. Dr. Bloch joined his appointment on the 30th November, 1896, and began work in the archaeological galleries. He was thus occupied from the date of his appointment till 1901, when he was appointed Archaeological Surveyor, Bengal Circle. During this short period a good deal of scientific work was done in this section. Dr. Bloch left the railing of the Bharhut stupa as it had been arranged by Cunningham and Anderson, but he completely rearranged the sculptures in the Indo-Greek Court, in which Gāndhāra sculptures only were now placed. His identifications of many of the scenes from Buddha's life among Gāndhāra sculptures of this Museum were made long before the publication of M. A. Foucher's "L'Art Greco-Bouddhique". In the Gupta Gallery he adhered to Anderson's division of Brahmanical and Buddhist sculptures, but he proceeded to rearrange the specimens in such a way as to make the idea of later Hindu and Buddhist pantheons clear even to the uninitiated. On the Buddhist side he placed Mathura, Amarawati and Sarnath sculptures in the first three niches. He then proceeded to classify specimens from Bihar and Bengal. First of all we find images of Buddhas classified according to the different positions of the

hands; next we find the Bodhisattvas; Avalokiteśvara, Mañjuśrī etc., in their varying forms; such as images with two hands, with four hands, and even with twelve hands. The next group, in order, are the various forms of Tārā, and finally we have the terrible female deities of later Buddhism, and Buddhist sculptures from Java.

On the Brahmanical side we find that the first niche contains images of Sūryya and two figures of Sūryyanārāyaṇa. The next three niches contain images of different forms of Viṣṇu and his different incarnations, as well as those of the nine planets, which, very often, are found side by side on the same slab. After this, we come to the Saiva section, where we find images of Siva, Siva in conjunction with Viṣṇu, and the various forms of Durgā or Pārvatī. The niche last but one was reserved for Jaina sculptures, and the last of all contains a very rare collection of Hindu sculptures from Java. In the last room, the Inscription Gallery, the wall space was divided into two parts; one being devoted to Sanskritic inscriptions, while the other was devoted to Arabic and Persian inscriptions. In the centre of the room Muhammadan architectural specimens from Gaur and other places were displayed.

In 1903 the Asiatic Society of Bengal agreed to send its very fine collection of Indian coins to the Museum, as a permanent loan. Having secured a liberal grant of money from the Government of India for the publication of catalogues of the coins in the cabinet of the Museum and that of the Asiatic Society of Bengal, the Trustees took over the Society's collection of coins in 1904. Foreign coins and duplicates were not included in this catalogue, and have since been returned to the Society. The joint cabinet thus formed is one of the best collections of Indian coins. It was finally decided by the Trustees that Mr. V. A. Smith, I.C.S. (retired), was to undertake the first volume of the catalogue. It was to be divided into three parts and was to contain non-Muhammadan coins. The remaining volumes of the catalogue were undertaken by Mr. H. N. Wright, I.C.S., who was permitted by the Government of India to take up the work while on furlough in England. The second volume

was devoted to the coins of the prae-Mughal Muhammadan dynasties and was to be divided into two parts; the first part contained the coins of the Sultans of Delhi from the 12th century to the 16th, and the second part, those of the various Muhammadan states which arose upon the ruins of the Empire of the Tughlaqs. The third volume was to be devoted entirely to the coins of the Mughal Emperors. The fourth volume was to contain the coins of various Muhammadan and Hindu states which came into existence upon the downfall of the Mughal Empire.

The coins catalogued by Mr. V. A. Smith were returned in 1907, and those catalogued by Mr. H. N. Wright in the next year. They were arranged in the safes by Babu Rakhai Das Banerji. At this time Babu Nilmoni Chakravartti compiled a catalogue of supplementary specimens in the Archaeological galleries. This catalogue was the basis of that subsequently published in the name of the late Dr. T. Bloch, who re-wrote the first part of it.

Arrangements were in progress for some time to create an Archaeological Section of the Museum and to transfer its control to the Director-General of Archaeology in India. In anticipation of this change, the Director-General placed the services of his excavation assistant at the disposal of the Trustees. The Archaeological Section was formally transferred on loan to the Archaeological Survey in December, 1910. At the same time the Trustees transferred the services of a gallery assistant to the Archaeological Department and agreed to the deduction of the pay of this officer, and also of the sum of Rs. 1200 for the purchase of antiquities from their annual grant.

During the first few months of its existence the work of the new Section was very much hampered for want of funds. Funds and the temporary staff were, however, sanctioned by Government in 1911.

When the new wing of the Indian Museum was planned it was proposed that the ground floor should be occupied by the Archaeological Section, the first floor by the Art Section, and the second floor by the offices of both these sections. Shortly before the visit of Their Imperial Majesties, the

Trustees found it necessary to remove the Victoria Memorial Collection, then temporarily housed in the Museum, from the front room of the first floor of the main building. The Director-General of Archaeology consented to the loan of the ground floor of the new wing to the Trustees of the Victoria Memorial, temporarily, for the exhibition of their specimens, but reserved the space in the suspended galleries and the coin room for the use of the Archaeological Section. In the space thus allotted were showed the antiquities collected by Dr. (now Sir Aurel) Stein during his first expedition into Central Asia, the antiquities discovered by Dr. J. H. Marshall in the excavations of Bhita, and those collected by Rev. A. H. Francke in Indian Tibet. The collection of prehistoric stone and metal implements of the Museum were also exhibited here.

The arrangements were completed on the 30th of December, 1911, and Their Majesties the King-Emperor and the Queen-Empress paid a visit to the Museum on the forenoon of 4th January, 1912.

The entire coin collection was, about the same time, rearranged in the new coin room. The room itself has been constructed as a strong room, in which it is not necessary to keep the coins locked in safes.

The exhibits of the Victoria Memorial having now been removed elsewhere, the gallery on the ground floor of the new wing has been formally made over to this Section. A new arrangement of specimens on modern methods is shortly to be taken in hand. At the same time the additional space will make it possible to exhibit the finds made in recent excavations, or rather such of them as will be sent to Calcutta.

In 1912 Mr. J. Coggin Brown of the Geological Survey of India undertook to classify and rearrange the collection of prehistoric stone and metal implements, and has compiled a catalogue of them. The publication of his catalogue, it is to be hoped, will make future investigation in Indian prehistoric archaeology more easy, for reliable literature on this subject is altogether wanting.

## CHAPTER IV.

*THE ART SECTION.*

The Art Section of the Indian Museum was constituted in its present form as recently as 1911, by the amalgamation for administrative purposes of the Artware Court, formerly included in the Economic Section, and the Bengal Government Art Gallery.

The history of the Artware Court is discussed in chapter vi of this book in connection with that of the Industrial Section, with which it was once connected. The Government Art Gallery owes its origin to a hope expressed by the Viceroy (Lord Northbrook) in December, 1874, when opening a temporary fine art exhibition in the Museum building, that a permanent art gallery would eventually be established in Calcutta. Sir Richard Temple, then Lieutenant Governor of Bengal, took steps to accomplish this object by leasing certain buildings and by obtaining contributions in the way of works of art. The gallery was established in connection with the School of Art. It was opened on the 6th April, 1876 by Lord Northbrook. In 1877, the local Government recorded a Resolution directing a sum of Rs. 10,000 to be budgetted for annually in the estimates of the Education Department on account of the Art Gallery, and appointing a Committee to assist the Principal of the School of Art with their advice and support in matters connected with the purchase of works of art for the Gallery out of the grant. In 1905, in connection with the scheme for the enlargement and improvement of the Indian Museum, it was proposed to amalgamate the art collections of the Museum with those of the Art Gallery. The combined collections were to be placed in charge of the Principal of the School of Art as Superintendent. These proposals were agreed upon by the Viceroy and the Lieutenant Governor in consultation.

On April 1st, 1911, the Artware Court of the Indian

Museum and the Government Art Gallery were, as already stated, amalgamated to form the Art Section of the Indian Museum. Previous to this date the Principal of the Government School of Art, Calcutta, held charge of the Government Art Gallery only, but on the amalgamation he took over charge from the Reporter on Economic Products to the Government of India of the Artware Court and the entire new section came under his control.

The work during the year 1911-12 was mainly the transfer of the two collections from their original location, and their accommodation and arrangement in the new wing of the Museum on the first floor allotted to the Art Section. The new building was completed on the 1st September, 1911, and a sum of Rs. 50,000 was put aside by the Trustees for providing fittings for this gallery, this sum being met from a special grant made to the Trustees for the improvement of the Museum by Lord Curzon's Government in 1904.

Immediately the construction of an entire outfit of new glass cases was commenced. The Government of India having expressed a desire that the collection should, if possible, be on view to the public at the time of the royal visit in December, in spite of the limited time thus allowed, special efforts were made to accomplish this. The cases were designed and constructed in Calcutta by Chinese carpenters in the short space of two and a half months, leaving the remainder of the time, one and a half months, for the transfer, assortment, and display of the combined collections. Some idea of the work involved may be gained by the fact that the cases constructed were 68 in number, and the objects exhibited amount to over 10,000. The fine art collection also comprises some 714 pictures, all of which had to be glazed, framed and hung. As a fitting conclusion to this strenuous piece of work, Their Imperial Majesties were the first visitors to the Art Section in its reorganized state.

The general arrangements of the art collections may now be described. Here it seems necessary to remark that the question of classification in all art museums has ever been a difficult one; but the balance of expert opinion has usually

been in favour of grouping by industries, on the grounds that students would thus obtain greater facilities for their researches, and the general public would be able more readily to understand the character of the arts represented.

With this object in view the collections in this section have been arranged primarily into three main classes: (1) textiles; (2) metal, wood, ceramics etc., and (3) pictures. These three classes have again been resolved into subdivisions, as for example the textile class, which has been separated into (a) those articles decorated in the loom, such as flowered muslins and brocades, and (b) those which are ornamented after they leave the loom, such as embroideries and cotton prints.

Within this classification the aim has been to observe such methods of subsidiary grouping as may render the collections both useful to the student and intelligible to the general public. These methods necessarily vary somewhat in the different classes, but as a rule may be described in this order (a) process or technical subdivision of the craft; (b) historical, by date; (c) local, by country of manufacture.

In explaining this system of arrangement one cannot be unconscious of the fact that even in this matter there can be two points of view; I refer to the eastern and western. For instance, all over the East calligraphy is considered a fine art, and in China the penman who can write elegantly in sweeping lines with a flowing brush is ranked above the artist. In the same way the *khush navis* or "pleasing writer" of India has always been regarded as a great craftsman. To fall in with this aspect of oriental art, therefore, it is apparent that calligraphy should find a suitable place in our classification.

Further, it is obvious that in dealing with a complex assemblage of objects, there must naturally be found some examples in which the leading principle of arrangement cannot strictly be followed; and some examples in which a certain overlapping of the various classes is bound to occur. Where, however, any given object illustrates in itself more than one process or craft, the object has been allocated so far as possible to the class which appeared to have the stronger

claim to it either as offering a fuller illustration of the craft, or as filling a gap in the sequence of the arrangement. By these various means it is believed that this section represents something approaching a systematic survey of the arts of India, and should form a means of instruction to all classes of people.

A brief description of the principal objects in some of the more important classes may now be outlined. The main class which first meets the eye on entering the court is that of Textiles. These occupy the cases in the whole of the northern half of the principal gallery, the subdivision of fabrics decorated in the loom being exhibited on one side, while those subsequently treated lie on the other. We may take up the latter subdivision first, as it is well represented in the entire series of frames on our right. Broadly, this particular division resolves itself into wax cloth and wax printing, tie-dyeing and cotton printing, and every form of embroidery. Some of the most interesting of these may be referred to in detail.

The dexterous manipulation of his crude tools and materials by the Peshawari in the production of what is commonly known as "Afridi wax cloth" is remarkable, and no description can convey his wonderful sleight of hand when wielding the iron style and treacly *rogan*, or mixture, to obtain his effects. But many good examples of his work displayed in the first frame on the right will show what artistic results this Frontier artist can achieve.

Near to these Afridi wax-cloth specimens, several other artistic industries are represented in which the use of wax plays an important part in their production. Probably one of the most interesting of these is that in which the pattern is obtained by stopping out different portions of the design by means of a wax resist. The process is too complicated for description, but the specimen shown from Masulipatam will indicate what rich and elaborate effects may be obtained in this manner. The art is essentially one of Southern India, but it is nowhere carried to such a degree of excellence as in the distant island of Java. History is still vague as to whether the early Javanese were emigrants from Southern

India or from Kathiawar. May it not be a small link in the chain of evidence in support of the Southern India tradition that the people of the south of the Peninsula and the Javanese are both experts in the same peculiar craft?

Near this collection is exhibited a series of cotton cloths treated by a decorative process known as "tie-dyeing." As a process it is probably one of the most interesting we have in India, and one that exhibits most plainly the patient character of the Indian workman. It will be seen that the pattern must necessarily on account of the method employed consist of a series of small dots or circles. One would naturally assume that a design worked out by means of this one circular element would not be capable of much elaboration; that the limitations imposed upon him would restrict the workman to simple scrolls and geometrical forms. But the reverse is often the case, as many of these fabrics depict intricate borders of elephants and cavaliers, chariots and horses, musicians and dancing girls, all drawn in outlines formed by a series of innumerable small dots. However, the method adopted by the dyer to secure this effect is the most astonishing part of this industry, as each minute dot is obtained by the fabric being tied up into a knot by means of a thread. When this part of the process is complete—that is the fabric being tied up into some thousands of knots—it is put into the dye-pot. The knots bound up tightly with the thread resist the action of the dye, and ultimately when the colouring process is complete, this thread is removed revealing a small white undyed spot, the thousands of which are so arranged as to produce the desired pattern. No description can do justice to this process, which, regarded in any light, is possibly one of the most remarkable on record. The art is an extensive one and is found in most of the bazaars of India, but its original home was undoubtedly Rajputana, where some of the most elaborate tie-dyed fabrics are manufactured.

The story of this art has an interesting sequel. It has been explained that the article is a cotton cloth, and the pattern appears as white spots on a red ground. The association of this species of fabric with a machine-made production in England, used by the British workman, may seem

remote, but nevertheless it exists. What is referred to is the well-known red and white-spotted handkerchief often seen in the hands of the English labourer or navvy, called the "bandana." The explanation of the similarity is as follows: Years ago numbers of Rajputana coolies emigrated to Jamaica, taking with them their tie-dyed shawls and turbans. Specimens of these fabrics eventually found their way to England, where, owing to a demand, these spotted patterns were reproduced in the mills of Manchester. Later the same style of design with certain modifications was introduced by the Lancashire manufacturers into common articles of English use, hence the "bandana" handkerchief, from the Hindustani word "*bandana*," to tie. Incidentally the art in an exactly similar form is carried on in Japan, where it is also called bandana work, the name thus indicating without a doubt that it essentially originated in India.

The next class of exhibit is that of Indian embroideries, a fairly representative series of which will be found in the adjacent frames. As a great authority has said of Indian art as a whole, so the same sentiment attaches to its embroidery: it has a character, what is popularly called an atmosphere, of its own. It possesses an individuality, a special fundamental quality which does not permit of a comparison with the same handicraft in other countries. It stands in a class by itself, and a study of the specimens of embroidery in the Museum collection will go far towards bearing out this view of the art. What could be richer and more expressive of the country of its manufacture than the Kashmir embroidered shawl, with its golds and greens intermingled in such a fantasy of forms. Or take another, a local form of the art, a *kasida* from Dacca, remarkable not so much on account of its colour, but for the rich pattern of chain stitch with which the ground is ornamented. These articles have been for many years the product of Dacca, while the principal market for the output has been among the Arabs of the Persian Gulf, nearly three thousand miles away, one of those industrial puzzles which seem to have no explanation. Dacca, by the by, has another of these riddles in her midst in the local industry of carved sea-shells. These shells are procured in

their natural state from Ceylon and brought all the way to Bengal, a journey of fifteen hundred miles, to be carved into rings and bangles by the Dacca craftsmen.

From the embroideries the visitor passes to the other great subdivision of textiles, namely those decorated in the loom. Chief among these are the *kinkhobs*, those cloths of gold for which India has long been so famous. The origin of the work is popularly supposed to be *kam khwab*, or little dream, and there is no doubt that some of these gold brocades are positive dreams in their effect. Surat and Benares are the principal places of manufacture, and the Museum possesses excellent examples from both these centres. The Surati pattern is usually simpler than that of Benares and is generally more open in its composition than the closely designed decorations of the latter.

Of the other methods of textile decoration located on this side of the collection of fabrics, mention may be made of the brocades of Berhampur, near Murshidabad, and the woven Kashmir shawl. The former products of the looms of Bengal have a character which is singularly their own, and although from an academic point of view the details of the designs used may appear somewhat ordinary, the general effect of these brocades is decidedly artistic.

From the brocades one may proceed to the cases containing the Kashmir woven shawls, probably the best known of all the products of the Indian weaver. These shawls are of two entirely different kinds, those which are woven and those which are embroidered, and it is the former, or what is ordinarily considered the higher form of this art, with which we are now immediately concerned. Many of these shawls are now not the work of the Kashmir looms, but were made in various places in the plains of India, notably at Amritsar, Benares and Lucknow. This is due to the great famine of 1877, when only two-fifths of the inhabitants of the valley survived this terrible calamity. The weavers specially were scattered and subsequently started manufacturing these shawls at places in the Punjab and Hindustan. Undoubtedly the best Kashmir shawls date from the time previous to this dispersal of the weavers, and the old examples are made of

materials of an exceptionally fine quality. The process of manufacture of a Kashmir shawl is an education in itself, while the finished product is a work of art of a very high quality.

This completes the brief survey of the textile class, and we may now pass over to the southern half of this gallery where are displayed works in wood, metal, ivory, etc.

The most interesting exhibits in this part of the collection are undoubtedly those comprising the metal-work section. In the cases devoted to this aspect of Indian art some of the most beautiful specimens of indigenous statuary may be observed. As is now probably well known it was customary until a few years ago, to state that India was devoid of that particular aspect of æsthetics known as Fine Art. A broader point of view having now been taken of Oriental Art generally, a hitherto unexplored and expressive field of art has been presented to us. Much might be said of the movement that has led up to this, but it is outside the limits of this review. The results, however, of its discernment are to be seen nowhere better illustrated than in the metal and picture galleries of the Indian Museum. These, the student is strongly urged to make himself acquainted with, and the general public is advised specially to inspect the collections of metal statuary and pictures.

Of the former, with which we are now immediately concerned, the Art Section possesses over a hundred examples, a large proportion of which are unique. As it is obviously impossible to refer here even to one quarter of these objects, a few examples only have been selected and will be described. One of the most striking is a small statuette in copper from Nepal of Maitreya, the coming Buddha. It stands about 24 inches in height and is supposed to date from the 8th century A.D. The fine modelling and expressive pose of this figure should be noted, while the whole composition is an embodiment of restrained dignity.

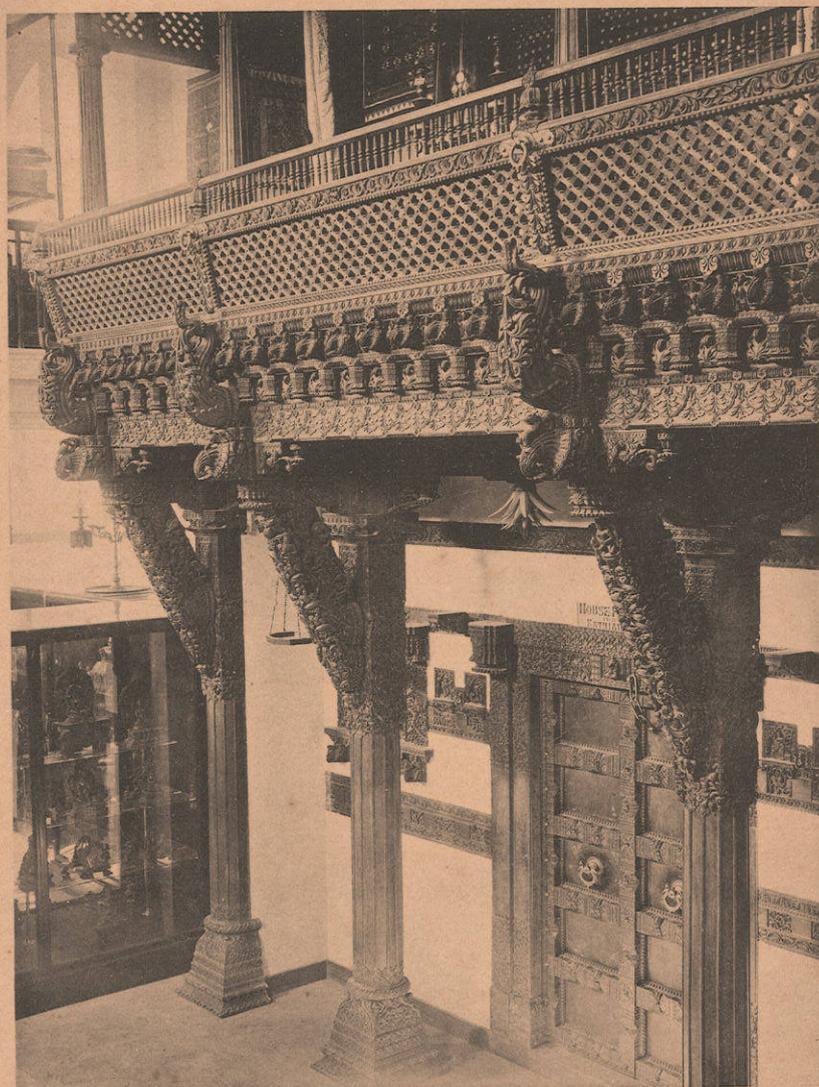
Another remarkable piece of metal statuary displayed in this collection is a figure in copper gilt of Padmapani. "The Lord who looks down with pity" is the guardian deity of Tibet. Padmapani is a deity, who, under the supreme Adi-Buddha's

command, creates all animate beings. Another figure near to this is Mangusri, who, in the same manner, is the creator of all inanimate things, in other words the great architect of this world. The statuette of Padmapani measures about 30 inches in height and is presumed to be the work of Nepalese craftsmen of the 7th or 8th century A.D. There is much that is very beautiful about this figure and one may call special attention to the modelling of the hands. In explanation of some of its characteristics which possibly appear unusual to the uninitiated the following may be quoted: "The attenuated waist and generalization of the anatomy carried much further than the Greeks ever attempted, producing an extreme simplicity of form and contour, are part of a deliberate intention of suggesting a type of abstract, spiritual beauty, far removed from worldly passions and desires."

Manjusri, who has been already mentioned, was the founder of Nepal. With his sword he cut a cleft in the range of mountains, which caused the lake to drain away and form the fertile "Valley of Nepal." There is an inscription on this statuette which shows that it was dedicated to a Nepalese shrine in the year A.D. 1782.

A very pleasing specimen of the work of the same school is a fragment of a scene evidently torn from some fixture in a temple. Three "loos" or water nymphs rising out of the swirling current of the Ganges with the Himalayas in the distance. Above the peaks are conventional clouds, while grottos and passes are indicated running into the mountain range. The idea is a very beautiful one and the whole composition suggests the Rhine maiden of German legend, or some similar story.

From the work in metal we immediately pass on to the section devoted to metal objects decorated by some particular process, such as encrusting, enamelling, damascening, etc. Probably the most attractive of these arts is that of enamelling, and we may accordingly examine the objects ornamented in this way somewhat in detail. Examples from Kashmir, Jaipur, Multan, Bahawalpur, Lucknow, etc., are displayed and illustrate the various styles of work fairly completely. The Lucknow school is well represented by several fine



Wood-Carving in Art Gallery.

examples, chief among which is a large *hukka* very characteristically enamelled. The art from this city has now practically died out and 12 years ago only one craftsman who had any knowledge of the process was to be found. At one time it must have been a flourishing industry and was probably considerably encouraged by the Court. One example in the Museum collection has a peculiar interest. It is a *hukka*-base, the body of which is decorated in the usual enamel of Lucknow. But inserted into this pattern are a number of panels or medallions enamelled in a manner which is seen nowhere else in India. The style of work is apparently French and may have some association with those European craftsmen who found their way to the Court of Oude a century or more ago.

The other main division of the Art Section is the Picture Gallery. These pictures have been already referred to in connexion with the metal statuary as comprising the highest form of artistic expression in the sphere of Indian æsthetics, so that the picture gallery is probably the most important part of the entire section. This gallery contains an exhibition of about 600 indigenous miniature water-colour paintings, collected from all parts of the country, and fully representative of this aspect of the fine art of India. Here, it must be confessed, that the appreciation of the pictures and statuary of this country, due to the broader outlook that this subject has recently demanded, has moved at a greater pace than our knowledge, so that although this collection is a very complete one, it still requires a considerable amount of research to be expended upon it before its full significance can be understood. The art of almost every other country in the world has received more or less expert investigation, but a practically untouched field lies open to the student in connexion with the metal statuary and painted pictures of India and Ceylon, Nepal and Tibet. The material for this research has been collected and is at hand, as may be seen by a glance at the possessions of the galleries now being described, but students are required, especially Indian students, to utilize their scholarship in dispersing some of the haze with which this subject is surrounded. The arts of India

have always been so indissolubly a part of the life of the people of that country, that until the deep meaning of them is better understood than at present, the Indian character is presented to the world incomplete in one of its most vital aspects. Conceive how limited our knowledge would have been of the Greek, if in our researches we had disregarded his art. Valuable pioneer work has been already achieved, notably by Mr. Havell, who has pointed out the way in his able writings on the subject, but much remains to be done before the full significance of Indian art can be adequately realized.

It is therefore on this account that the collection of Indian pictures in the Museum is only temporarily classified into the two broad divisions of Hindu and Mahomedan. The various schools of painting require more definition before the examples can be satisfactorily allocated to their separate subdivisions. We know that certain forms of composition and methods of technique manifested themselves in certain cities and districts, as for example those families of hereditary artists at Kangra, in the Punjab, whose talent the writer was able to bring to light some years ago; but whether we are justified in regarding these as schools of painting, or merely as local styles has yet to be determined. Irrespective of any detailed arrangement, however, this collection presents a display of Indian painting which is probably unique. One of the earliest examples in the Museum collection is the picture of a wounded lion which it has been truly said "recalls the vigour and truth of the ancient sculptures of Nineveh." Another early specimen, No. 293, very fine in colouring, is a portrait, presumably of a poet, and is particularly interesting on account of its very obvious Persian character. A picture depicting "Travellers round a camp-fire" barely needs description as it fully explains itself, but as an impression of night and firelight it holds a high place. Another striking picture represents Avhisareka, the spirit of poetry passing through an enchanted forest, and is replete with symbolism; while in portraiture alone the collection presents us with a national portrait gallery of great historic interest. The likeness of the Emperor Aurang-

zeb illustrates the complex character of the great autocrat and is obviously a speaking likeness, while a portrait of Mullah-do-peaza, Akbar's Court Jester, is probably a contemporary representation of this famous individual.

The picture collection is brought up to date by including six examples of painting by the modern Indian Art movement, chief among which may be mentioned "In the dark night" by Mr. Abanindra Nath Tagore.

The following is a summary of the arrangement of the collections.

Under the heading of Fine Arts have been displayed collections of old Hindu and Mahomedan water-colour paintings together with a few paintings on ivory and Tibetan temple banners. One gallery is entirely devoted to the Fine Arts.

11. Under hardwares the following classifications are made:—

- (a) Metal wares.
- (b) Stone wares, including lapidary work.
- (c) Glass and earthenwares.
- (d) Lacquer wares.
- (e) Ivory and horns.
- (f) Leather.
- (g) Papier-maché.
- (h) Painted wood.
- (i) Inlaid wood.
- (j) Wood-carving.
- (k) Glass mosaic.

Under (a) the following sub-divisions are made:—

- (i) Brass and copper wares from Tibet, Bhutan and Nepal.
- (ii) Brass and copper wares from other parts of India.
- (iii) Damascened and encrusted wares.
- (iv) Enamelled, niello and *bidri* wares.
- (v) Silver wares.
- (vi) Gold wares and imitation gold ornaments.

Since the amalgamation of the old Art Ware Court with the Government Art Gallery there have been a few

noticeable additions to the collections, the annual grant of Rs. 11,000 sanctioned for purchase of specimens (Rs. 6,000 by the Government of India and Rs. 5,000 by the Government of Bengal) having been expended in filling up gaps and forming connecting links between the various classes of exhibits. A certain number of rugs have been purchased, as the gallery was weak in this class. A number of embroidered shawls have been acquired to enrich the Section and a few pictures of a special type have been obtained to complete the fine art collection. Advantage was taken of a number of specimens of Nepalese and Tibet work coming on the market, to obtain some unique art productions of Central Asia. These were mainly of metal, and among the best acquisitions are a carved steel saddle, jewelled gold ornaments and vases; while several figures of lamas and deities are of exceptional interest. The principal value of these objects is that they represent, as near as we can tell, the style of art which flourished in India previous to the Mahomedan invasion. Remains of work of this character are scanty in the country of its origin, but it is felt that the more recent art manufactures of Nepal and Tibet reflect the æsthetic handiwork of India as this was maintained before the introduction of the Musalman influence. Examples of this work may therefore be the means of assisting those interested in forming some idea of the Art of India of a thousand years ago.

## CHAPTER V.

### THE GEOLOGICAL SECTION.<sup>1</sup>

The Geological Section which consists of four galleries—the Siwalik, the Meteorite, the Mineral, and the Fossil Gallery—contains the collections constituting the former Geological Museum and comprising those belonging to the Geological Survey of India, together with a certain number of specimens belonging to the Asiatic Society of Bengal.

The early history of the Geological Museum is intimately bound up with that of the Asiatic Society. It was only natural that, soon after the foundation of the Society in the year 1784, the idea of starting a Museum for the housing of the various curiosities that were sent by members from all parts of the country should have arisen, and we accordingly find that in 1796 a proposal was made for hiring a suitable house for their reception. It was not until 1814, however, that the project took more definite shape, when Dr. Wallich offered specimens from his own rich collections in order to form the nucleus of a Museum, and the Society adopted his recommendations. In that year a resolution was passed to the effect that "the Asiatic Society determine upon founding a Museum for the reception of all articles that may tend to illustrate Oriental manners and history, or to elucidate the peculiarities of art or nature in the East." Ores of metals, native alloys of metals, and minerals of every description were specially included in the list attached to the resolution, and the collection rapidly increased. Dr. Wallich was appointed Curator of the Geological and Zoological Section, and held this post for several years.

The whole of the collections were at first housed on the

<sup>1</sup> Taken for the greater part from a paper read by T. H. D. La Touche, formerly officiating Director, Geological Survey of India, before a meeting of the Mining and Geological Institute of India. *Trans. Min. Geo. Inst. India*, vol. V, p. 31 (1910).

ground floor of the Society's building in Park Street, but by 1835 we find that they had accumulated to such an extent that it became necessary to discuss proposals for converting the Society's Museum into a national concern, and to employ a paid Curator, Government sanctioning a grant of Rs. 200 a month for this purpose, to which the Court of Directors added Rs. 50 a month for preparing specimens and maintaining the collection in order. Up to this time the whole of the collections, archæological, geological, and zoological, were kept together and under the charge of one person, but the opening up of the Raniganj coal-field and the reports of Dr. Helfer and other scientific officers had directed so much attention to the mineral resources of the country that it was resolved to establish a Museum of Economic Geology, and it is accordingly at that time that we must consider that our Geological Museum was founded.

In 1841 a typical collection of mineral specimens was brought out from home by Captain Tremenheere, and placed in the rooms of the Society in the charge of Mr. Piddington, who was also Curator of the "Museum of Economic Geology for India" which had been inaugurated by Government in the previous year, its collections being housed with those of the Asiatic Society on the Society's premises in Park Street. This arrangement lasted till 1856, the original collection made by the Society and the nucleus of the national collection being kept together, but at this period the Geological Section had so outgrown the accommodation provided in these rooms that Government determined to remove the Museum of Economic Geology to a new site. The Geological Survey, with which its subsequent history is intimately connected, had only recently been established as a separate Department, though several enthusiastic geologists had either been employed by Government, or had spent their leisure time, in surveying and reporting on various parts of the country. Among the most conspicuous of these were perhaps Dr. Voysey, the first geologist employed by Government, in 1818; Mr. Williams, who first examined and reported on the Raniganj coal-field, and whose original Journals, covering the period from December 1846 to just before his death in

1848, are preserved among the records of the Department; Dr. Andrew Fleming in the Punjab Salt Range; Sir Joseph Hooker in Sikkim; Dr. Carter, who in 1857 published a "Summary of the Geology of India between the Ganges, Indus, and Cape Comorin"; and lastly, Dr. McClelland, who immediately preceded Dr. Oldham and the regular Survey, and continued Mr. Williams' work in the coal-fields. It is recorded that when Dr. Oldham came out to this country in 1851, he found that the whole staff of the Survey consisted of one peon and one writer, and that all records were kept in a single box at the Surveyor-General's office.

In 1855 a house was taken on a three years' lease by Government, at a rent of Rs. 370 a month, at No. 1, Hastings Street, and was fitted up as a Museum and Office for the Geological Survey. Correspondence between Dr. Oldham and the Council of the Asiatic Society, who refused at that time to allow their own collections to be moved to the new building, because they thought that by doing so the proposal for a national Museum would be indefinitely postponed, will be found in the Proceedings of the Society for August 1856. The Museum was thrown open to the public on the 1st January 1857. In a note on the new departure inserted in the first volume of the Memoirs of the Geological Survey, Dr. Oldham defines the objects of the Museum, and it appears incidentally from this that it was proposed to house the institution later on in the new buildings of the Calcutta University. A set of rules for the admission of the public is added, and as the first of these states that visitors are requested to enter their names and number of party in a book provided for that purpose, it may be conjectured that no great influx of the native population, such as is now to be seen any day in the Imperial Museum, was looked for. The attendants were also strictly forbidden even to speak to visitors—rather a drawback, one would think, to people of an inquiring turn of mind.

Dr. Oldham's note and the rules referred to are quoted below:—

GEOLOGICAL MUSEUM,  
IN CONNEXION WITH THE  
GEOLOGICAL SURVEY OF INDIA,

*Hastings Street, Calcutta.*

The Government of India having recently sanctioned a considerable extension of the "Museum of Economic Geology for India," which had for some years existed under the careful superintendence of Mr. Piddington in connexion with the Asiatic Society of Bengal, the attention of all who may be interested in the study of Geology, and of all who may desire the internal improvement of this country, is solicited to the objects of this Institution; and their aid in the promotion of these objects is requested.

In the year 1840, a Museum of Economic Geology for India was established, under the sanction of the Honourable the Court of Directors. Its objects and aim were clearly set forth in a brief statement drawn up by Mr. Piddington, and freely circulated at the time. In conjunction with the Asiatic Society of Bengal, and in their Rooms, it grew into some importance, and gradually became the depository of many good and valuable specimens, illustrative of the mineral wealth of this country. But simultaneously with its growth, the Science of Geology itself was rapidly attaining its present development. All cognate Sciences were spreading their domain, and the results of investigations in each were becoming more widely and more largely known. Since then, also, the study of Mineralogy, of Geology, and of Chemistry has been introduced as a part of the established course of Education, and the practical applications of these Sciences to Mining and to Engineering generally will soon be as regularly taught in this country as they have been for years past in Europe.

The extension of the Museum had become, therefore, essential, if it were to keep pace with the progress of knowledge, and to retain any of its value as a means and aid to instruction. With this view, the Right Hon'ble the Governor-General in Council has given orders for the formation, on a much more extended scale than hitherto, of a general geological collection, with a special view to illustrate the geological structure, the mineral wealth, and the manufacturing resources of this Empire. A commodious house has been rented for the purpose at present, and it is intended that abundant accommodation shall be provided for the Museum in the new building for the University of Calcutta when the geological collection will form a portion of the general collections of Natural History to be connected with that establishment.

In the Museum now in progress of formation, every thing tending to illustrate the geology of this country, in its widest sense, will find a place. The history of the Science, the progress of its investigations, the nature of its classifications, the phenomena with which it is concerned, the laws of these phenomena, will all be illustrated. The grand

series of organism, the remains of which occur in such abundance in various deposits, will be exhibited, and the whole Natural History of rocks traced out, so far as collections enable this to be done. By the aid of drawings, such objects as cannot be procured will be made familiar to the student, and by the use of maps, the structure of countries, which it would be impossible for many to visit, will be made known.

While thus endeavouring to render the student acquainted with the principles of the Science, the practical applications of these principles will, at the same time, be fully exhibited. Mining processes, mining products, and the principal metallurgical operations will also be included, and the comparative excellence of each, so far as possible, made known. The building materials of the country, and their applications, the localities where used, the durability, the facility of working, the strength, etc., of the stones, will all be examined into. The importance of Mineral waters must not be overlooked, and the value of these will be determined by careful investigations.

Further, in a country so essentially agricultural as India, the character of the soils and sub-soils, their peculiar adaptation to peculiar crops, their composition, and, in dependence upon this, the easiest means of renewing or increasing their fertility; all these are important questions which at once connect themselves with the researches of the Geologist, inasmuch as the natural powers of any soil depend essentially on the source from which that soil has been derived, and therefore on the geological structure of the district.

To enable such enquiries to be effectively carried out, a small Laboratory is attached to the Museum, where such analyses and investigations as may be requisite will be carried on; and it is hoped that most valuable, because accurate and detailed, information may thus be acquired.

Moreover, careful summaries of all existing knowledge on the geological structure of the country, will be compiled and arranged, so as to facilitate reference. Much has been done in investigating the geological structure of this country, and very valuable papers have been given to the public, descriptive of various parts of India. But these facts are scattered through various periodicals, are often only incidentally noticed in travels, or can be found only in manuscript among the records of Public Offices. Many of these are with difficulty intelligible, from the writers frequently calling similar objects by different names, or *vice versa*. It is, therefore, necessary to obtain the key to the terms used before these can be compared. It will be an object with the Officers of the Geological Survey to remove this difficulty, and to bring into an accessible form every thing which has been published bearing on the geological structure, the mineral wealth, or the manufacturing industry (so far as this is concerned with mineral products) of this Empire.

The Museum of Geology has been placed in connexion with, and under the same superintendence as, the Geological Survey of India. By this means opportunities will be afforded of procuring a very perfect

series of the rocks, fossils, and minerals of the districts visited by that Survey. But the aid of all is solicited in completing such local collections as may illustrate the structure of the several districts. Every one will be able to contribute something of value. Those permanently resident in any locality have infinitely greater advantages and facilities for procuring good illustrations of its mineral structure and products than any visitor could enjoy, and from such we confidently look for much that will prove of great interest and of great value. Every thing which can, in any way, tend to illustrate the rocks, the fossils, the minerals, or the practical applications of these will prove interesting.

Regarding the nature and properties of all specimens forwarded, the fullest information will be freely afforded, on application to the Curator of the Museum. Organic remains will be examined, and, so far as possible, carefully named for contributors, and every facility given for the investigation of any particular subject or any particular line of research connected with Geology.

The formation of a Library of reference, in connection with the Museum, has been sanctioned, and has already made considerable progress. Under the proper restrictions, this will be accessible to all students of Geology, and others interested in such enquiries.

Catalogues of the several departments of the Museum will be issued from time to time. Public Officers, and other persons in all parts of India, are requested to send contributions. All specimens, carefully packed, may be forwarded by the safest and most economical mode of conveyance, addressed to

THE MUSEUM OF GEOLOGY,  
No. 1, Hastings Street,  
Calcutta.

And it is requested that a communication stating fully the wishes of the donors may, at the same time, be forwarded by post to

THE DIRECTOR OF THE MUSEUM OF GEOLOGY,  
No. 1, Hastings Street,  
Calcutta.

#### RULES FOR ADMISSION OF PUBLIC, ETC.

*The Museum will be open daily, excepting Sundays, from 10 o'clock A.M. to 6 P.M.*

#### ADMISSION FREE.

Visitors are requested to enter their names, and number of party, in a book provided for that purpose.

The attendants in the Museum are strictly forbidden to speak to, or interfere with, visitors in any way, excepting for the protection of the Museum and its contents.

It is particularly requested that any irregularity or want of civility may be reported at once to the Curator of the Museum.

The collections being exposed for public benefit, it is confidently hoped that the public will feel the importance of carefully preserving what conduces to their instruction and advantage, and will therefore aid the Officers of the Museum in the discharge of their duty.

Students of Geology, or persons desirous of information on any special point, are requested to apply to the Curator at the Museum on Tuesdays and Saturdays, between the hours of twelve and four. In particular cases, this aid will be afforded at any time; but as it is essential that the Officers in charge of the Museum should be able to devote much of their attention to the arrangement of the collections, to the examination of specimens, and to the general duties of their Office, it is hoped that the public will aid in these objects by not interrupting them, under ordinary circumstances, at other times than those fixed above.

Gentlemen interested in geological pursuits, mines, etc., in special agricultural objects, or in the use of new or untried building materials, etc., who may desire detailed examination of any mineral substance, or definite information for a special object, are requested to apply by letter (post paid) addressed to the Director of the Museum of Geology, 1, Hastings Street, Calcutta, stating as clearly as possible their wishes. All such communications will be attended to at the earliest possible opportunity, and in the order of their receipt.

Visitors and others are requested to contribute to the collections everything which may appear interesting, or locally peculiar.

The servants of the Museum are prohibited, under pain of instant dismissal, from asking for, or receiving, any gratuity whatever, and it is hoped that none may be offered.

The Museum will be open from the 1st day of January 1857.

The inauguration of the Geological Museum rapidly led to the acquisition of large numbers of specimens; in 1857 a collection of crystal-models, which had been prepared by James Prinsep, was made over by the Assay Master of the Calcutta Mint. In the same year were contributed a number of geological specimens collected by officers of the Survey of India, and a collection of models of fossil vertebrates, presented by the British Museum.

In 1858 the establishment of the Geological Museum was amalgamated, by order of the Government of India, with that of the Geological Survey, and the Museum was definitely incorporated into the latter Department, of which it has ever since remained an integral part.

From the old registers it appears that the Hastings Street Museum contained about 1500 specimens of minerals and rocks, but these probably refer only to the specimens

exhibited, as there were also 104 cases unpacked in the godown. The collections rapidly increased, as the members of the Survey, now a round dozen strong, began to push their inquiries into all parts of the country. Of all those who were then on the staff, Mr. F. R. Mallet, who joined in 1859, is the only member still alive. What the conditions of such work were in those days may be conjectured from the fact that, of 23 geologists who were appointed between the years 1846 and 1859, no less than nine died on service, and of these seven died within three years of their appointment.

The requirements of the Survey soon began to outgrow the accommodation in Hastings Street. In most of the annual reports submitted by Dr. Oldham between the years 1859 and 1868, reference is made to the inconvenience of the building and the impossibility of exhibiting the specimens to good advantage in the small and badly-lit rooms of a private house; but it was still many years before relief was afforded. Although the removal of the geological collections belonging to Government had enabled the Asiatic Society to devote more space to their own collections, the care of these had already become an unmanageable burden. More room and a larger staff than the Society could provide were required for their preservation, and the Society soon began to press on the proposal for the foundation of an Imperial Museum at Calcutta. The breaking out of the Mutiny retarded the consideration of these proposals for a time, but in 1862 Government announced that the time had come when the duty of providing a public Museum should be taken in hand, and conditions were settled under which a Board of Trustees was appointed to take over the Society's collections. In 1866 their geological collections were made over by the Society, but still remained in their own building, and it was not until ten years later that they were amalgamated with the collections of the Geological Survey and incorporated in the Geological Museum. The collections included minerals, fossils and meteorites; of the minerals, most have now become of little value or use, having been superseded by the finer specimens subsequently acquired directly by the Geological Survey. The fossils, however, include a valuable,

though small, collection of Siwalik vertebrates; these, to the number of about 1500, are exhibited, together with the more recent collections made by members of the Geological Survey, in the Siwalik Gallery, which now contains over 19,000 specimens.

In 1867 a large collection of European rocks and fossils, numbering some 20,000 specimens, was purchased by Dr. Oldham, on behalf of the Government of India, from Professor von Klipstein of Giessen for the sum of £2,400 and its acquisition, together with that of two smaller collections in the following year, made the provision of further accommodation more imperative than ever. It was not until 1875, however, that the geological collections belonging to the Geological Survey could be moved to the present building in Chowringhee; the old quarters in Hastings Street were vacated on the 30th September in the same year and on the 1st January 1877 the new galleries were thrown open to the public.

In their new quarters the collections rapidly expanded, and within a few years the space available was well filled. It was some time before a definite system of registering specimens was adopted, and the earlier methods were somewhat peculiar and confusing. Each officer selected a serial number under which he registered his specimens as he brought them in from the field; thus one specimen only might be registered under one number and perhaps even a thousand under the next, so that there was no ready means of discovering what the total number might be. In 1867 the present system was adopted, in which each serial number or letter includes beneath it about 1000 specimens, so that a glance at the last entry will show the approximate number of specimens in the collections. There are now in the Museum about 11,000 specimens of minerals, over 26,000 of rocks, 10,000 of microscope slides, and over 112,000 of fossils, including besides Indian forms large collections from other parts of the world. The collection of meteorites has always been one of the most interesting features of the Museum. It was started in 1865 by Dr. Oldham with the purchase of specimens of 223 falls collected by Mr. R. P. Greg of Man-

chester, and now contains 414, a considerable number of which have been found, or have been seen to fall, in India itself.

The task of arranging and labelling the collections in the first instance was an arduous piece of work, in which Mr. Mallet, Mr. Lydekker, and Dr. Feistmantel took the largest share. It was carried on for many years, and it was not until 1883 that guides to the whole of the collections were completed. Since then the history of the Museum has been one of continued expansion. In 1890, on his arrival in India, Sir T. H. Holland was appointed Curator, and with characteristic energy set to work to classify, arrange and re-label the collection of rock-specimens, at the same time selecting a series of minerals and models for the use of the students of the Presidency College, a branch of work that has grown steadily under his influence. He was in charge of the Museum for six years, and during that time he re-registered the whole of the rock and mineral collections, then amounting to over 18,000 specimens, and published a new edition of the guide dealing with them.

## CHAPTER VI.

### *THE INDUSTRIAL SECTION.*

In the gallery of this section are represented specimens of commercial and industrial interest from all parts of India, chiefly belonging to the vegetable kingdom. The collection in its general character dates back to a period of forty years ago, when a provincial museum was opened in Calcutta the history of which it will be necessary to recapitulate. The formation of the Bengal Economic Museum was commenced in Calcutta in 1872, under very favourable auspices. Sir George Campbell, Lieutenant-Governor of Bengal, at the suggestion of Mr. Justice Phear instituted the forming of a complete collection of the commercial and industrial products of Bengal, and making it accessible to the public. The collection was to include seeds, grains, fibres, silk, oils, drugs, timbers and minerals. A strong central committee was formed with Mr. Justice Phear as Chairman and Mr. H. H. Locke as Secretary. A Local Committee was next formed in each district in Bengal and Assam and acted in communication with and under the direction of the Central Committee in sending in specimens and models. This machinery once set in working order produced an influx of products which the small staff registered, labelled and placed away in bottles. Tea companies of Assam and Darjeeling sent in samples of their teas. The managers of the Bengal collieries supplied samples of their coal. The jute mills donated samples of raw jutes, thread and finished bags and sacks. The Superintendent, Royal Botanic Gardens, Sibpur, sent a collection of "cyclone woods," or specimens cut from trees blown down in the gardens in the cyclone of 1864 and 1867. Lac, indigo, tobacco and oil seeds were contributed from various districts. In this way the museum began to grow in size and interest. Sir George Campbell at first proposed to locate the building at Alipore in the corner of the Belvedere grounds towards

Woodlands, but in December 1873, it was decided to utilize the Customs House godowns abutting on Dalhousie Square; here it remained until 1879, when the site was required for the office of the East Indian Railway Company. In 1879 it was moved to 12, Hastings Street, a house at the corner of Hastings Street and the Strand Road, which was unfortunately far too small for an adequate arrangement of the cases and samples for exhibition purposes. Records show that by December 1874, 2217 specimens had been received and catalogued; one year later, 4405; at the end of 1876, 8586; at the end of 1877, 12,140; 1878, 13,382; 1879, 13,745; 1880, 13,937; 1881, 14,519. The museum made no progress after its change to Hastings Street. The removal in 1879 carried out in little over a month threw the collection into great disorder, and for a time the exhibition was closed. In 1880, the committee wished to publish a guide book, but nobody with sufficient knowledge and leisure was available. A grant of Rs. 1,000 for an illustrated catalogue on the drug collection was sanctioned by the Government of Bengal. The preparation of this book was entrusted to Dr. Kanny Lall Dey, but ill-health prevented its completion.

The Bengal Economic Museum at Hastings Street was re-opened to the public on July 24, 1882, but the neglect of recent years had destroyed many of the specimens, the stock of bottles had long been exhausted and new presentations were not properly displayed for exhibition. Next year the committee of the Calcutta International Exhibition in searching for exhibits obtained permission from Government to secure the large collection of the local Museum. The Calcutta Exhibition was opened on the 4th December, 1883, and the Economic Court was a temporary structure on the maidan facing the present main building of the Indian Museum. The following collections found a place in that Court:—

1. The entire collection of the Bengal Economic Museum.
2. Collections of Economic Products and Indian Artware made by the Revenue and Agricultural Department of the Government of India.

3. Collections of products contributed by private individuals.
4. Trade samples supplied by the various Indian Chambers of Commerce and by individual merchants.
5. A small series of ethnological specimens purchased or loaned.

At the close of the Exhibition in 1884, the economic specimens were housed in temporary sheds on the site now occupied by the School of Art and in the annexe to the Chowringhee main buildings, but the treatment they had received reduced to a considerable extent the value of the collection. The almirahs and cases of the old Economic Museum emerged from the Exhibition in a fragmentary condition. Many of the samples were found to be worthless and had to be destroyed. The total number of specimens at this time was 17,685, and registers are still preserved showing the names and districts where the articles had been collected. Those that were presentable were orderly arranged in the new temporary quarters, but for the next few years the staff could do little more than cope with the damaging influence of the climate. The Trustees reported, "We are at present concerned in the almost helpless task of checking the decay and decomposition incidental to thousands of samples of raw products imperfectly housed." The absence of a technical staff and the attendance of an officer for about one hour a day were not conducive to the development of a museum with any scientific pretensions. Mr. T. N. Mukerji, who had made himself an authority on Indian artware, was appointed Assistant Curator in 1886, and on April 1st, 1887, the Economic and Art Section, which had formed a separate institution under the direct control of the Government of Bengal, was brought under the Trustees of the Indian Museum by Act IV of 1887.

The Trustees undertook their new duties with some diffidence; they felt that until suitable accommodation and scientific supervision were provided for the collections they would be able to do little towards carrying out the object of the Trust effectively. It was necessary to arrange properly

and complete the new collections in a systematic way that would meet the wants of the scientific enquirer as well as of the manufacturer or merchant, and provide instruction and recreation for the general public.

In 1888, the Government of Bengal was able to commence the construction of the wing in Sudder Street, which it had in 1882 undertaken to erect. The wing was finished in 1891, and Mr. Thurston, who was then acting for Dr. Watt as Reporter on Economic Products in executive charge of the Economic and Art Section, removed all the collections of economic products, artware and ethnology into the new building. The Art Gallery was opened to the public in September 1892; but much remained to be done to get the economic collection into a fit state for exhibition.

About this time a new system was inaugurated for making a collection of economic products. Various exhibitions held in Europe and elsewhere required samples of products, and they were supplied from the Museum stock or obtained by the staff of the Economic Section. The preparation of a permanent exhibit at the Imperial Institute afforded an excellent opportunity for collecting new material of which duplicates were retained and utilized in building up the present Economic Court. New registers were started, and new fittings were obtained which were calculated to preserve the samples from dust and damp. Dr. Watt designed the arrangements of the court, and in 1899 made a tour throughout India to collect specimens of commercial interest. The Economic Court was opened to the public on May 29th, 1901, when the registers recorded 15,185 specimens in addition to a few articles belonging to the Bengal Economic Museum. The collection continued to expand and during the years 1904 to 1910 received between 700 and 800 samples a year. A selection of the most instructive specimens are exhibited in the court while a large number of cereals, pulses and drugs are registered and kept in the herbarium for scientific study.

The collections in this gallery are arranged in eight bays under the following subjects:—

1. Gums, resins, India rubber, lac, kino.
2. Oils, oil seeds, oil cakes, soap and waxes.
3. Dyes, tans, e.g. indigo and cutch.
4. Fibres: silk, cotton, jute, wool.
5. Medicinal products and indigenous drugs.
6. Narcotics: opium, Indian hemp and tobacco.
7. Food substances: sugar, starch, cereals.
8. Timbers.

In the centre of the gallery are displayed the finished commercial articles as they are produced by Indian factories. The wall-cases are constructed under three divisions; the larger glass cases exhibit the more important products; sloping cases contain articles of secondary importance; while on the walls of the bays are placed all other substances of the same class alphabetically arranged in glass-faced index boxes. The object of this gallery has been to give in a bird's-eye view an illustration of the trade and commerce of the country.

The Reporter on Economic Products as noticed above, was placed in charge of the Economic and Art Section when the collections were transferred to the new building. The duty of this officer was to collect and arrange information by means of a system of ledgering of agricultural and commercial products, and to publish the results when enquiry was sufficiently advanced. The organ of the department was the "Agricultural Ledger," a publication serving as a supplement to the "Dictionary of Economic Products" edited during 1889 to 1893 by Dr. (now Sir) George Watt. The work of the officer was also to collect specimens mentioned in the Dictionary, to identify samples and to give information to correspondents all over India. Such work was inseparable from the Economic Court, where authentic specimens were received, studied and scientifically arranged under their respective subjects. New material was constantly being brought together and constituted a bureau of economic information found nowhere else in the East. At one time it was intended to revise the "Dictionary of Economic Products" and bring it up to date, but it was considered that a work

dealing with the major products should be compiled in the first place. This was taken in hand and the ledger and correspondence files of the office were utilized by Sir George Watt in writing the "Commercial Products of India", which was completed at Kew in 1907.

Mr. I. H. Burkill succeeded Sir George Watt in the Museum in 1901, and continued to add largely to the Economic Court. He carried out a number of tours in different parts of India and made special studies of cotton, jute, fibre-plants, pulses and spices. He also prosecuted an exhaustive study of yams, an important famine-food yielded by the genus *Dioscorea*. Besides contributing numerous interesting botanical papers to the Asiatic Society of Bengal, he wrote on the plants of Baluchistan and Nepal. He was Botanist in the Abor Expedition of 1911-12. On the formation of the Indian Indigenous Drugs Committee in 1895, the Reporter on Economic Products was appointed Secretary. The drugs for experiment were distributed by the Medical Store Department and all the results of the clinical investigations were received in the office of the Reporter, where the meetings of the committee were held.

The need for a chemical laboratory for testing economic products in connection with this office was long felt. When Mr. D. Hooper, late Government Quinologist to the Madras Government, joined the staff in 1897, suitable rooms were fitted upon the ground floor, gas was installed and technical analyses were undertaken. Tanning materials were first taken up and the amount of tannin in a large number of the more important barks, fruits and their extracts was estimated. Gums suitable for confectionery were tasted for their physical and chemical properties, and the gums of authentic species of *Acacia* were examined comparatively. Indigenous resins of the dammar class were tested as to their solubility and chemical values as compared with imported resins. The nature of gutta-percha and India rubber obtained from local sources was examined. The composition of oils and fats of India was reported upon in Agricultural Ledger No. 5 of 1912, and a comprehensive account of Indian beeswax formed the subject of the Agricultural Ledger No. 7 of 1904.

Paper-making materials were tested for cellulose and textile and rope-fibres were estimated for their strength. Food products received attention, and analyses were made of numerous cereal grains, famine foods and pot herbs. Indigenous drugs were tested for their active principles and several were chemically examined for the first time. The following deserve mention: *Adhatoda Vasica*, Indian podophyllum, *kino*, *kamala*, *waras*, Indian hemp, cinchona, Burmese storax, catch, ipecacuanha and jalap.

The laboratory was closed on April 1st, 1913. From the year 1897 to 1913, over 4,000 museum specimens were chemically examined and the results were recorded in the Annual Report of the Industrial Section. Analyses were also conducted on behalf of the Controller of Printing, Stamps and Stationery, the Director-General of Commercial Intelligence, the Customs Department, and the Admiralty. Consignments of economic products have been sent on various occasions to Europe for chemical and physiological investigation. Most of the specimens were despatched to the Imperial Institute, London, while others were sent to Professor A. G. Perkin, Leeds, Dr. E. Schaer, Strassburg, Messrs. Schimmel & Co., Leipzig, and other experts.

A portion of the laboratory has been used by the Assistants of the Scientific Officer of the Indian Tea Association, whose head-quarters for part of the year are, by permission of the Trustees, situated in the Museum.

In February 1912, this Section of the Museum was placed under the Botanical Survey of India, and the Director of the Survey, under the Indian Museum Act, 1910, becomes *ex officio* officer in charge of the Industrial Section. The designation of the officer in executive control of the section was at the same time changed from "Reporter on Economic Products" to "Economic Botanist to the Botanical Survey of India."

## CHAPTER VII.

## THE ZOOLOGICAL COLLECTIONS.

In this chapter we have to trace the history of the zoological collections of the Indian Museum and the uses to which they have been put both as material for research and as objects of exposition.

The study of zoology was not encouraged in the beginning by the Asiatic Society; indeed, Sir William Jones expressly discouraged it as likely to bring about unnecessary suffering and slaughter among the animals of the country. Even a prejudice of the Founder naturally had great influence on the early history of the Society, and it was not until nearly half a century later that serious zoological investigations were started under its auspices at the instance of Brian Hodgson, whose researches on the fauna of Nepal afterwards became a classic of natural history.

In the early days of his work in Nepal Brian Hodgson presented many valuable specimens to the Society's Museum, to which his precept and example were of the greatest possible value. The real father of the zoological section of what is now the Indian Museum, must, however, be named in Edward Blyth (see the biographical notice in chapter ix), who was appointed curator in 1841 and immediately set about collecting and describing the vertebrate fauna of the Indian Empire, and more particularly that of its eastern districts, with a diligence and care attested by the fact that few of the species he described of which the type-specimens have recently been re-examined, have been found to be synonymous with others previously recognized. To the invertebrates he was able to pay comparatively little attention, but it is interesting to note that there are still in the Indian Museum specimens of freshwater prawns which he had named, evidently with the intention of describing them, and that one of his nominal species in this group still awaits a scientific diagnosis.

As Sir Asutosh Mookerjee has pointed out in the first chapter of this book, our zoological collections have been derived mainly from five sources, which may be tabulated as follows:—

- (1) The old collections of the Asiatic Society;
- (2) the marine collections made by successive Surgeon-Naturalists on board the R.I.M.S. 'Investigator';
- (3) the collections made on military and political expeditions;
- (4) the gifts of private donors, and
- (5) the collections made by members of the Museum staff.

The zoological collections of the Asiatic Society of Bengal were mainly of vertebrate animals. They were housed for many years in glass cases by no means dust-proof and their successive curators had little time or opportunity to protect them against the ravages of animals and vegetable pests. That many of Blyth's specimens still exist in good condition is a testimony to the climate of Calcutta in so far as the preservation of zoological specimens is concerned.

A glance through the Asiatic Researches and old volumes of the Proceedings and the Journal of the Asiatic Society of Bengal reveals a host of names of well-known naturalists, most of them contributors alike to the collections and to the publications of the Society:—

J. Armstrong, Valentine Ball, W. H. Benson, William and Henry Blanford, Edward Blyth, W. E. Brooks, Theodore Cantor, John Cockburn, Francis Day, G. E. Dobson, H. H. Godwin-Austen, Thomas Hardwicke, Brian Hodgson, Allan Hume, Thomas Hutton, T. C. Jerdon, John McClelland, Geoffrey and Henry Nevill, J. T. Pearson, F. A. de Roepstorff, W. Roxburgh, Ferdinand Stoliczka, Robert Swinhoe, W. H. Sykes, William Theobald, S. R. Tickell, R. C. Tytler.

In this long list the names of three distinguished members of the Geological Survey of India stand out pre-eminent in reference to the zoological collections—those of William Blanford (with which that of his brother Henry, meteorologist

and conchologist, is often associated), Ferdinand Stoliczka and William Theobald.

William Blanford<sup>1</sup> joined the Geological Survey of India in 1855 and retired in 1882. He died as recently as 1905. As a zoologist he is best known in connection with the official "Fauna of British India", the inception of which was due to his untiring efforts. To this series he himself contributed the volume on the mammals and two of the four volumes on birds. A first volume on the mollusca that he had begun but left unfinished was completed by Colonel Godwin-Austen. Hardly less valuable to the study of zoology in this country is the long series of papers which he contributed to the Journal of the Asiatic Society before his retirement. He was one of the most active agents in the foundation of the Indian Museum as a Government institution and also in the negotiations connected with the first zoological work of the 'Investigator.' His private collections, gathered together in the course of his geological work in Persia and Abyssinia and in the Central Provinces, Orissa and other parts of the Indian Empire, were distributed to the Indian Museum in which the majority of his types of vertebrate animals are still preserved, and to the British Museum, in which the molluscs that occupied the studies of his later retirement found a permanent resting-place.

Ferdinand Stoliczka,<sup>2</sup> who came to India from Vienna as a member of the same service in 1862 and met an early death in Ladak on his return from an expedition to Central Asia in 1874, had an even wider outlook on the animal kingdom than Blanford; his investigations had reference to still more diverse groups of animals. He was the first naturalist to give an adequate description of the internal anatomy of a sea-anemone; he was a pioneer in the study of Indian arachnology; he described a long series of Indian and Malayan molluscs, frogs and reptiles, and was able to turn

<sup>1</sup> Obituary Notices by Sir Thomas Holland and Col. A. Alcock; *Rec. Geol. Survey India*, Vol. XXXII, pp. 241-257 (1905).

<sup>2</sup> Memoir on the Life and Work of the late Ferdinand Stoliczka by the late Dr. V. Ball; *Scientific Results of the Second Yarkand Mission*, 1878-1891.

his knowledge of the osteology of living vertebrates to good account in his examination of fossil remains. The specimens he collected are still remarkable for their excellent state of preservation and it is worthy of comment that so recently as 1912 Dr. Ekandranath Ghosh was able to prepare a minute histological account of the anatomy of certain slugs based entirely on the examination of specimens preserved by Stoliczka in 1872.

In the early days of his work in India Stoliczka was in the habit of sending the zoological specimens he obtained to Vienna, where several of his types of reptiles are still preserved, but later on, as he came to recognize the scientific needs of India, he presented the many invaluable collections he made in the East to the Asiatic Society's Museum or, later, to the Indian Museum, to which he bequeathed the specimens in his possession at the time of his death.

William Theobald's<sup>1</sup> knowledge of zoology was less extensive than that possessed by Blanford and Stoliczka, but his work on the reptiles and the molluscs is of enduring importance and the collections he made are still of very great value. Theobald came to India in 1849 as an assistant to the Geological Surveyor under the Government of Bengal and was connected with the subsequently instituted Geological Survey of India until 1881. He died in 1908.

With the names of Blanford, Stoliczka and Theobald must be joined that of Geoffrey Nevill, who after the foundation of the Indian Museum as a separate institution was Assistant Secretary and Librarian therein. It is to him that the excellence of our collection of shells is still in great part due.

With these names of naturalists now no longer living that of the veteran zoologist and geographer Lt.-Colonel H. H. Godwin-Austen calls for special mention. In a ripe old age he continues in England to prosecute the malacological studies which the companionship of Blanford and his contemporaries fostered in the Asiatic Society's Museum. To Colonel Godwin-

<sup>1</sup> Obituary Notice. *Rec. Geol. Survey India*, Vol. XXXVIII, pp. 10-11 (1909-10).

Austen the Indian Museum owes zoological collections from Assam and Burma of the greatest scientific value.

The collections of the 'Investigator,' or rather of the two 'Investigators,' are of such unique importance that their history is dealt with in a separate chapter, which we owe to the present Surgeon-Naturalist. The fascinating book of one of his predecessors—Alcock's "Naturalist in Indian Seas" (London: John Murray: 1902)—should also be read by all who are interested in the natural history of eastern waters.

As an appendix to the chapter on the 'Investigator' it is convenient here to allude to the specimens obtained in 1908-1909 by the Bengal Fisheries Steamer 'Golden Crown,' from which we gained in particular an invaluable series of the rarer and larger rays of the Bay of Bengal, as well as many representatives of the sponges and coelenterates, molluscs and crustacea characteristic of its shallower waters. This collection is proving particularly useful for comparison with that of the 'Investigator,' the successive surgeon-naturalists on board which have until recently devoted most of their attention, as has been natural and proper in the circumstances, to the deep-sea fauna. We have to thank both Dr. J. Travis Jenkins, late scientific adviser on fisheries to the Government of Bengal, and also Capt G. Mann, skipper of the trawler, for devoting much time and trouble, in a total absence of scientific equipment, to the accumulation of a mass of valuable material, the classification of which is still by no means complete.<sup>1</sup>

In passing under rapid and necessarily superficial review the various military and political expeditions on which zoological specimens were obtained for the Indian Museum, it will be convenient to group them geographically and, as the majority took place on or near the northern frontier of the Indian Empire, to proceed along a line extending, with considerable gaps, from Persia in the North-West to the Chinese province of Yunnan in the extreme East.

The first collection that must be noticed on this plan is

<sup>1</sup> J. Travis Jenkins, Observations on the Shallow-water Fauna of the Bay of Bengal made on the Bengal Fisheries Steam-Trawler "Golden Crown," 1908-09, *Rec. Ind. Mus.*, Vol. VII, pp. 51-64 (1912).

that made on the journeys of the Persian Boundary Commission (1870-72) by Major Oliver St. John (with the help of a collector from the Museum) and by Blandford. The zoological results of this expedition were published by Blandford in 1876 in the second volume of "Eastern Persia" (London: Macmillan & Co.). With a few exceptions, invertebrates were not collected, and even the fish remained unnamed in Calcutta until 1910, when they were described in the Records of the Indian Museum by Dr. Jenkins. The whole collection is one of great value, for little zoological work has since been done in parts of the country traversed; the majority of the specimens still remain in good condition.

Collections from three other political expeditions to the frontier of Persia and Afghanistan are preserved in the Indian Museum; those of the Afghan Delimitation Commission of 1885, the Afghan-Baluch Boundary Commission of 1896 and the Seistan Arbitration Commission of 1903-05.

On the first of these Dr. J. E. T. Aitchison collected large numbers of vertebrates and invertebrates, on both of which he published a report in the Transactions of the Linnean Society in 1887. On the same expedition Capt. C. E. Yate obtained a considerable series of mammals, which were described in the same year by Dr. J. Scully in the Journal of the Asiatic Society of Bengal. Capt. Yate's specimens were presented direct to the Indian Museum, but of the larger and more general collection only duplicates were sent to Calcutta.

The other two expeditions on the Afghan frontier were both under the command of Sir Henry McMahon, now Secretary to the Government of India in the Foreign Department, who took great personal interest in the specimens obtained; in 1896 Captain (now Lieutenant-Colonel) F. P. Maynard, I.M.S., also supervised the collector's work. More specimens were obtained in that year than in 1903 to 1905 and few species not represented in the earlier collection were found in the second; with the exception of fish, of which several new species from the Helmand basin were described by Mr. Tate Regan of the British Museum in the Journal of the Asiatic Society of Bengal in 1906 and by Dr. B. L. Chaud-

huri in the Records of the Indian Museum in 1909. Most of the specimens reached Calcutta in fair condition on both occasions and, regarded as a whole, the material is of considerable interest.

The fauna of Afghanistan itself is poorly represented in the Indian Museum and, indeed, almost unknown; but a collection is present from the Russian frontier on the Pamirs. This was obtained in 1896 by Captain (now Lt.-Colonel) A. W. Alcock, I.M.S., who served as Surgeon-Naturalist with the Pamir Boundary Commission and described his zoological work in his "Report on the Natural History Results of the Pamir Boundary Commission", which was issued officially in Calcutta in 1898. Though small, the collection is valuable; chiefly on account of the fish and of the butterflies. Interesting specimens of other vertebrates and insects, of the lower crustacea (including two types) and of freshwater molluscs were, however, also preserved.

A much larger collection is that made by Dr. F. Stoliczka, and the officers of the Second Yarkand Mission (1873-74) on the North-West Frontier of India and in Chinese Turkestan. A full account is published in the "Scientific Results of the Second Yarkand Mission" issued by the Government of India (1878-91). Although particularly rich in vertebrates of all groups, it also included a very valuable set of beetles and spiders. The different groups were fully worked out by leading authorities of the time, and large numbers of type specimens were named, the majority being returned in due course to Calcutta. It has not, however, been possible to trace the ultimate fate of the spiders, and in this case, as in so many others, zoological research actually in progress in India is handicapped by the fact that the specimens are not available for comparison in this country. It was while returning from the expedition that Stoliczka died.

The lower hills of the Western Himalayas, Sikkim (native and British), and the more accessible parts of Nepal are represented by numerous collections, small and great, in the Indian Museum; but this is the result of the liberality of private naturalists and of the work of our own officers and collectors rather than of the journeys of historical expeditions.

To reach the next field investigated zoologically by an expedition of the kind, it is necessary to cross the Himalayas and enter on the highlands of Tibet.

On the military expedition to Lhasa in 1903-04, a member of the Indian Medical Service was instructed to make zoological collections on behalf of the Government of India. As the specimens were obtained, they were sent down to Calcutta and were sorted out in the Museum. By order of the Viceroy (Lord Curzon), however, they were then dispatched to London, and only a comparatively small number of duplicates were finally returned to India.

As an indirect result of the expedition the Museum profited much more extensively, for several of the medical officers who have been stationed at Gyantze have presented valuable collections. Special mention in this connection may be made of Capt. F. H. Stewart, I.M.S., the results of whose work in Tibet on the aquatic fauna were published in the Records of the Indian Museum in 1911 and 1912.

Bhutan is still an unknown country to naturalists and its territory represents the most important gap in our geographical knowledge of the Himalayan fauna. East of Bhutan two expeditions of very different date are of zoological importance, namely the Daffa Expedition of 1874-75 and the Abor Expedition of 1911-12.

On the first of these, Godwin-Austen, then a major in the Royal Engineers attached to the Survey of India, himself made collections of great value, and also encouraged his subordinate officers to do the like. A large proportion of these specimens he generously presented to the Indian Museum. Among them are included many examples of rare or almost unknown beetles and lizards, crustacea and mammals.

The Abor Expedition of 1911-1912 was the first frontier expedition on which permission was given for a scientific man to accompany the force solely in the capacity of zoologist and anthropologist. Mr. S. W. Kemp, Senior Assistant Superintendent in the Zoological Section of the Indian Museum, was the naturalist to whom this pioneer service was granted. He was given unstinted assistance by many

officers both military and medical, and notwithstanding the fact that the expedition took place at a time of year (the winter months) most unfavourable to many forms of life, his collections, which are being described by many specialists of different nationalities in a special volume (VIII) of the Records of the Indian Museum, were of exceptional interest, more especially as regards the lower vertebrates, the earthworms, mollusca, land planarians, and other terricolous and aquatic groups. The great "find" of the expedition was undoubtedly a new genus and species of that peculiar group the Onychophora, intermediate in many respects between the arthropods and the annelid worms. This little animal has been named by Mr. Kemp *Typhloperipatus williamsoni*, in memory of Mr. N. Williamson whose murder was the ultimate cause of the expedition. It is the only member of its group that has been found north of the Isthmus of Kra in the Malay Peninsula, and may, therefore, be said to be the only peripatus as yet known from continental Asia.

Two expeditions still remain to be considered. Both of them passed through Burma to Western China and in both Dr. J. Anderson, the first Superintendent of the Indian Museum, took a prominent part as medical man and naturalist. The first was in 1868 and the second in 1875. The zoological collections formed a basis of extensive research, both anatomical and systematic, on the part both of Anderson himself and of other workers in Calcutta. The results were published in two large volumes (text and plates) under the title of "Anatomical and Zoological Researches: comprising an account of the zoological results of the two expeditions to Western Yunnan in 1868 and 1875; and a monograph of the two Cetacean genera, *Platanista* and *Orcella*." Unfortunately a considerable proportion of the specimens appear either to have been lost after their arrival in Calcutta, or possibly never to have been brought back to India; for apparently Dr. Anderson was in the habit of preparing in the field very elaborate descriptions of the animals he collected, and of drawing detailed figures while they were still fresh. Those specimens that remain, how-

ever, are of great importance and value, including as they do many types and not a few unique specimens. They represent a fauna of which recent additions have been made to our collections by the specimens brought to India by Mr. J. Coggin Brown of the Geological Survey, and described in the Records of the Indian Museum in 1910.

Among the private donors to whom the Museum is more especially indebted, a considerable number have already been mentioned in reference to the collections of the Asiatic Society, and to those made on military and political expeditions. Such names as those of Blanford and Stoliczka, Godwin-Austen and John Anderson would naturally be inscribed on any list of our benefactors. Indeed, Dr. Anderson in particular would hardly escape mention under several different headings, whether as official surgeon-naturalist beyond the frontier, as an officer of the Museum, or as a munificent donor. It is no secret that a great part of the expenses he incurred in making the collections which found their resting-place in the Museum was incurred at his own private charges.

The zoological collections that the Museum owes to private donors are chiefly representative of localities or districts rather than of special groups of animals. The extremely varied and abundant specimens from the north-east corner of Assam presented by the late Mr. S. E. Peal, a well-known tea-planter of Sibsagar, are, for example, of peculiar value as illustrating the fauna of one of the most interesting districts in the Indian Empire; while those collected by several of the Hugli pilots, notably Messrs. W. M. Daly, A. J. Milner and J. Barnet, at the mouth of that river, are from a region hardly surpassed in interest for the study of the origin of freshwater faunas. From the Andaman Islands and the Nicobars Lt.-Colonel A. R. S. Anderson, I.M.S., continued for several years, while in medical charge of the convict settlement at Port Blair, to send to Calcutta a continuous stream of valuable material representing in particular the invertebrates and the lower vertebrates. His generosity in this direction has been continued recently by Mr. C. G. Rogers, Chief Conservator of Forests, Burma, who has also collected

for us many specimens from the Arrakan and the Pegu Yomas—hill-ranges as little known zoologically as any in the country.

These are of course mere instances, which space renders it impossible to multiply.

The Museum has acquired few zoological collections by purchase, but those obtained in this way include the first set of the late Dr. Francis Day's collection of Indian fishes, and the whole of the late Mr. L. de Nicéville's collection of butterflies.

The officers of the Museum have always considered field-work an important part of their duties. The late Dr. John Anderson's work as a field-naturalist has already been noticed. Shortly before leaving India he undertook on his own account an expedition to the Mergui Archipelago, the zoological results of which were fully described in two special volumes of the Journal of the Linnean Society (vols. XXI and XXII, 1888-89). The valuable collections he made were sent to the Indian Museum, but unfortunately, in the confusion that occurred at the time of his departure, a certain proportion of them were lost. The specimens that remain are among the most valuable series of a littoral and insular fauna that we possess.

At an even earlier date the late Mr. Wood-Mason, then Deputy Superintendent, who had taken a very prominent part in the foundation of the biological work of the 'Investigator', had commenced a survey of the Indian marine and freshwater crustacea, which has borne no less valuable and perhaps more lasting fruit. His energies were not confined to the zeal with which he persuaded friends and correspondents in all parts of the Indian Empire, and even so far beyond its frontiers as Hongkong and Mauritius, to contribute specimens of crabs, prawns and stomatopod crustacea; for he made the fullest possible use of the little opportunity he had for field-work, not only as regards the groups (crustacea and insects) in which he took a special interest, but also in respect to many others. On one occasion he acted as Surgeon-Naturalist for some months, and 1873 he accom-

panied the late Dr. Valentine Ball, then a member of the Geological Survey of India, to the islands of the Bay of Bengal, and in particular the isolated islet of Narcondam, which enjoys the peculiar distinction of being the only habitat of a well-defined species of hornbill (*Rhytidoceros narcondami*, Hume). This tour was described in a charming manner by Dr. Ball in his book "Jungle Life in India" (T. de La Rue & Co.; London, 1880).

In the time of Wood-Mason and his immediate successor the work of the Museum was greatly increased at headquarters, while the zoological staff was actually diminished. It therefore became more and more difficult for the superintendent to leave Calcutta, and it was only a few years ago that facilities were given for regular touring on the part of the scientific staff. The rapid increase in the collections in the time of Alcock was very largely due to the work of the 'Investigator', and to the generosity of private donors stimulated by his own zeal.

Both Mr. Frank Finn and Dr. N. Annandale were, however, sent on deputation to various localities while they held successively the office of Deputy Superintendent, and a certain number of interesting specimens were obtained by them in the Andamans and in the country adjacent to the Gulf of Manaar.

Of recent years the practice of touring has been resumed with vigour. While in the field the scientific officers have had two main objects in view—to obtain material for a survey of the fresh- and brackish-water fauna of different parts of the Indian Empire, and to elucidate and illustrate the precise distribution of the Indian representatives of several groups, more particularly the crustacea, coleoptera, arachnida, reptiles, and batrachians. The birds and mammals have been perforce neglected, but, with only four scientific officers, it has naturally been impossible to pay attention to the whole of the animal kingdom, and the admirable work of the Bombay Natural History Society has done much, so far as the fauna of India is concerned, to fill in this gap in our organization. The number and the importance of the specimens obtained in those groups on which special work has

been done in connection with the Museum are clearly shown in the papers published in the Records of the Indian Museum, and in the last few volumes of the Journal of the Asiatic Society of Bengal, not to mention those of the official "Fauna of British India" edited and published in England.

In the centenary volume published by the Asiatic Society in 1885, a complete list is given of all the papers on zoological subjects in the Asiatick Researches and the earlier numbers of the Society's Journal and Proceedings. This list gives a very fair idea of the manner in which the collections that accumulated in the time of Blyth and his predecessors and immediate successors were utilized for the purpose of research; but subsequent memoirs on material acquired later were so frequently published outside India that the full extent of the zoological work done in this country was never realized either here or in England, and even when, under the superintendence of Alcock, the Museum commenced the publication of its own monographs,<sup>1</sup> the research they embodied, although its value was recognized, was never attributed to India.

To strengthen the solidarity of zoological study in the country, it was, therefore, decided in 1907 to publish two periodicals to be called respectively the "Records" and the "Memoirs of the Indian Museum," and to issue in them such papers as had hitherto been published in European journals, in that of the Asiatic Society of Bengal, or in the form of isolated monographs. The Memoirs were to be reserved for the more comprehensive papers and for those that needed illustrations of a larger size, while the Records were to consist of shorter accounts of the current work of the Museum, and also of other zoological research that had a direct bearing on India. As three volumes of the Memoirs have already appeared and nine of the Records, it is not too early to claim that they have been successful, both from a purely scientific point of view and also in attaining the special object for which they were inaugurated. Their success is

<sup>1</sup> The first was entitled "Figures and Descriptions of nine species of Squillidae from the collection of the Indian Museum," published in 1895.



Superintendent's Laboratory,  
1914.

due in large measure to the hearty co-operation of many contributors both in India and abroad. Among workers in this country who are not members of the Museum staff, Mr. E. Brunetti and Major J. Stephenson may be mentioned in particular.

The zoologists of the Indian Museum have always recognized that zoological work undertaken in connection with a museum, even if much of it is done in the field, must be largely of a systematic or taxonomic nature; but they have endeavoured to infuse therein a spirit of philosophy, and lately have been encouraged in the belief that taxonomy itself will fail of its object if it be divorced from bionomics and geography.

Without books systematic zoology is impossible. Calcutta zoologists are, therefore, fortunate in having at their disposal a library that is certainly no less complete than that of most English centres of the science. The library is that of the zoological section of the Indian Museum. It now includes some twelve thousand volumes, and has increased in the last few years at the rate of over six hundred volumes a year. Where it is deficient is mainly in some of the older works that have already become classics, and in the full issues of certain periodicals; and most of these in both cases are to be obtained from the libraries of the Asiatic Society of Bengal or the Geological Survey of India. The generosity with which the Museum library is treated by the Trustees and by the Education Department of the Government of India is perhaps the strongest proof of the encouragement given to zoological research of recent years by both bodies.

Another proof lies in the construction of the new zoological laboratories erected in 1912 on the top of the old building. Apart from a public lecture-room, one corner of which is fitted up for microtome work, and a photographic room, they cover an area of 6620 square feet and are now well supplied with the necessary apparatus. The thanks of all concerned in planning and using them are due to Mr. H. A. Crouch, Consulting Architect to the Government of Bengal, who showed a readiness to fall in with the wishes

of the scientific staff, and at the same time a fertility of resource in meeting their needs—more particularly in the important matters of lighting and ventilation, that has not always been displayed in the erection of museum buildings. The cost of these laboratories was approximately Rs. 1,22,000 and was met from a special grant made for the improvement of the Museum by Lord Curzon's Government in 1904 and augmented by that of Lord Minto in 1906.

In addition to the space occupied by the laboratories a considerably greater area is covered by the cabinets that contain the zoological collections not exhibited to the public. Except in the case of specimens that are practically indestructible, only duplicate material is now displayed in the show-cases of the public galleries.

It is not possible to approach the question of the utilization of the Museum collections for purposes of display and popular education with the same confidence as that with which their scientific utilization has been discussed. Superintendents of the Indian Museum have been faced throughout its history as a government institution by the fact that the funds at their disposal have not been adequate both to encourage zoological research, and to display to the public its results in a manner worthy of an Imperial Museum. They have deliberately chosen the alternative that seemed to them, in the peculiar circumstances prevalent in India, the better of the two, and have frankly claimed that the chief function of the zoological section must be to act as a centre of investigation.

The peculiar difficulties that exist in India in respect to the public galleries of a zoological museum are both physical and educational. On the one hand we have the tropical light, and a comparatively great range of temperature; on the other, both the illiterate condition of the vast majority of the visitors and the eagerness with which students learn the statements on labels by rote. The last is a difficulty that it is apparently by no means easy for a museum-curator in Europe to appreciate, but it is a very real one in Bengal, if not also in other countries. Another fact that has un-

doubtedly influenced the development of the zoological section of the Indian Museum is the small amount of zoological research hitherto undertaken in Indian universities.

In our galleries some of the stuffed animals have been displayed for over half a century and should undoubtedly be replaced, if proper precautions could be taken to preserve those substituted for them. In Calcutta the museum-curator is fortunate in not having to face either the salt-laden sea-breezes that in many tropical localities make it difficult to keep dried specimens dry, or the extreme seasonal and diurnal variations of temperature and moisture that cause specimens of the kind at one time to shrivel up or crumble away and at another to be in a sodden condition. Relatively speaking, therefore, Calcutta has an equable climate by no means unfavourable for the preservation of zoological material—provided that sufficient care can be taken of the specimens. So far as the public galleries of the Museum are concerned, all that is now necessary is a liberal expenditure of money.

Six of these galleries are devoted to zoology, covering a total area of 26,400 square feet. Two are on the ground-floor, on the side of the quadrangle furthest from the main entrance; while the other four are above them on the first storey. Of the former, the largest (with a floor space of 7,440 square feet) is devoted to the crustacea and to all other invertebrates except the insects and their close allies. That the galleries are as good as they are is due mainly to Colonel Alcock's devotion.

The most important feature of the large Invertebrate Gallery is the exhibition of decapod crustacea arranged by Alcock, who devoted not only a very special knowledge of these animals but also a keen instinct for artistic display to their arrangement. Typical representatives of the larger groups are shown, with terse descriptive labels painted in white on black boards; while the different families (more especially those represented in the seas, rivers, etc. of India) are also shown with similar labels. Individual specimens belonging to species of particular interest in respect to habits or distribution also bear descriptive labels on the jars in which they are preserved, in addition to the scientific and

(wherever possible) trivial names with which all are inscribed.

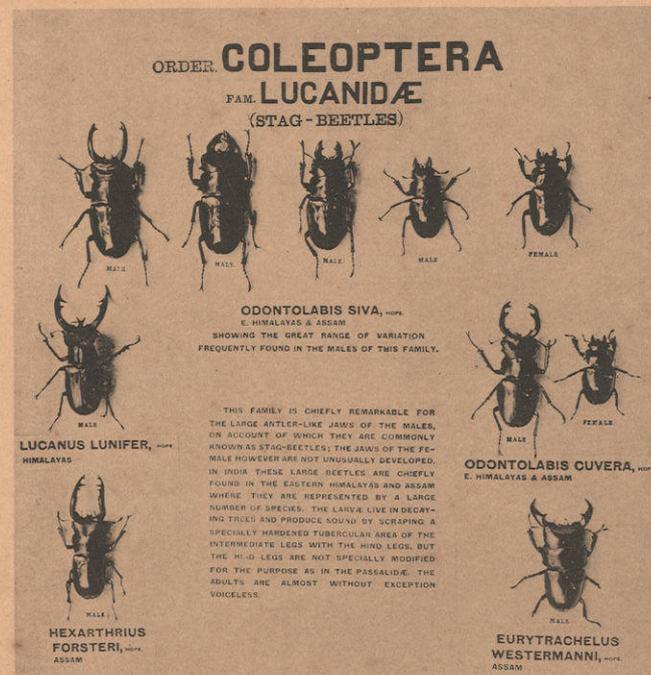
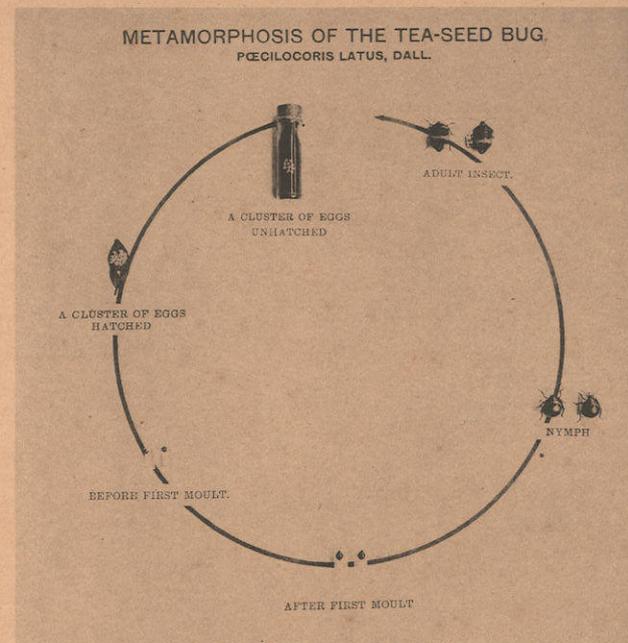
The research collection of marine invertebrates is stored, together with those of the reptiles and batrachians, in two large galleries adjacent to the library upstairs, with the exception of a few of the smaller groups kept in the superintendent's laboratory.

The other zoological gallery on the ground-floor is much smaller, occupying only 1760 square feet; it contains insects, arachnids, myriapods and several other smaller groups. Wood-Mason and de Nicéville devoted particular attention to this gallery and devised, together or separately, some simple and ingenious methods of arrangement. One of these is shown in the illustration opposite, in which a photograph of the exhibit illustrating the life-history of a common tea-pest is reproduced. Within the last few years cases illustrating such problems as variation, mimicry, sexual dimorphism, the comparative anatomy of insects and their allies, have been prepared or revised and are now being set up while the various groups of arachnids and myriapods have been entirely rearranged with fresh descriptive labels.

Only a very small proportion of the entomological collection is exhibited to the public, all specimens that could not be readily replaced being preserved on the first storey in an entomological room, or rather in two rooms, to which only serious students are admitted.

Upstairs, the vertebrates are displayed in two large and two small galleries, which correspond roughly in size with the large Invertebrate Gallery and the Insect Gallery respectively. The mammals are divided, without pedantry, into "large mammals" and "small mammals," the former being shown in a large gallery and the latter in a small one. The arrangement is convenient, and much less unscientific than it might seem at first sight to be; under the heading of "small mammals" are included the monotremes, marsupials, edentates, insectivores, rodents and bats; the remaining groups being shown in the large gallery.

In the arrangement of all of the public galleries of zoology in the Museum it has been accepted as a principle that



**Method of displaying Insects.**

groups not represented in the fauna of Southern Asia shall not be illustrated in detail so great as that in which the characteristic fauna of the Indian Empire and the surrounding countries is displayed. Hence the small amount of space devoted to the marsupials and monotremes.

The "Mouse Gallery," as it is called by the Indian attendants, stands badly in need of new specimens and a new arrangement; but the valuable collection of mammal-skins now being received from the Bombay Natural History Society in accordance with a compact made between the Government of India and that Society, will be of great use for this purpose, as soon as, or if ever, the services of a specialist are available.

The gallery of large mammals contains abundant and interesting material, including the type-skeletons of several Indian cetaceans and a complete mounted skeleton of the Mishmi Takin. The room is long and narrow, and obtains both light and ventilation from above by a system not altogether satisfactory; the area occupied is identical with that of the large Invertebrate Gallery, which is immediately below. The stuffed specimens are displayed in cases ranged along the two sides and originally designed to contain not only those prepared for exhibition but also, behind cotton curtains, the research collection of skins and skeletons. The latter, however, were found to be practically inaccessible and experience has proved that the cases, which were constructed in India about forty years ago, are by no means proof against dust. The whole of the collection of unmounted skins is now stored in the lecture-room at the top of the building and care has been taken in weeding out from the public gallery and preserving in proper cabinets protected against light as well as dust, the skins of historical value that were until a few years ago numerous amongst the public exhibits.

The centre of the gallery is occupied by skeletons of the larger Indian mammals and also of such exotic groups as giraffes and zebras, by stuffed rhinoceroses and by two large cases, one of which contains casts of cetaceans, together with skulls and other specimens of the group.

The casts were mostly prepared in the Trivandrum Museum and are replicas of those now exhibited in the Whale Gallery of the British Museum. The other central case contains the largest known specimen of the Dugong (stuffed), from the Gulf of Manaar, with a skeleton, photographs and drawings of the animal. In a case at one end of the gallery there are stuffed seals and a walrus, while the corresponding case at the other end is occupied by a series of skeletons illustrating resemblances and differences between man and the higher apes.

This last exhibit replaces a spectacular group representing a fight between a lion and a tiger, mounted in quasi-realistic style with plenty of red-sealingwax blood. Some eighteen years ago this triumph of the taxidermist's art became dilapidated and was removed. But its fame had gone abroad and survived its destruction beyond the confines of India; for when the Dalai Lama visited the Museum in 1910 one of the first things that his attendants asked to be shown was the lion and the tiger fighting, of which they had heard at Lhasa.

A large collection of horns and antlers, chiefly of Indian ruminants, is hung on the walls above the cases.

The birds now share with the reptiles and batrachians a large gallery at right angles to and rather smaller than that of the large mammals. What has been said of these is also true of the birds. Indeed, it has seemed advisable to reduce the whole exhibit considerably until new cases can be provided, and the only family now in any way adequately represented is that of the ducks, to which Mr. Frank Finn while Deputy Superintendent devoted special attention.

The research collection of bird-skins and of eggs and nests is kept in cabinets supported on a hanging gallery along the walls above the show-cases and is naturally in very much better condition than the duplicates displayed, at any rate so far as the skins are concerned.

Half of the floor-space of the gallery is devoted to birds, the structure, eggs and bionomics of which are illustrated in cases occupying the centre of the room. The reptiles and batrachians occupy the other half, together with a

large case containing an exhibit of Indian rays which properly belongs to the adjoining Fish Gallery.

In present conditions the cold-blooded vertebrates can be exhibited in a very much more satisfactory way than the birds and mammals: it is only natural that the scientific staff, fully conscious of this, have felt a far greater interest in arranging those exhibits in the completion of which they could feel some satisfaction.

The reptiles occupy the greater part of the side-cases on the right-hand side of the door of the gallery. In these cases tortoises and turtles, lizards, chameleons, snakes, crocodiles and the almost extinct group *Rhynchocephalia*, now represented only in New Zealand by a single living species, are illustrated by specimens in spirit, skeletons, casts and clay models. Each family is provided with a descriptive label and in most cases with a map showing its distribution. The clay models are the work of Babu P. C. Chatterjee and were executed with the most detailed accuracy. Most of the snakes described in Mr. Boulenger's volume in the "Fauna of British India" are represented in this way, as well as a large proportion of the lizards.

In the centre of the room are large stands supporting stuffed specimens of the two Indian crocodiles and the Gharial and a cast of a large Leathery Turtle from Travancore. Here also are cases containing dissections, diagrams and models that demonstrate the anatomy and life-histories of the reptiles and batrachians.

The latter group is exhibited from a systematic point of view in one of the wall-cases, by specimens hardened in formalin and then preserved in alcohol, by clay models and by photographs of living frogs.

The end of the gallery furthest from the door on the right-hand side contains a large case designed for the exhibition of the Indian rays. These fishes, some of which reach a great size, are represented by stuffed specimens, casts and specimens in spirit. The two former have been painted from the fresh fish and a particularly interesting feature of the exhibit as a whole lies in the fact that several of the common sting-rays are thus shown both in a young and in an

adult stage. Photographs of fresh rays are also hung on the wall of the archway that leads from the reptile gallery to that specially devoted to fish.

The rich material obtained from the 'Golden Crown' enabled us to display the rays in a manner that has probably not been attempted in any other museum. Immediately within the Fish Gallery proper there is another case containing the record specimen of the sting-rays (Trygonidae), a female of the White Ray of the Bay of Bengal, the disk of which had a diameter of over 8 feet when fresh.

Yet other specimens of the rays—a large Eagle-Ray and an almost equally large Gangetic Sting-Ray—are hung on the walls, on a shelf on which also reposes an Indo-Pacific Basking Shark obtained from the mouth of the R. Hughli.

Other sharks and other fish of all the families represented in Indian waters are illustrated in the side-cases of this gallery, which has a floor-space of 1760 square feet. In cases in the middle of the room skeletons, teeth and the soft organs of various fishes are shown, with others illustrating the care of the young or of the eggs exercised by certain fishes, more particularly by those cat-fish the males of which carry the eggs in their mouths.

Another case is occupied by the primitive vertebrates: the ascidians or sea-squirts, the lampreys, lancelets and certain other less well-known groups. The structure of all these is demonstrated by both specimens and diagrams, while printed labels explain the reasons why zoologists consider that the different groups are related to vertebrate animals.

A case at the end of the room contains specimens of the largest and the smallest Indian bony fishes—*Serranus lanceolatus* and *Gobius alcockii*.

Before leaving the subject of zoology in the Indian Museum it may be as well to say a few words about the connection that has long existed between the zoological section (or as it was formerly called the "Natural History Section") and the administration of the Museum as a whole. This may be traced in the first instance to the appointment of Edward Blyth to the curatorship of the Asiatic Society's

Museum in 1841, and in the second to that of John Anderson as Curator and subsequently Superintendent of the Indian Museum in 1865. Blyth's tenancy of the post, combined with the foundation of an independent Geological Survey, gave the Museum as a museum a zoological trend, which was strongly confirmed by Anderson's work, although he was an archæologist, an ethnologist and a historian as well as a naturalist. As the Museum consisted, after the separation of the geological collections, of a single section or department in which zoology, anthropology and archæology were combined under a head who was primarily a zoologist, the appointment of superintendent came to be regarded as a zoological one, and all who have held it since have been zoologists. As soon, however, as a second section was added under an independent head the position of the former officer became an anomalous one and misunderstandings naturally arose. The new bye-laws accepted by the Government of India in 1912 made the position somewhat clearer by asserting definitely that the superintendent had control over all the buildings of the Museum and over all the servants on duty in the public galleries. They also made it clear that the officer in charge of the zoological section should be, under existing conditions, both Superintendent of the Indian Museum and Secretary to the Trustees. There is, however, no Director of the Indian Museum, and the superintendent has no authority outside his own section (*i.e.* the Zoological and Anthropological Section, over which he has of course complete control) to interfere in internal arrangements, except in cases of extreme urgency. The system has obvious advantages, which, so long as a true *esprit de corps* animates the heads of the different sections, greatly outweigh its inherent difficulties.

## CHAPTER VIII.

THE BIOLOGICAL WORK OF THE MARINE  
SURVEY OF INDIA.

It may at first sight appear somewhat out of place in a volume of which the purport is to celebrate the Centenary of the Indian Museum, that a chapter should be devoted to an account of the biological work of a marine survey; but the connection between the Museum and the Surgeon-Naturalist's "department"—if one may employ such a term to describe an association of but three individuals—has always been a close one, for both can claim the Asiatic Society of Bengal as their *alma mater* and from the commencement of the work the biological collections of the Marine Survey have found a resting place in, and have eventually become the property of, the Indian Museum. Moreover, since the creation of the appointments, the artist of the Marine Survey has always been accommodated in the Museum and the Surgeon-Naturalist, when not at sea on the survey ship, is attached to the Museum and is provided by the Trustees with the necessary laboratory. Of late years the link between the two departments has become even stronger, for the Trustees have honoured the Surgeon-Naturalist by appointing him an Honorary Assistant in the Zoological and Anthropological Section, and on several occasions in the past this officer has officiated as Superintendent of the Museum.

The history of the biological work of the Marine Survey of India dates back to the year 1871. During the preceding decade the science of biology had been making rapid progress and many time-honoured theories and beliefs were being overthrown; many zoologists, among whom one may be mentioned in particular, Dr. G. C. Wallich, formerly of the Bombay Medical Service and naturalist with M'Clintock's North Atlantic Expedition of 1860, had been attempting to prove, with more or less success, that the ocean bed was not,

as had formerly been believed, a barren wilderness, chiefly remarkable for

... its solitude,  
wherein no living creature did intrude.

Their results for the most part had been either discredited or disregarded, but it was becoming more and more widely felt that some effort should be made to decide the question once and for all. In England, Wyville Thompson and Carpenter were endeavouring to persuade the British Government to undertake a systematic expedition to investigate the conditions of life and matter in the great oceans: efforts that eventually resulted in the famous voyage of H.M.S. 'Challenger'; and in 1871 the Council of the Asiatic Society of Bengal wrote to the Government of India, urging them to undertake similar investigations in Indian waters. Prior to this date the matter had already attracted the attention of the Society, and a committee had already been appointed to draft a report on the subject; the list of members of the committee contains the names, now so famous in the annals of Indian biology, of F. Stoliczka, W. T. Blanford, J. Anderson, J. Wood-Mason and T. Oldham.

It is interesting to note that one of the chief arguments put forward in this committee's report to the Society is the hope that such deep-sea investigations would discover many forms hitherto known to science only in a fossil state and that many "missing links" in the scheme of evolution would be brought to light. This view, indeed, was very strongly urged by Agassiz in America, when supporting the scheme for the 'Challenger' Expedition; but such hopes were, with a few minor exceptions, doomed to disappointment. The Society's proposition received the active support of the Royal Society of London and many of the leading zoologists, and the Government of India gave the scheme their approval but unfortunately, owing to a variety of circumstances but chiefly because there was no ship available, nothing at that time could be done. The honour of being the first to carry out deep-sea biological investigations in the Indian Ocean belongs, not to the Marine Survey of India, but to an officer of the Indian Museum, the late Mr. James Wood-Mason, who

in 1872 was deputed by the Trustees, with the sanction of the Government of India, to proceed to the Andaman Islands and make a collection of the marine fauna. Some two months were spent by him in making collections in the shallower waters down to a depth of fifty fathoms, but beyond this it was impossible for him to go, as he had only the use of a small steam-launch; towards the end of his stay in the islands, however, he persuaded the Commandant of Port Blair to place the guardship, S.S. 'Undaunted,' at his disposal for a day and he was thus able to carry out a series of hauls in depths ranging from 100 to 300 fathoms. During the next year or two the Society was slowly getting together such apparatus as they considered necessary for deep-sea exploration, and in 1875 the President in his annual address remarked that the Indian Coastal Survey had at length been established and that all the apparatus for carrying out biological investigations was ready. The same year saw the creation of the post of Surgeon-Naturalist to the Marine Survey of India.

The first officer to be appointed to the post was Dr. J. Armstrong, at that time a surgeon in the Bengal Army; but as yet there was no ship available and in consequence deep-sea sounding and trawling was impossible, as the Surgeon-Naturalist had, perforce, to confine his attentions to the fauna of the shallow waters (*i.e.*, water under 100 fathoms) and of the littoral region. Surgeon Armstrong continued to hold the appointment till 1879, and he has left considerable evidence of his zeal and abilities in the shape of extensive collections, but his sole literary monument is a short paper, published in the Journal of the Asiatic Society on "Hydroid Zoophytes from Indian Coasts and Seas." In 1877 the 'Challenger' returned from her voyage of discovery and the Asiatic Society of Bengal, taking advantage of her being put out of commission, requested the Government of India to apply to the Admiralty for some of her gear. The following year Lieut. Jarrard, R.N., who had been appointed to the Marine Survey of India under Commander Dundas Taylor, was in England on leave and took the opportunity of meeting several of the 'Challenger' scientific

staff. With their advice and assistance, he compiled a list of such sounding and dredging-gear as would be required. He then went to the Admiralty and, as has invariably been the case, found that they were willing to assist in every possible way. They presented much of the 'Challenger' apparatus, as examples, to the Marine Survey of India, and it is of interest to know that when the Surgeon-Naturalist began his researches he was not only continuing the 'Challenger' work, but was actually using 'Challenger' apparatus; indeed, for some years afterwards in the annual administration reports the trawl of the 'Blake' pattern is frequently referred to as the 'Challenger' trawl. At this time a survey ship was in process of construction in the Royal Indian Marine Dockyard at Bombay; this was the R.I.M.S.S. 'Investigator.' The initial ceremony, consisting of the driving of a silver nail into the stem, had been performed by Miss Carew on the 14th of December, 1878, and the ship was launched from the slips in 1881. Commander Dawson, at that time officer in charge of the Marine Survey, in his annual report, gives the following account of the ship:—

"The 'Investigator' is a wooden paddle-steamer of 580 tons, built at Bombay and launched on the 3rd of March, 1881. The 'Investigator' underwent a preliminary steam trial, November 4th, and a six hours' full-power steam trial, November 7th. The average speed attained during the last trial was 10·5 knots an hour. December 3rd the 'Investigator,' being ready for sea, proceeded outside of Bombay Harbour to adjust compasses and on the 28th sailed."

During the next three years no steps were taken to commence the investigation of the deep-sea fauna, but in 1884 Commander A. Carpenter, R.N., was appointed to the post of officer in charge. Owing to his previous experience on board the 'Challenger', Commander Carpenter had been impressed with the value and importance of biological research, and, whether it was a result of his representations or not, the fact remains that simultaneously Surgeon G. M. I. Giles, I.M.S., was appointed Surgeon-Naturalist and, to quote from

Alcock,<sup>1</sup>—"deep-sea dredging at last took its proper, if secondary, "place in the economy of the Marine Survey of India."

The biological equipment of the ship at this time, as has already been pointed out, was very much the same as that employed on the 'Challenger': a large trawl of the 'Blake' pattern was used for deep-water investigations, and was towed by a long hemp rope; for shallow-water work there were small dredges and a small trawl. Commander Carpenter was also very fond of using the "tangle-bar."

It was during the survey season 1884-85 that deep-sea research was commenced; hauls were carried out at two stations on opposite sides of the Bay of Bengal in 1884, and during the latter part of the season, in 1885, the ship was surveying the region round the mouths of the Ganges and Hughli, and several trawls were made, one, at least, actually in the "swatch of no ground," at depths ranging from 285 to 409 fathoms.

As was but natural at the commencement of a survey, the localities in which work was carried out, were somewhat scattered, and during a single season the ship would visit and carry out surveys of several places: thus, during the survey season 1886-87 the areas under observation ranged from Chittagong to Madras, then from Porbandar to the Laccadive Islands, and finally from Ceylon to the Andamans. In this way it was possible to get glimpses of the faunistic character of numerous widely-separate regions, but it was impossible to make a systematic survey of any one locality.

As has already been mentioned, the Surgeon-Naturalist during the "recess" season, from May to October, returns to the Indian Museum, Calcutta, and there works out the collections that he has made. During the first few years of the survey, it was impossible that any systematic work of paramount importance could be undertaken, but several short papers, dealing chiefly with the amphipoda, were published by

Giles in the Journal of the Asiatic Society of Bengal between 1885 and 1890. Apart from their zoological value, these papers are of interest as they constitute the beginning of a long series of papers and monographs dealing with the group crustacea, the study of which has been carried on continuously in the Indian Museum for over forty years and, indeed, has become a tradition of the institution. In 1888 Giles resigned the post of Surgeon-Naturalist and, during the interregnum before the next officer was appointed, the vacancy was, for the time being, filled by Mr. J. Wood-Mason, then Superintendent of the Indian Museum. At the end of the year Lt.-Col. (then Captain) A. Alcock was appointed, and since that date the post has been continuously held by officers of the Indian Medical Service.

During the last season for which Giles was in charge, not only had extensive biological collections been made, but considerable attention had also been paid to the sea-bed and the nature of the various deposits, a large number of observations being made and each sample reported on in considerable detail. This work was continued by his successor during his first year or two of office, but in later years Alcock's interests were too much occupied with the study of the bathymetric fauna to permit of such work, except in so far as it related directly to his zoological researches; and consequently the sea-bed received but little attention, a condition of affairs that has unfortunately continued to exist down to the present time.

During Alcock's tenure of the appointment several important changes took place, the first of which consisted of the substitution for the old 'Blake' trawl of the type known as the "Agassiz" and a continuous wire warp. Owing to this change it became possible to carry out a complete trawling operation in a very much shorter time, and in consequence the number of trawls *per* season show a marked increase.

Alcock first joined the 'Investigator' at Port Blair in the Andamans, and within a few days he gained his first view of a growing coral reef. The ship still continued to visit a number of widely distant areas, though during the

<sup>1</sup> Major A. Alcock, M.B., C.M.Z.S., F.G.S., "A Summary of the Deep-Sea Zoological Work of the Royal Indian Marine Survey Ship *Investigator* from 1884 to 1897." *Scientific Memoirs by Medical Officers of the Army of India*, Part XI, 1898.

next few years much of her time was spent on the coast of Orissa and Madras, and in many localities, when trawling, for any reason, could not be undertaken, Alcock availed himself of the opportunities that occurred to visit the various islands and shores and make collections of the littoral fauna. As a result, during the few years he was in office a very fairly representative collection of the fauna of Indian waters was made. As was but natural during the first years of such a survey, it was the larger and more obvious animals that attracted attention, and as the collections, year by year, were sorted and worked out in the Indian Museum, a series of papers, dealing for the most part with the fish and crustacea, were published either in the *Annals and Magazine of Natural History* or in the *Journal of the Asiatic Society of Bengal*.

In 1890 the Government of India sanctioned the appointment of an artist to the Marine Survey, for the work of drawing the numerous zoological treasures that were being brought to light; at the same time they undertook to pay for the production and publication of twelve plates annually. For many years the plates were published separately under the title of "Illustrations of the Zoology of the Royal Indian Marine Surveying Steamer 'Investigator,'" but latterly their publication as a separate issue has been discontinued and they are now included in the *Memoirs of the Indian Museum*. The first artist to be appointed to the post was Babu A. C. Chowdhary, and in 1892 he was succeeded by Babu S. C. Mondul, who still holds the appointment.

During the survey season 1890-91 the area under investigation was part of the Andaman Sea: during the voyage out from Colombo to Port Blair two noteworthy trawls were made; the first of these was taken at station 110: 9° 34' N: 85° 43' 15" E in 1997 fathoms; this was then and up to the present date still is the deepest haul ever made by the 'Investigator'; the second was in shallower water, in 561 fathoms at station 112: 13° 47' 30" N: 92° 36' E. It is noteworthy because it demonstrated for the first time that many deep-sea crustacea are phosphorescent. In 1892 Alcock retired from the post to take up an appointment in the

Sanitary Department. He has given to us a vivid account of his experiences during his tenure of office in the Marine Survey in "A Naturalist in Indian Seas": his description of his first view of a growing coral reef, and the subsequent reception of his catch on board the ship, is most graphic. But the fates decided that he was not to be permitted to give up zoological work, and in 1893 he again became connected with the Indian Museum in the capacity of Superintendent.

In succession to Alcock, Surgeon-Captain A. R. S. Anderson was appointed in 1893 to fill the vacancy on the Survey staff, a post that he held till the year 1899, with the exception of the survey season 1895-96, during which Surgeon-Captain Wemyss Grant officiated for him. During his first season Anderson was able to carry out a number of trawls in the seas to the south of India, for the ship was at that time surveying the Palk Straits and early in the season also paid a visit to the Laccadives, where the opportunity was taken to do some collecting on shore. At the commencement of season 1894-95, the 'Investigator' visited the mouth of the Indus River, and it is interesting to note that a trawl was carried out in that part known as the "Indus Swatch" at a depth of 170-210 fathoms, the result, however, was, from a collector's point of view, very meagre and did not approach in interest that obtained in the Gangetic Swatch in 1884. Later in the same season and during the following year the area under survey was again the region of the Palk Straits, so that Anderson was thus enabled to increase his collections from this locality: one trawl in particular, at station 197, proved to be one of the richest for several years and yielded many new species of animals. In 1895-96, as already mentioned, Surgeon-Captain Wemyss Grant officiated for Anderson, the area under survey being again the region round the Indus delta. The next year Anderson again rejoined the ship and the scene of operations was laid in that naturalists' paradise, the Andaman Islands; not only did he carry on shore-collecting in the Andamans themselves, but as the 'Investigator' was unable for the time to devote any attention to trawling, he accepted an invitation to visit

outlying islands in the R.I.M.S. 'Ephinstone': he was thus able to study the condition of, and make collections in Table Island, East Island and Landfall Island, and still later in the season, he again left the ship and made a tour with Colonel Bingham, the head of the Burma Forest Department, through the Salween Hill Tracts.

During the next two seasons the *milieu* was again the Andaman sea, and shore-collecting was carried on on Table Island and Long Island, the latter being one of several islands in the northern group of the Moscos Archipelago; in 1897-98, and in the Amherst district of the Burma coast in 1898-99.

In the year 1898 the Trustees of the Indian Museum published the first of that series of comprehensive monographs dealing with the various groups of Indian marine animals, that has made the name 'Investigator' so famous in zoological literature. The survey had been in progress now for over twenty years, and as a result of the work done during this period a magnificent collection had been accumulated. The harvest truly is ready, but the labourers are few. Indeed, with the exception of Alcock in Calcutta and Henderson in Madras, there was no one in India capable of working out the collections, and it consequently became necessary to make a search in other countries for specialists,

"Those that, eye to eye, shall look  
on knowledge . . . . . and in their hand  
Is nature like an open book."

The first of these 'Investigator' monographs was published in 1898, dealing with the Madreporaria, and was by Alcock himself; the following year saw the completion of three more such volumes, these were "The Deep-Sea Ophiuroidea" by R. Koehler and "The Deep-Sea Fishes" and "The Deep-Sea Brachyura," both by Alcock. This last was the first of a series of monographs from the same pen dealing with various groups of the crustacea. In October 1899, the 'Investigator' left Bombay to carry out an extensive survey in the region of the south coast of India. On this occasion she carried Captain McArdle, who had succeeded to the post of Surgeon-Naturalist on Anderson's retirement. This region

occupied the Marine Survey for that and the next following season, but in 1901-02, for the first time in her history, the 'Investigator' visited the Persian Gulf, and twenty trawls were made at stations ranging from the Arabian Sea, through the Gulf of Oman and the Straits of Ormuz to the Persian Gulf. Unfortunately McArdle did not live to investigate the results of these operations, for he died of cholera on October 11th, 1902, while officiating Superintendent of the Indian Museum in Calcutta.

At the end of season 1900-01 it had become necessary to submit a new programme of work. Most of the ports and a good deal of the coast-line of India and Burma had been surveyed, and it was felt that the time was then ripe, when the survey of the coasts could be taken in hand systematically. The programme put forward comprised the survey of the Tenasserim coast, from Moulmein to the southward, and after that, the Arrakan coast, to the south of Elephant Point: this was sanctioned, and the work duly commenced.

In March 1903, Captain MacGilchrist was appointed to succeed McArdle. Owing to climatic conditions being unfavourable, the survey of the Burma coast had to be interrupted and the opportunity was taken to carry out a survey of some of the smaller harbours and inlets in the Middle Andaman, and on several occasions shore-collecting on the various islands and reefs was carried out. During the season 1903-04 the survey of the Burma coast was again continued, the areas under investigation being Akyab and Hinzé Basin: this latter was an enclosed sheet of water having two inlets to the west and south. During the progress of the survey the 'Investigator' proceeded into the basin and remained there for some weeks, during which time MacGilchrist was able to make an extensive collection of the shallow-water fish and other organisms, but as the shore consists, for the most part, of mud-flats and mangrove-swamps, he found that shore-collecting was in many places impossible.

During the following two years the areas under investigation were parts of the Persian Gulf and Aden harbour and its approaches. In 1905 Captain R. E. Lloyd, I.M.S., was appointed to succeed Captain MacGilchrist, and he was thus

able to make a series of interesting observations on the fauna of this region. During the recess, 1906, the 'Investigator' had been docked and minor repairs carried out, but the old ship was getting worn out and it was decided to replace her by another.

At the commencement of season 1906-07 the region under survey was again part of the Persian Gulf, but about the middle of November, 1906, the 'Investigator' proceeded to Burma to continue the coastal survey there and in February 1907, she was detailed to carry out a biological investigation of the Mergui pearl fisheries. In order that this work might be carried out efficiently, two young zoologists, Mr. R. N. Rudmose Brown, B.Sc., and Mr. J. J. Simpson, M.A., B.Sc., were sent out from England, and they joined the ship in Rangoon. For the next two months biological investigations were carried out in the Mergui Archipelago, and, in addition to the ship herself, further facilities were given by the Government Steam launch 'Mercury'; Captain Lloyd acted as assistant to these experts and one of the ship's cutters was provided with the necessary pumps and was used as a diving boat, the services of a professional diver having been secured. In this way, a very large collection of the fauna was made and, at the conclusion of the investigations, the whole was taken back to England: the India Office promised, however, that when the collections had been investigated, the first set of specimens should be sent to the Indian Museum. In September 1907, Captain Lloyd resigned his appointment and was succeeded by Captain F. H. Stewart. During this year, the old 'Investigator' was condemned as being no longer fit for the work and was replaced by the new ship of the same name.

The present 'Investigator' was built by Messrs. Vickers, Maxim & Co: she is a steel ship, having a gross tonnage of 1018 tons and is capable of steaming at about 14 knots. "Although thoroughly equipped for the modern requirements "of surveying-vessels," yet, so far as the requirements of a naturalist are concerned, she is by no means so well arranged as the older ship.

Captain Stewart held the appointment of Surgeon-

Naturalist from 1907 to 1910. During the whole of this time the survey of the Burma coast was in progress, but from a variety of causes, very little time was spent by the Surgeon Naturalist on board the ship and, as a natural result, the amount of biological work done was comparatively small.

In September, 1910, Lieutenant R. B. Seymour Sewell was appointed to the post and he joined the ship in October, prior to her sailing for Rangoon. Up till the present time, with the exception of a short period in March and April, 1912, when the 'Investigator' visited Nankouri harbour in the Nicobar Islands, the survey of the Burma coast has gradually been extended to the southward. During the season 1910-11 owing to the fact that trawling was for the most part impossible, the Surgeon-Naturalist turned his attention to shore-collecting and a systematic survey of some of the organisms of the "plankton" and more especially of the surface-living copepoda.

During the recess a new form of net was constructed in the Royal Indian Marine Dockyard in Bombay, designed to fish in the mid-water. Hitherto this region had been entirely neglected, and the only knowledge of its fauna that we possessed was obtained from a few individuals that had been captured during the ascent or descent of the bottom-trawl. During the season 1911-12, this net was tried on four occasions and the results obtained show that we have here an exceedingly promising field for biological research in the future.

In December, 1911, Captain Sewell was recalled to Calcutta to officiate as Professor of Biology in the Medical College and Lieutenant T. L. Bomford, I.M.S., was subsequently appointed to officiate as Surgeon-Naturalist during the season 1912-13. Owing to the exigencies of the service the R.I.M.S.S. 'Investigator' was detailed to act as station-ship at Port Blair during the early part of the season and was, therefore, not available for survey work until January, 1913. The survey of the Burma coast was then continued, and had so far progressed that the ship was once again working in the Mergui Archipelago. Captain Bomford continued

the work on the surface-plankton and made several interesting observations on the dates at which certain organisms first made their appearance: he also made extensive collections of the littoral and shallow-water fauna of this region. In July, 1913, Captain Sewell again reverted to the post of Surgeon-Naturalist.

The biological work of the Marine Survey of India has thus been in progress for nearly forty years, for the whole of which it has been carried out in close, though generally informal, connection with the zoological section of the Indian Museum. Proposals are now under consideration which, if carried out, will have the effect of rendering the union still more intimate.

A list of the biological stations of the two 'Investigators,' with data as to depths, temperatures, etc., has recently been published by the Museum authorities, who will be glad to send copies to those who are working at deep-sea biology.

## CHAPTER IX.

### *CURATORS AND SUPERINTENDENTS.*

The present chapter consists of short biographies of the more distinguished occupants of the posts of Superintendent and Curator of the Asiatic Society's Museum, and their successors in the direct line as Superintendents of the Indian Museum. It is explained at the end of chapter vii how it came about that all but the first few of these officers have been zoologists.

The biographies are derived from different sources. Those of James Wood-Mason and John Anderson are reprinted *verbatim* from the Journal of the Asiatic Society of Bengal, and are by their successor Lieutenant-Colonel A. W. Alcock, F.R.S. That of Blyth is in part by the editor of this volume, in part extracted with considerable compression and other verbal changes from an obituary notice in the same Journal by the late Mr. A. Grote. The account of Colonel Alcock's work in India is by his successor, and follows for the most part a note published in the Records of the Indian Museum at the time of his retirement. Major A. T. Gage, I.M.S., Director of the Botanical Survey of India, has kindly supplied the article on Nathaniel Wallich, whose life he is at present studying while on leave in England. The short notice of John M'Clelland is compiled from an article on "What the Indian Medical Service has done for India" in volume XLVII of the Indian Medical Gazette (June, 1912), from Sir Clements Markham's Memoir on the Indian Surveys (London; 1878), from the Centenary Review of the Asiatic Society (1885), and from the introductions to his own geological papers.

We have to thank Archdeacon Firminger for making inquiries, unfortunately without result, into M'Clelland's life in Calcutta, and have also to acknowledge the courtesy of the Council of the Asiatic Society of Bengal in permitting us to make free use of the Society's publications in the preparation of this chapter, and, indeed, throughout the book.

## NATHANIEL WALLICH,

*First Superintendent of the Asiatic Society's Museum.*

Nathaniel or—as styled in Danish state documents—Nathan Wallich was born of Jewish parentage at Copenhagen on 28th January, 1786. He was educated in the city of his birth and prepared for the medical profession. He displayed a strong bent for natural science and studied various branches under Wiborg, Vahl, Schumacher and Hornemann. In 1806 Wallich passed the examinations and obtained the diploma of the Royal Academy of Surgeons at Copenhagen. About the end of that same year he was appointed surgeon to the Danish Settlement at Frederichsnagor—the name given by the Danes to what is now known as Serampore—on the Hughli river in Bengal.

Wallich sailed for India in April, 1807 and arrived at Serampore in the following November, after a round-about voyage that included a visit to the east coast of South America. Meanwhile war had broken out between England and Denmark, and in January, 1808 Serampore was captured by the English and retained by them until 1815.

Wallich was soon released from his parole as a prisoner of war and remained on as surgeon to the Settlement subject to the orders of the English East India Company. He speedily became acquainted with Carey, the celebrated missionary of Serampore, with Roxburgh, the Superintendent of the Calcutta Botanic Garden, and other distinguished men interested in the cultivation of the natural sciences. For a short period during 1809 Wallich resided with Roxburgh in the Botanic Garden with a view to becoming his official assistant. This plan, however, failed to mature and Wallich returned to his surgeon's post at Serampore, and remained there until 1813, except for some six months during which he made a voyage to Mauritius.

Meanwhile efforts were being made by Wallich's friends to obtain for him an assistant-surgeon's post on the regular establishment of the Honourable East India Company, but for various reasons—one of them being a fresh outbreak of war between England and Denmark—these efforts were fruit-

less. Wallich gave up hope of entering the Company's service on regular terms, and in 1813 he resigned his appointment at Serampore and established himself in Calcutta in independent medical practice. By this time he was well known for his scientific attainments, was in touch with most of the men in India who shared his scientific interests and was a member of the Asiatic Society. It was in connection with this Society, and while engaged in medical practice in Calcutta that Wallich made a proposal which has had wonderful developments.

The propriety of establishing a museum in the Asiatic Society's rooms had been informally suggested by the secretary, H. H. Wilson, and others, but it was Wallich who gave the essential impetus to the proposal in a letter dated the 2nd February, 1814, to the Council of the Society. In that letter after adverting to the advantages to science that would ensue from the establishment of a museum, Wallich offered his services to the Society and the few articles that remained of his own collections. The Society heartily supported the proposal and resolved to fit up the hall on the ground floor of its rooms as a museum and to appoint Wallich to be "Superintendent of the Oriental Museum of the Asiatic Society."

Meanwhile, unknown to Wallich, the obstacles that had prevented his appointment as an assistant-surgeon in the Honourable East India Company's service were surmounted, and in August, 1814 his name appeared in a list of appointments of assistant-surgeons, and thenceforth he was in the Company's service, and subject to the inconveniences as well as the advantages of such a position. The former were more apparent at the offset, for Wallich received orders to join the expeditionary force then proceeding against Nepal. In consequence of these orders he offered in December, 1814 his resignation of the Superintendentship of the Society's Museum. It is doubtful if his resignation actually took effect, for a fresh set of circumstances evolved to prevent Wallich's joining the Nepal force.

Francis Buchanan (afterwards Hamilton), then officiating as Superintendent of the Company's Botanic Garden, was about to retire from the Company's service and as Wallich was practically the only qualified officer available at the Presi-

dency to perform the duties of the post, he was appointed to succeed Buchanan taking over officiating charge of the Garden from the latter in February, 1815. Wallich remained at the Garden until April, 1816, when he had to give over charge to Hare, whom the Council at Calcutta had appointed superintendent. Wallich then lived in Calcutta and was then certainly superintendent of the Society's Museum, for we find him writing in that capacity to the secretary of the Society regarding the hours of closing of the Museum and the rules to be observed by its staff.

Meanwhile the question of the superintendentship of the Botanic Garden had come before the Court of Directors in London, with the result that Wallich was reinstated in the Garden in August 1817, and this time as substantive superintendent. Wallich found that from the Botanic Garden he could not continue to perform efficiently his duties as superintendent of the Society's Museum and he proposed the appointment of a joint-superintendent to help him. The Society however declined to accept a dual control and relieved Wallich altogether of the superintendentship, while highly complimenting him on his past services.

Wallich did not relish his official severance from the Museum, and in 1819 he sought permission to resume the superintendentship, with the result that the Society in November, 1819 reappointed Wallich as superintendent, making Gibbons who had been in charge of the Museum, deputy superintendent thereof. It is impossible that Wallich could henceforth have devoted much time to his Museum duties, for he was absent in or on the way to and from Nepal from July, 1820 to December, 1821, and again on a visit to Penang and Singapore during 1822.

For the remainder of his official career in India, which lasted until 1846 when he retired, he had but little time to spare from his administrative duties as Superintendent of the Botanic Garden, and his botanical investigations for Museum work, but this in no way lessens the debt which the Indian Museum of to-day owes to him as one of its founders and its first head.

It is unnecessary to detail here his botanical activities

which endured over the long period of thirty-nine years in India, twenty-nine of which he spent as superintendent of the Botanic Garden. He survived his retirement in 1846 by eight years, dying in London on 28th April, 1854.

#### JOHN M'CLELLAND,

*Curator of the Asiatic Society's Museum, 1839—1841.*

Very few facts are available of M'Clelland's life, or even of his tenure of the post of Curator of the Asiatic Society's Museum. He was apparently appointed to this post in 1839 and retired from it some time before Blyth's arrival in 1841.

M'Clelland entered the Bengal Medical Service in 1830 and became Inspector General thereof thirty years later. He retired in 1865 and died in England in 1883.

His scientific work in India included his editing of the posthumous botanical works of Edward Griffiths, but his own researches were geological and zoological, and he is perhaps best known as the founder and editor of the short-lived, but scientifically successful Calcutta Journal of Natural History (1841—1847), to which he contributed numerous papers more particularly on Indian ichthyology. His account of the Cyprinidæ or carps is particularly noteworthy. As a geologist he published several lengthy and valuable reports, having been at first secretary to a Committee for the investigation of the coal resources of India and then for two years, from December 1848, Geological Surveyor to Government. He was thus the immediate predecessor of Dr. Oldham, the first Director of the Geological Survey of India, who came out in 1851.

#### EDWARD BLYTH,

*Curator of the Asiatic Society's Museum, 1841—1846.*

##### I.

Edward Blyth was born in London on the 23rd December, 1810, and educated at a private school at Wimbledon. He left school in 1825 and appears to have been intended for the Church, but finally studied chemistry and on coming of age invested what little he had in a druggist's shop. His

keen interest in natural history, however, interfered greatly with his business, which was not successful. In his introduction to an edition of White's "Selborne" he alludes to the anxieties which then surrounded him, but adds, "his mind cleaves to his favourite pursuit in defiance of any obstacles and interruptions, and eagerly avails itself of every occasion to contribute a mite to the stock of general information."

From 1833 until he left for India in 1841, Blyth was a contributor to the Magazine of Natural History; he also wrote for the Field Naturalist, and was associated with Mudie, Johnston and Westwood in an illustrated translation of Cuvier published in 1840. The Proceedings of the Zoological Society of London from 1837 to 1840 contain papers by him, of which the most important is a monograph of the genus *Ovis*.

In 1841 Blyth was appointed by Prof. H. H. Wilson, Honorary Agent to the Asiatic Society of Bengal in London, as curator of the Society's Museum. He expressed, however, great diffidence in taking charge of the mineral department, which he handed over to Mr. Piddington in the following year.

Month by month from October 1841, Blyth submitted a report to the Society at the general meetings and in each of the monthly issues of that year he published a paper. The first of these papers was:—

"A General Review of the species of True Stag, or Elaphoid form of *Cervus*, comprising those more immediately related to the Red Stag of Europe."

For over twenty years Blyth continued to be in charge of the Asiatic Society's zoological collections, and the work that he did in this period may be said to have laid the foundation of zoological study in India on a firm basis. He was at one time accused of neglecting the insects and molluscs in the collection in favour of the birds and mammals, but his work on the former groups was of so comprehensive a nature that the wonder is that he was able to carry it through at all.

He availed himself of every opportunity that offered itself in a legitimate manner for an escape from his museum studies by a shorter or longer periods of field work, but the

number of his communications to the Society reach the total of fifty-three.

In 1861 Blyth's health gave way and he was only able to remain in India because the Council of the Society afforded him facilities for several visits to Burma, and in 1862 he was forced to leave India on a year's leave with the intention of remaining permanently in Europe.

In 1864 the Society had completed its negotiations for the transfer of its collections to the Indian Museum, and at the November meeting of that year the following resolution was passed:—

"On the eve of transferring the zoological collections of the Society to Government, to form the nucleus of an Imperial Museum of Natural History, the Society wishes to record its sense of the important services rendered by its late Curator, Mr. Blyth, in the formation of those collections. In the period of twenty-two years during which Mr. Blyth was Curator of the Society's Museum, he has formed a large and valuable series of specimens richly illustrative of the ornithology of India and the Burmese Peninsula, and has added largely to the mammalian and other vertebrate collections of the Museum; while, by his numerous descriptive papers and catalogues of the Museum specimens, he has made the materials thus amassed by him subservient to zoological science at large, and specially valuable to those engaged in the study of the vertebrate fauna of India and its adjoining countries."

Blyth's zoological work did not cease when he left India. In January, 1864, he visited Dublin, where he read two papers before the Royal Irish Academy. He also attended a meeting of the Geological Society of Dublin and took part in a discussion on geological epochs. For the next few years the connection which he had established in early life with Land and Water and later with the Field gave him interesting literary occupation. Many of the short notes that he contributed to these journals, signed "Zoophilus," were used by Darwin. His last work was a paper on the Gruidae or crane family published in the Field.

Blyth died of heart disease on the 27th December, 1873.

## II.

The zoological papers published by Blyth have reference to all groups of the vertebrate animals except the ascidians

and other lower types. He was perhaps most interested in the birds, but also wrote many valuable papers on the mammals and several on the reptiles and fish. Especially in his more comprehensive memoirs he was beset by a difficulty that always meets those who have to do pioneer work on biology in a country as yet little known. No sooner had he completed a catalogue or a monograph than fresh information accumulated which might either confirm or disprove the views just put forth. In several instances Blyth attempted to meet this difficulty by adding appendix after appendix. The result was often to obscure rather than to elucidate. His keen insight, however, and the importance he attached to the examination of long series of specimens gave his first expressed views a permanent value that those of few systematic zoologists except himself and Charles Darwin have possessed. In all his systematic papers he was careful to add notes on habits and distribution, and it is remarkable how many of his species that were ignored or passed into synonymy by subsequent zoologists are now being revived.

From the point of view of the Indian Museum the extraordinary energy—which must have been combined with a very considerable amount of tact—that he displayed in persuading correspondents and friends to send specimens to Calcutta is particularly noteworthy. The greater part, or at any rate a very large part, of his collections still exist in the Indian Museum. Many of the specimens are still in better condition than those obtained at a later date, perhaps because in the early days of Indian zoology collectors had more time to spare for the preparation of their material.

The chief loss that has befallen the collections he made is that of all the rays he described. Many of the specimens of this group of fishes that he examined perished long ago, but there is reason to think that some remained intact as late as 1906, and were then destroyed in a hasty clearing out of the public gallery of fishes that took place owing to what is now recognized to have been an ill-judged exercise of official influence. The only compensation for their loss is that it made the occurrence of anything of the kind practically impossible for the future.

Blyth had evidently intended, perhaps under pressure from important members of the Asiatic Society, to turn his attention to the invertebrates, and certain crustacea in spirit still bear labels on which are inscribed in his handwriting the names that he intended to give them. It is hoped that before long at least one of these manuscript names will be published in connection with work now in progress, with his original specimens as the types of a new species.

[The first part of this note is extracted almost *verbatim* from the introduction to Blyth's "Catalogue of the Mammals and Birds of Burma," which formed an extra number of Part II of the "Journal of the Asiatic Society of Bengal" and was published in August, 1875. This introduction was by A. Grote. A list of Blyth's published papers will be found at the end of it.]

#### JOHN ANDERSON,<sup>1</sup>

*First Superintendent of the Indian Museum, 1865—1886.*

By the death, on August 15th, 1900, of Dr. John Anderson, the Society has lost one of its oldest and most distinguished members, whose connection with the Society dated from January, 1865.

Dr. Anderson was born on the 4th October, 1833, and graduated M.D. in the University of Edinburgh in 1861, his graduation thesis which was entitled "Contributions to Zoology" indicating the natural bent of his mind.

Before this he had already carried out some successful dredging operations off the coast of Scotland, and about this time he initiated his long series of zoological publications with two papers "*On an Apparently New Form of Holothuria*," and "*On the Anatomy of Sacculina*," which appeared in the *Annals and Magazine of Natural History* for 1862.

After holding the Professorship of Natural Science in the Free Church College at Edinburgh for two years, he came to Calcutta, where his name is permanently associated, *monumentum aere perennius*, with the foundation of the Indian Museum, and with the origins of our zoological knowledge of Upper Burma and Mergui.

<sup>1</sup> Obituary notice by A. Alcock in *Proc. Asiat. Soc. Bengal* for 1901, p. 40.

He will also be remembered as one of the earliest advocates of a Zoological Garden for Calcutta, and as one of the experts who greatly assisted in giving shape to that Institution when it was started.

Dr. W. T. Blanford, than whom there is no one more competent to speak at first hand, has already, in "Nature," given a review of his scientific work, from which the following paragraphs are extracted:—

His arrival in Calcutta was at a fortunate time. The Asiatic Society of Bengal had gradually come into the possession of a large collection, not only of the archaeological remains, manuscripts, coins and similar objects, for the study of which the Society was originally established, but also of zoological and geological specimens in large numbers. In the course of the preceding quarter of a century the collections had increased, chiefly through the work of Edward Blyth, the Curator, until the Society's premises were crowded, and the Society's funds no longer sufficed for the proper preservation and exhibition of the specimens collected. After long negotiations, interrupted by the disturbances of 1857, arrangements were completed in 1864 by which the archaeological and zoological collections of the Society (the geological specimens had been previously transferred) were taken over by the Government of India, who undertook to build a new museum in Calcutta, of which the Society's collections would form the nucleus. The Trustees appointed by the Government to manage the new Museum asked the Secretary of State for India to select a curator, and Dr. J. Anderson was nominated for the post early in 1865. His status was changed, a few years later, to that of Superintendent of the Museum, and in addition to his museum work he became Professor of Comparative Anatomy at the Medical College, Calcutta. He held both offices until his retirement from India in 1886.

The time at which Dr. Anderson arrived in India was fortunate in another respect. It coincided with a great impulse given to Indian zoology by the publication of Jerdon's "Birds of India," the last volume of which appeared in 1864, and with the presence in Calcutta of a larger number of men interested in the study of the fauna than were assembled

there at any time before or since. Amongst these men were Jerdon himself, Ferdinand Stoliczka, Francis Day, and Valentine Ball, all of whom have now passed away. Probably at no time has so much progress been made in the study of Indian Vertebrata as in the years 1864-74, and in this work Dr. Anderson took an important part.

The new Indian Museum, which now towers over the other buildings of Chowringhee, was not ready for occupation till 1875, but meantime Dr. Anderson had been busily engaged in adding to the zoological collections and in getting them into order. One of his first tasks was the bringing together of an ethnological series, for which the conditions of Calcutta are favourable. Amongst other important additions made by him was that of a fine series of human skulls representing various Indian races. Another very valuable museum series brought together by him consisted of a good collection of Indian Chelonia-skeletons, carapaces and stuffed specimens.

The work in Calcutta was interrupted by two important expeditions to Upper Burma and Yunnan, to both of which Dr. Anderson was attached as naturalist and medical officer. Both expeditions were designed to pass through China to Canton or Shanghai, but in neither case was it found practicable to carry out the original plan. The first expedition, commanded by Colonel E. B. Sladen, left Calcutta at the end of 1867, proceeded as far as Momein in Yunnan, and returned to India in November 1868; the second, under the command of Colonel Horace Browne, left in January 1875, but was treacherously attacked by the Chinese before it had proceeded more than three marches beyond the Burmese frontier, and compelled to return; Mr. Margery, of the Chinese Consular Service, who had been despatched to accompany the mission, and who had preceded it by a march, being murdered with several of his followers. The difficulties experienced by both missions from the time they crossed the frontier between Burma and China, and the opposition of the inhabitants of the country, seriously interfered with zoological observations, and the collection of specimens was generally impossible; but still some important additions were made to the previous knowledge of the fauna. A full account of the journey was

given in Dr. Anderson's reports and in a work by him, entitled "Mandalay to Momein," published in 1876. The detailed observations on zoology, supplemented by important notes on some Indian and Burmese mammals and chelonians, were published in 1878-79, under the title of "Anatomical and Zoological Researches, comprising an Account of the Zoological Results of two Expeditions to Western Yunnan in 1868 and 1875, and a Monograph of the two Cetacean Genera, *Platanista* and *Orcella*." The work appeared in two quarto volumes, one consisting of plates. Dr. Anderson was the first who succeeded in obtaining specimens of the porpoise (*Orcella*) inhabiting the Irrawaddi, and the examination of this previously undescribed form<sup>1</sup> led him to make a thorough anatomical investigation of an allied species occurring in the Bay of Bengal and in the estuaries of rivers flowing into the Bay, and also of the remarkable cetacean, *Platanista*, inhabiting the Ganges, Brahmaputra and Indus.

The only other important collecting expedition undertaken by Dr. Anderson during his tenure of the superintendency of the Indian Museum was to Tenasserim and the Mergui Archipelago in 1881-82. This journey was chiefly, though by no means exclusively, undertaken for the collection of marine animals, and the descriptions of the results, to which several naturalists contributed, were published first in the Journal of the Linnean Society, and subsequently as a separate reprint in two volumes, under the title of "Contributions to the Fauna of Mergui and its Archipelago." This appeared in 1889. Dr. Anderson's share was the description of the Vertebrata and an account of the Selungs—a curious tribe inhabiting some of the islands; but in connection with his visit to Mergui, and as part of a general description of the fauna which he had at first proposed to publish, he prepared an account of the history of Tenasserim, formerly belonging to Siam. This historical résumé, which deals especially with British commercial and political intercourse with Siamese and Burmese ports, was compiled mainly from the manuscript

<sup>1</sup> It is now generally thought to be identical with *O. brevirostris* of the B. of Bengal and the Ganges.—Ed.

records of the East India Company, preserved in the library of the India Office, and was published in 1889 in a separate volume, entitled "English Intercourse with Siam." The book forms a well-written and interesting chapter of the history of British progress in Southern Asia.

Besides the works already mentioned and many papers, descriptive of mammalia and reptiles, which were published in the Journal of the Asiatic Society of Bengal and in the Proceedings of the Zoological Society of London, Dr. Anderson wrote two catalogues on very different subjects for the museum under his charge in Calcutta. Of these, one was the first part of the "Catalogue of Mammals," published in 1881, the other the "Catalogue and Handbook of the Archaeological Collection" which appeared in 1883.

Dr. Anderson was elected a Fellow of the Royal Society in 1879, and retired from the Indian Service in 1886. He had married a few years previously, and after retiring he travelled with his wife to Japan. Finally he settled in London, but for the remainder of his life his health was somewhat precarious, and he passed several winters in Egypt. Here he took up the study of the mammals and the reptiles, which had received but scant attention since the early part of the century, when the great and superbly illustrated French work on Egypt appeared—a work which, brilliantly begun by Savigny and others, was never adequately completed.

To the work of collecting, examining, figuring and describing the Mammalia, Reptilia and Batrachia of Egypt, the later part of Dr. Anderson's life, when he was well enough for work, was mainly devoted. He also paid some attention to the fauna of the neighbouring countries, and in 1898 published "A Contribution to the Herpetology of Arabia," founded on the collections of the late Mr. J. T. Bent and others. The first part of the important work he had intended to produce on the zoology of Egypt, containing an account of the physical features of the country and descriptions of Reptilia and Batrachia, appeared in 1898. It is a fine quarto volume with excellent figures, many of them coloured. He had made large collections and notes for the volume on Mammalia, and these it is hoped will be published in due course.

One of the last undertakings in which Dr. Anderson engaged, as soon as the Upper Nile Valley was once more thrown open to civilization, was the systematic collection and description of the fish inhabiting the river and its tributaries. That this important work (of which a notice appeared in "Nature" of February 23rd, 1899) is now being carried out with warm interest and assistance from the Egyptian Government, must be attributed to Dr. Anderson's foresight, zeal and skilful advocacy. Both in our Indian Empire and in North-Eastern Africa, Dr. Anderson contributed much to the solution of one of the chief biological questions of the present day, an accurate knowledge of the distribution of animal life.

#### JAMES WOOD-MASON,<sup>1</sup>

*Assistant Curator and afterwards Superintendent of the Indian Museum, 1869—1893.*

James Wood-Mason was born in December 1846, and was educated at Charterhouse and Oxford. He early evinced an inclination towards Natural Science, being at first specially interested in Geology, and even before his twenty-third year he had published several palaeontological papers in the Proceedings and in the Quarterly Journal of the Geological Society. In 1869 he came out to India as Assistant Curator of the Indian Museum, for which post he had been selected by Professor Huxley and Sir Joseph Hooker, and in 1870 he became a member of this Society.

His interest in Natural Science was shown immediately he joined the Society [*i.e.* the Asiatic Society of Bengal], when he contributed his first paper—"On Polydactylism in a Horse"—to the Proceedings, and was sustained throughout the whole twenty-two years of his membership, during the greater part of which period—until he began to be incapacitated by serious organic disease—he was a constant contributor to the Proceedings and Journal. His papers in the Society's publications exhibit the comprehensive extent of his attainments, embodying as they do

<sup>1</sup> Obituary notice by A. Alcock in *Proc. Asiat. Soc. Bengal* for 1893, p. 110.

the results of original investigation in most branches of Zoology and in Ethnology in its morphological and geological aspects. His most numerous and most important contributions however were upon Insects—especially the Mantidae and Phasmidae—and upon the general subject of the Crustacea, which early attracted him. In 1873 he became Natural History Secretary, and during the greater part of the next sixteen years, though not continuously, he edited Part II of the Society's Journal with conspicuous ability and success. In 1887 he was elected a Vice-President of the Society. Outside the limits of the Society his devotion to zoology was marked with no less distinguished ability and success, and in the course of his official career he became Deputy Superintendent of the Indian Museum, Professor of Zoology and Comparative Anatomy in the Medical College, and finally, on the retirement of Dr. Anderson in 1887, Superintendent of the Museum. In 1888 he was made a Fellow of the University of Calcutta.

His record of work, outside his official routine, and beyond his connexion with the Society, is a long and varied one, and embraces explorations in the field, the publication of his scientific researches, and economic inquiries. Although his purely scientific work completely overshadows his economic work, yet his attitude to Economics in the proper place was not unfriendly. With the more aggressive Economists he had little sympathy, believing that science diligently and methodically pursued for its own sake would be far more likely to yield incidental benefits to civilization than would science studied disconnectedly for the sake of the practical man alone. In the field he explored, in 1872, the marine fauna of the Andamans, and again, in 1873, that of the Nicobars, and in 1888 he went for a time as Naturalist on board Her Majesty's Indian Marine Survey Steamer 'Investigator.' As a result of these field excursions he added largely to our knowledge of the life of the Bay of Bengal, and greatly enriched the collections in the Indian Museum. He also, in the course of economic inquiries into the tea-bug, and into the diseases of silk-worms, travelled and collected largely in Assam, Cachar and Lower Bengal.

He contributed a few papers to the Royal, Zoological, and Entomological Societies, and a great many to the *Annals and Magazine of Natural History*, which embodied his original work not only in the field of systematic and descriptive zoology, but upon morphology—especially the morphology of Arthropoda; upon phylogeny—especially the phylogeny of Insecta; upon physiology, and upon the philosophy of zoology. It was in the last branch of the science that his inquiring, original genius found its happiest exercise, and he was particularly interested in all problems as to the significance of animal organs. More than most systematic zoologists was he dissatisfied with the dry facts of animal structure, and his desire to see through these facts into their origin and meaning—to make zoology really a science of living beings—may be said to have been a passion with him. Unfortunately his published work in this direction does not represent a fraction of his accumulated knowledge, principally because he had an almost fastidious objection to publishing anything that was not exhaustively complete. But this philosophical bent of his mind is amply illustrated by his papers on the claspers, and on the antennae, and on the femoral brushes of the Mantidae; on the mode in which the young of Astacidae attached themselves to the mother; on the stridulating organs of Crustacea, of Arachnida, and of Myriapoda; on sexual characters in Mollusca; on Mimicry; on the scent-glands of scorpion-spiders; on the meaning of Viviparity; etc. In purely systematic zoology his principal published works were:—(1) a catalogue of the Mantodea which was not completed at the time of his death, and (2) a series of papers on the Butterflies of the Andamans and Nicobars and of Cachar, written in collaboration with Mr. deNicéville. These papers were the result of work undertaken between the years 1880-83, when Mr. deNicéville was employed on the staff of the Museum, during which period he worked with that gentleman almost exclusively at the Lepidoptera of the Indian region, the result being to greatly increase the collections in the Indian Museum and to add largely to faunistic knowledge. In this series of papers must specially be mentioned a very curious case of mimicry between two distinct groups of Papi-

lios, which he discovered. Another systematic work of considerable importance was his series of descriptions and illustrations of the Deep-sea Crustacea dredged by the 'Investigator.' He also had in contemplation a complete catalogue of the Crustacea for which, however, he had only collected and systematized the bibliography.

His principal economic work consisted of Reports on the Tea-mite and other Insect-pests, and on certain diseases of Silkworms. He also formed for the Indo-Colonial Exhibition a collection illustrative of Indian sericulture, for which he received the thanks of Government.

His influence as a Naturalist extended far beyond the Museum and the realm of scientific literature: to beginners he was always ready to give advice and assistance at any sacrifice to himself: he had no contempt for amateurs, and no jealousy of fellow-workers: but he had truly and singly at heart the advancement of science, as is amply shown by his work upon the 'Investigator' Zoological Reports, and by his work in connexion with the establishment of the Calcutta Microscopical Society—a Society mainly of amateurs.

His health seems never to have been really robust, and recent events show that he must for many years have been suffering from one of the most debilitating and enervating of all organic diseases. But it was not until quite the end of last year that the outward signs of it became so manifest as to arouse the anxiety of his friends.

He was in a critical state of health when he left Calcutta on the 5th of April, and he died on the 6th of May, just as he was nearing the shores of his native country. Although of late years, owing to his prolonged absence from England, he had no very active connexion with any of the learned societies there, yet he was a Fellow of the Zoological and Entomological Societies of London and of the Zoological-Botanical Society of Vienna.

ALFRED WILLIAM ALCOCK,

*Superintendent of the Indian Museum, 1893—1907.*

Lieutenant-Colonel A. W. Alcock, C.I.E., M.B., LL.D., F.R.S., came to India as a member of the Indian Medical

Service in April, 1886, having already had considerable experience of the country, and having also been Assistant Professor of Zoology in the University of Aberdeen under the late Professor H. A. Nicholson, F.R.S. After two years spent on the North-West Frontier as Medical Officer, he was appointed Surgeon-Naturalist to the Indian Marine Survey. In 1891 he officiated for some months as Resident Physician and Professor of Pathology at the Calcutta Medical College, and in September 1892 was appointed Deputy Sanitary Commissioner, Metropolitan and Eastern Bengal Circle. In May 1893 he became Superintendent of the Indian Museum and Professor of Zoology at the Medical College; from June 1895 to January 1896 he was on special duty with the Pamir Commission. He retired from the Indian Medical Service and the superintendentship of the Museum on December 29th, 1907 and was succeeded in the latter by Dr. N. Annandale, the present superintendent.

Colonel Alcock's connection with the Indian Museum may be said to have commenced when he became Surgeon-Naturalist on the Indian Marine Survey Ship 'Investigator.' Year by year in the monsoon season when the ship was laid up in Bombay harbour, he came to work in Calcutta on the material dredged during the preceding winter, and thus established an association with the late Mr. J. Wood-Mason, his predecessor as Superintendent, that was fruitful in scientific work. On the death of Mr. Wood-Mason his services were put at the disposal of the Trustees, and he became Superintendent, without, however, leaving the Indian Medical Service.

In the Museum Colonel Alcock made it his aim to work out, so far as it was possible for one man to do, the fauna of the deeper parts of the Indian seas, to set in order the marine collection in the Museum, and to exhibit to the public a judicious selection of the animals identified or described by himself and others. The scientific side of this work, in its more general aspect, is known to all marine zoologists, being embodied in numerous papers and monographs and in his book "A Naturalist in Indian Seas," of which there is more to be said. It was mainly on account of his monographs on marine

zoology that Colonel Alcock was elected a Fellow of the Royal Society and received the honorary degree of LL.D. from his old University of Aberdeen. The work of arranging and exhibiting the collections of the Museum has naturally a more limited renown. There are few Museums, however, which can boast that their marine collections are in better order and better displayed than is the case in Calcutta—so far, at any rate, as the actual specimens are concerned. The gradual development which has made it possible to claim for the Indian Museum its place among the great reference collections of the world is largely due to Colonel Alcock's work in this direction.

He did not, however, confine his attention, while connected with the Museum, to marine zoology, as his reports on the zoology of the Pamir Commission and on the reptiles of the Afghan Frontier Commission of 1895 and his biological notes in the publications of the Asiatic Society of Bengal attest, while the many dissections and other preparations he set up in the public galleries of reptiles and other terrestrial vertebrates prove his care for the interests of the students of the Calcutta Medical College, to whom he lectured in disheartening circumstances as regards the absence of all opportunity for practical classes and the humble place then given to zoology in the Indian medical curriculum. The Bird and Mammal Galleries are still perhaps the least satisfactory parts of the Museum, but one man could not bring every section to equal perfection, and only those who remember their previous state can appreciate what was done to improve them in Colonel Alcock's time.

"The Naturalist in Indian Seas" (1902) may be regarded as an epitome and a popularization (in the best sense of the word) of the greater part of Colonel Alcock's scientific work in India. It is a book that owes its value not only to its erudition and perspicuity but hardly less to its literary style, in which the strong infusion of Shakespeare and other Elizabethan authors is never pedantic, never frivolous, and never dull. The skill with which such apparently incongruous elements are fused even into the guide-books he prepared for the Museum galleries can be fully realized only by one who

has attempted, and failed, to complete a work of the kind he left unfinished.

No account of Colonel Alcock's zoological work in India would be complete without some reference to his connection with the Asiatic Society of Bengal, the scientific collections of which formed the nucleus of the Indian Museum. He became a member of this Society in February 1888, was elected Natural History Secretary in May 1894, General Secretary in April 1895, and Vice-President in February 1901; for several years his papers were by far the most important contributed to the zoological section of the Society's Journal, and after leaving India he was elected an Honorary Fellow.

Colonel Alcock worked, so far as his service in India is concerned, for his successors rather than himself; but it is fortunately impossible to think that his own work for India is finished. We may confidently hope that it will still continue for many years in his retirement to bear the fruit of his unsurpassed accuracy of observation, his many-sided enthusiasm, and his literary talent. The admirable organization of his office, which enabled his successor to take up the threads of routine mechanically, is another matter for which it is impossible to be too grateful: although changes necessarily take place as the Museum grows and develops, the ground-work will always be that constructed by Colonel Alcock, too often without recognition and in spite of obstacles of which nothing was known beyond the Museum walls.

Colonel Alcock is now Professor of Entomology in the London School of Tropical Medicine. Since leaving India he has published a monograph of the freshwater crabs in the collection of the Indian Museum, which has already been recognized as the necessary basis for future work on the group. He has performed an even greater service to tropical zoology, more directly connected with his present work, by the publication of his admirably conceived and remarkably lucid text-book "Entomology for Medical Officers."

A full list of the papers published by Colonel Alcock while in India is given in volume II of the Records of the Indian Museum, pp. 4—9.

## CHAPTER X.

### THE MUSEUM BUILDINGS.

The buildings of the Indian Museum stand on a plot of land thus described in the schedule attached to the Museum Act of 1910:—

Land bounded—

On the north side by the premises No. 2, Sudder Street, and by Sudder Street;

On the west side by Chowringhee Road and by the premises No. 29, Chowringhee Road (occupied by the Bengal United Service Club);

On the south side by the premises No. 29, Chowringhee Road, by Kyd Street, and by the premises No. 4, Chowringhee Lane; and

On the east side by the premises No. 15, Kyd Street, and the premises Nos. 4, 3, 2 and 1, Chowringhee Lane,

together with all buildings, roads and tanks existing or erected thereon, and all easements appertaining thereto.

This land, the greater part of which was given to the Trustees by government when their board was instituted, is not entirely occupied by the Museum buildings, for it also contains the Calcutta School of Art, which (despite the above schedule) is apparently not owned by the Trustees, and the offices, laboratories and library of the Geological Survey of India. The building in which these latter are housed belongs to the Trustees but has been lent by them to the Survey. Extensive gardens, moreover, are included, and a large "tank" or pond which at one time played an important part in the water-supply of Calcutta but is now more useful as a hunting-ground for zoologists: in particular it supports more species of freshwater sponge than any body of water of similar area that has ever been investigated. Servants' barracks also occupy a considerable area near the Geological Block on a piece of land bought by the Trustees in 1905.

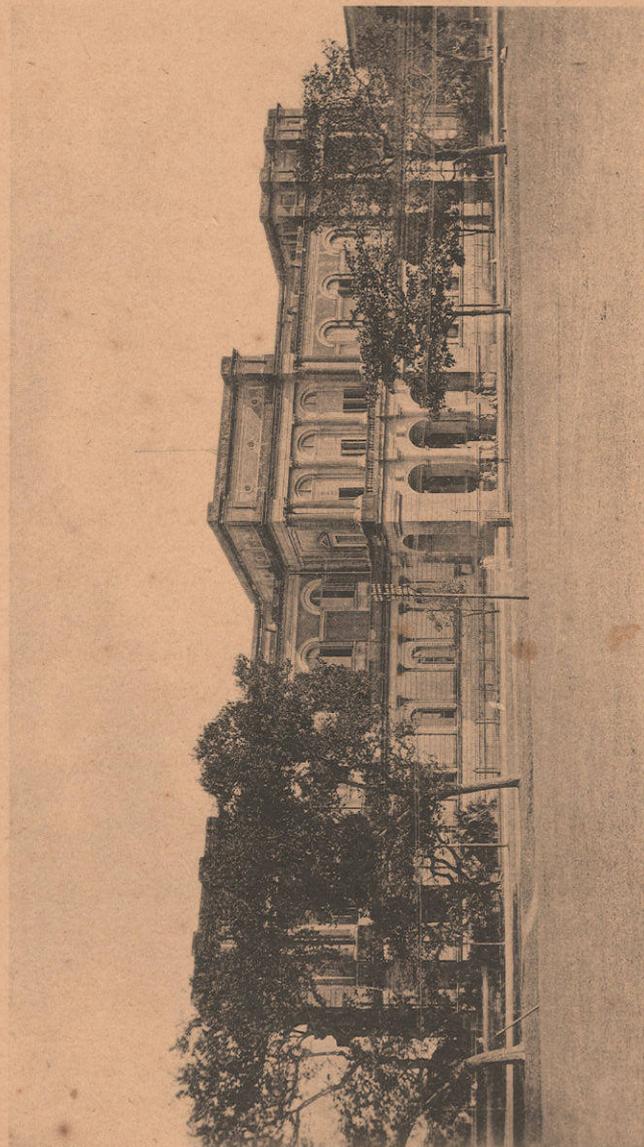
The oldest building directly connected with the Museum

is now hidden away in the midst of the higher and more imposing structures that face Chowringhee and abut on Sudder Street. It is a bungalow built in 1790 and some years afterwards the scene of a tragedy described in Miss Blechynden's "Calcutta Past and Present" (p. 208). Later it became the Sudder Dewanny Court and so gave a name to Sudder Street. A drawing of it by Sir Charles Doyly, as it appeared from Kyd Street when the tank beside it was of much greater extent than now, is represented in the Victoria Memorial Exhibition by a lithograph by Robert and Dickenson. It is at present occupied as residential quarters by certain officers of the Museum.

So far as the actual Museum is concerned, the original building (which was completed in 1877 but occupied in part some years earlier) is now represented by the Main Quadrangle, the front of which extends along Chowringhee (the chief thoroughfare between the commercial and the residential quarters of Calcutta) for 312 feet, facing the open reaches of the Maidan and thus occupying one of the most conspicuous sites in the city. In the last few years this building has undergone considerable alterations. Its aspect from the Maidan previous to these is shown in the photograph reproduced on the plate opposite.

We are informed by Mr. H. Crouch, Consulting Architect to the Government of Bengal, that the original plans for this building were drawn up in the "sixties" by W. L. Granville, who was also responsible for several other buildings still prominent in Calcutta, notably the General Post Office and the High Court. They were prepared in consultation with the late Dr. Thomas Oldham, Director of the Geological Survey of India.

It was at first intended that a third floor should be built along the front, in addition to the two actually completed; but funds gave out, and in any case the ominous cracks that appeared in the building owing to the unstable nature of the ground on which it had been founded, would probably at the time have rendered this impossible. As it stood, the building had a certain dignified simplicity not without value in a city of stucco palaces and hovels of rubbish, although the materials of its structure—bricks overlaid with



Museum Buildings from the Maidan,  
1906.

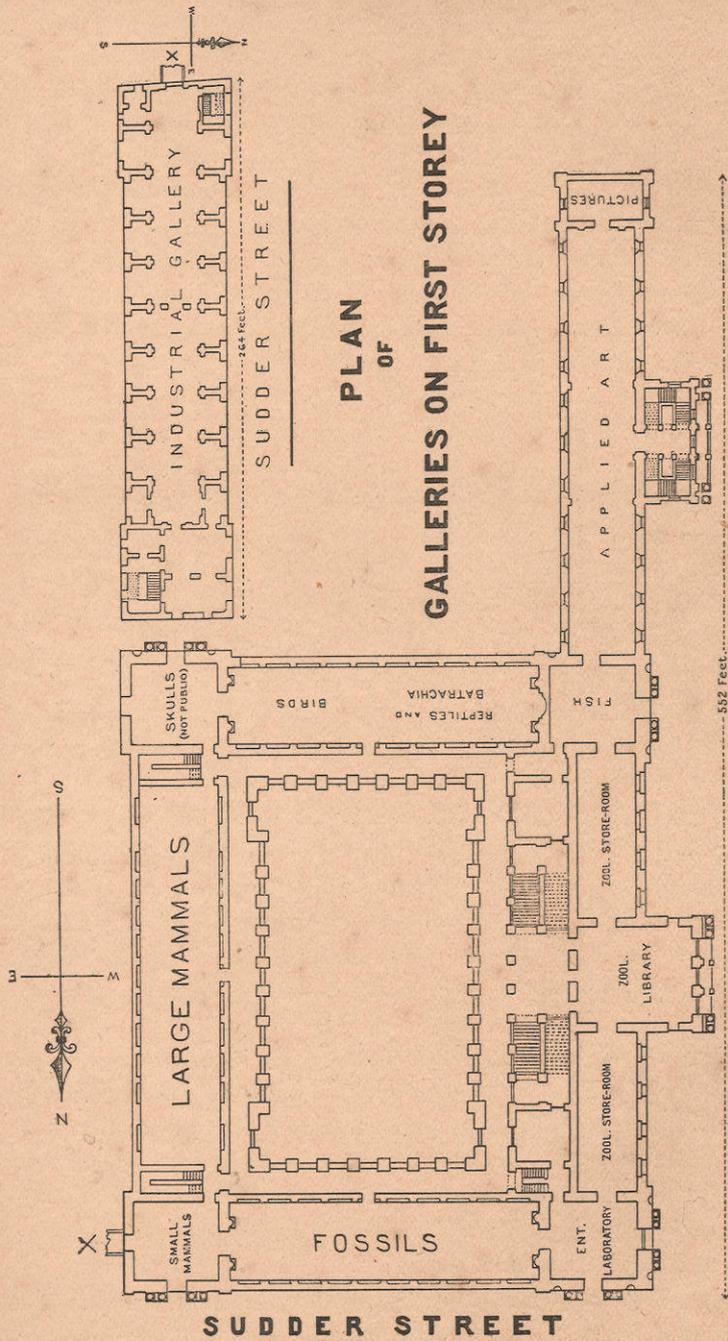
plaster—were perhaps not altogether appropriate to its Greek style.

The proposals made by the Asiatic Society in reference to the transfer of its collections and their arrangement in this building had originally included one whereby accommodation should be found also for the Society itself, for its library and meeting-room; but this ultimately proved impracticable and the Society remained in the house it still occupies—and has occupied for over a century—at no 1, Park Street. It is this house that is represented in the frontispiece to the present volume.

The next of the Museum buildings to be constructed was a block of four floors running along Sudder Street behind the Main Quadrangle, with which it is connected by two bridges. Under the lower of these passes the Sudder Street entrance into the Museum compound. The building of this block was commenced in 1888, in order that it might hold the "economic" collections (including those of ethnography) and the offices attached to the Economic and Art Section. The collections were removed to it in 1891; part of the ground floor was occupied later by the chemical laboratory referred to in chapter vi. The building is in red brick and does not correspond in style with the Main Quadrangle, with which, however, it is not in architectural continuity.

A second block of three floors was erected in 1894 at right angles to the Sudder Street one, to contain the offices, laboratories and store-rooms of the Natural History Section. Half this building was actually consigned on its completion to the Geological Survey, to which it was wholly transferred in 1912.

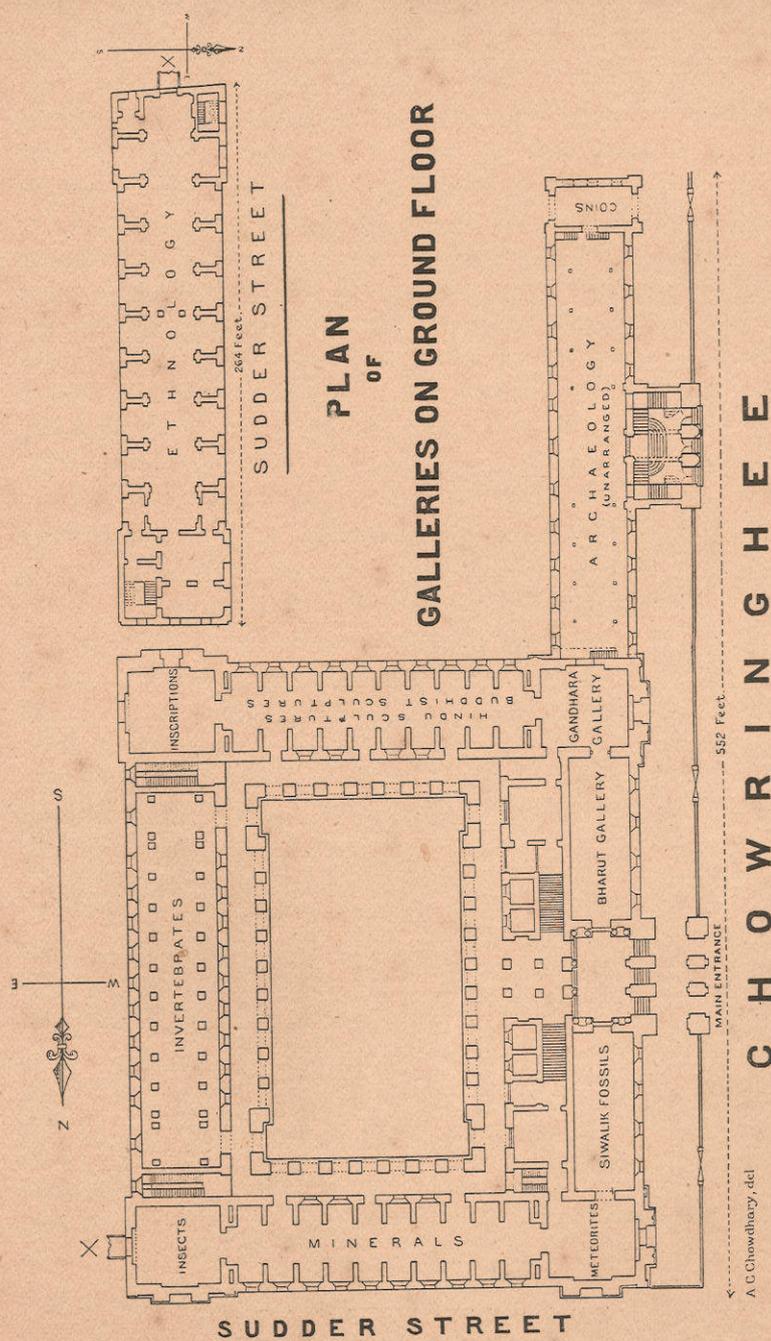
The recent improvements in the main building are due to the interest taken by Lord Curzon while he was Viceroy of India both in the Museum and in the public buildings of Calcutta. In 1904 he obtained for the Trustees a government grant of Rs. 5 lakhs (£33,333). Moreover, he himself, with the assistance of the late Mr. Banks Gwyther, Superintending Engineer, Bengal, drew up a design for a new front. This design was based on the original one by Granville that was left uncompleted in 1877. It was grandiose in style with copper



**PLAN OF GALLERIES ON FIRST STOREY**

**C H O W R I N G H E E**

A.C. Chowdhury, del.



**PLAN OF GALLERIES ON GROUND FLOOR**

**C H O W R I N G H E E**

A.C. Chowdhury, del.

“mansards” and an abundance of architectural sculpture. But although the Government of India increased the original grant by 2½ lakhs in 1906, it was found that the expenses entailed in its materialization would be greatly in excess of the money available and new plans of a simpler nature were prepared by Mr. Crouch. The work was completed in 1912. It included the rebuilding of a great part of the front of the west side of the Quadrangle, the masonry of which was found to be too heavy for its supports; the addition of a third floor along the top of this front, and the erection, in direct continuity with it, of a new wing of three floors and 240 feet long. Space for this was found by the demolition of the old Bengal Art Gallery, a red-brick building originally erected for temporary purposes in connection with the Calcutta Exhibition of 1883-4.

The buildings actually occupied by the Museum consist, therefore, at present of:—

1. The Main Quadrangle facing Chowringhee.
2. The New Wing in continuation of its front.
3. The Sudder Street Block connected with it by bridges.

So far as the public galleries are concerned, the plans<sup>1</sup> reproduced on pp. 126 and 127 show the arrangement of these buildings. It must, however, be understood that, for convenience of reproduction, the Sudder Street Block is removed from its proper place and represented as parallel to, instead of at right angles to, the east side of the Quadrangle. Moreover, the galleries of this block are not on the level of those in the latter, but must be approached from them by short flights of steps.

The ground floor of the Quadrangle has a colonnade in Italian style and surrounds an open turfed space. In the colonnade a number of Hindu sculptures are exhibited, and it also contains certain geological specimens. The entrance is by a comparatively small pillared vestibule in which the

most conspicuous objects are stone figures of a lion and a bull that once stood on the capitals of edict-pillars erected by Aśoka in northern Bihar. These are among the oldest sculptures in the Museum.

The outer sides of the colonnade are occupied on the west by various offices; on the north by geological, on the east by zoological and on the south by archaeological galleries. Another archaeological gallery (that of the Bharut Stupa) opens direct from the vestibule on the south side, as does also a geological gallery (that of the Sivalik fossils) on the north. All the geological galleries on this floor are in direct communication one with another, and this is also the case with all those of archaeology. The bridge to the Ethnological Gallery in the Sudder Street Block opens from the Insect Gallery in the north-east corner.

The first storey can be reached by two staircases from the inner vestibule and also by two smaller ones on the east side of the Quadrangle. The former open above on a broad landing in the centre of which stands a marble statue of Queen Victoria presented to the people of India by the late Mahatab Chand Bahadur, Maharajahdhiraj of Burdwan. Behind the statue is the entrance to the Zoological Library, not open to the general public. North and south from the library extend galleries in which zoological collections are stored for purposes of research, while the north-west corner is occupied by entomological laboratories and store-room. A colonnade like that on the ground floor extends round the quadrangle. On the north side is a gallery containing fossils; in the north-east corner a bridge extends from the Small Mammal Gallery to the Industrial Gallery in the Sudder Street Block; the Large Mammal Gallery occupies the east side, while the south end contains the Bird and Reptile and the Fish Galleries and also the skull room, the last not being open to the public. A bronze tablet with a portrait-bust of the late Dr. John Anderson occupies a prominent place in the east verandah.

A third floor (second storey) has recently been built on the front of the building and extends along the whole of the New Wing. With the exception of a public lecture-room

<sup>1</sup> We have to thank Mr. H. H. Green, Superintending Engineer, Presidency Circle, P.W.D., Bengal, for the drawings from which these plans were prepared.

occupying a considerable area, this floor is entirely devoted to the laboratories of the Zoological and Anthropological Section, the offices of that and of the Archaeological Sections and a large gallery, at present used as a store-room by the Art Section, with a small office at its south end.

The Sudder Street Block contains not only the Ethnological Gallery (on the first storey) and the Industrial Gallery (on the second) but also the laboratories of the Indian Tea Association and the offices and store-rooms of the Industrial Section. The use of the whole of the ground floor is now granted by the Trustees to the Association, while the top floor and part of the first storey are occupied by the Section not only as offices but also to house a library, herbarium, etc.

The New Wing contains on the ground floor an extensive gallery that will ultimately form an addition to the exhibition-space of the Archaeological Section. This gallery is surrounded by a hanging balcony from which, at the south end, a few steps lead to a strong room in which the collection of coins is kept.

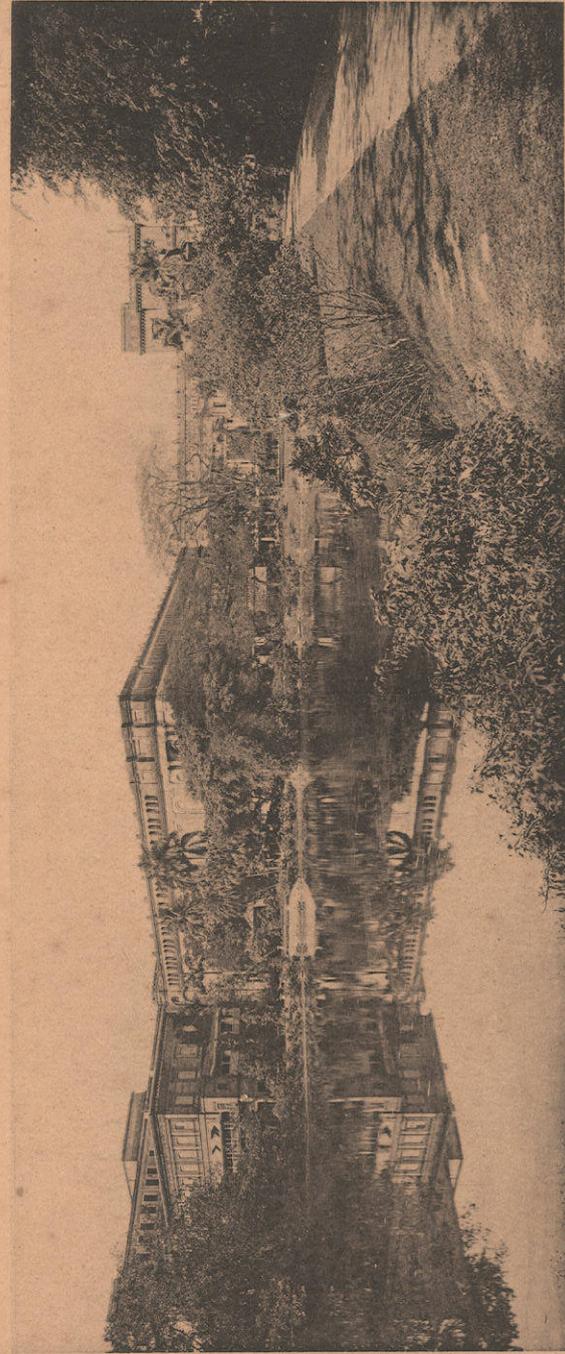
The photographs reproduced in this volume should give a good idea of the style of the buildings, but owing to certain architectural features of the galleries and to the crowded condition of most of them, it has not been found possible to obtain satisfactory views of their interior as a whole and special objects or exhibits have, therefore, been chosen to represent them.

New Wing.

Main Quadrangle.

Industrial Wing.

Geological Survey.



Art School.

Officers' Quarters,  
Museum Buildings from behind,  
1914.

## CHAPTER XI.

### GUIDE-BOOKS, CATALOGUES AND LECTURES.

The question of guide-books is always a difficult one ; in a polyglot country like India the difficulty is increased, nor is it lessened by the fact that the vast majority of those who visit museums are illiterate in all languages. Furthermore, guide-books may become an actual temptation to the college student already all too prone to cram for his examinations.

However, attempts have been made in the Indian Museum to overcome, or rather to evade, the difficulty—nor altogether without success if one may accept the criterion of sales—by publishing guide-books in simple English.

In the archaeological galleries the late Dr. John Anderson's "Catalogue," to which tribute is paid on p. 31 of this volume, belongs practically to the category, as is indicated in its full title ; it deals not only with the specimens but with their (former) position in the galleries. The late Dr. Bloch's supplement, published in 1912 by the Archaeological Survey, does so still more frankly. But these are rather for the learned visitor, a *rara avis* in Calcutta, than for the populace or the ordinary educated man.

A real guide-book to the art galleries, that is to say one for the average educated person, already exists in manuscript and will, we hope, be published before long.

Members of the Geological Survey have written "Popular Guides" to several of the geological galleries, and although these are included among the publications of the Survey and not of the Museum, they should be mentioned here. The following list is taken from the cover of a recent part of the Records of the Geological Survey of India.

*Popular guides to the Geological collections in the Indian Museum,  
Calcutta.*

No. 1. Tertiary vertebrate animals. By R. Lydekker (1879) (*out of print*).

No. 2. Minerals. By F. R. Mallet (1879) (*out of print*).

No. 3. By F. Fedden (1880) (*out of print*).

No. 4. Palaeontological collections. By O. Feistmantel.

No. 5. Economic mineral products. By F. R. Mallet (1883) (*out of print*)

Guide-books to several of the zoological galleries were prepared in Alcock's time, but all are now out of date, if not out of print. The latter fate rapidly befell the excellent account of the Invertebrate Gallery written by Alcock himself, for the greater part of the whole edition was bought up by medical students for use as a text-book. Alterations, originating directly or indirectly in the hasty destruction of the old Fish Gallery in 1906, have, however, been so continuously in progress in most of the galleries of recent years that there has been no opportunity for the preparation of fresh guide-books. In the Invertebrate Gallery this has not hitherto been the case so much as in some of the others, and Alcock, when he left India, handed over to his successor the manuscript, only partially complete, of a new edition of his account of that gallery. The individuality of its style, however, proved a stumbling-block to its actual completion and the present superintendent was diffident in rewriting the whole. As the gallery is now being entirely rearranged the preparation of a new edition must again be postponed. A complete list of the official<sup>1</sup> guide-books to the zoological galleries will be found at the end of the book in the last appendix.

Here we may mention an interesting little book, the late Rai Bahadur R. B. Sanyal's "Hours with Nature" (Calcutta: 1896), in which considerable space is devoted to a tour of the zoological galleries of the Museum described in a dialogue between a pupil and his teacher somewhat after the style of "Sandford and Merton", but with an originality and quaintness of its own. The book is of course in no sense official.

Quite recently, indeed since the beginning of 1914, a small guide-book to the whole Museum has been published in

<sup>1</sup> For a technical reason the publications of the Trustees do not rank as official Government publications. This makes it possible for the Museum to issue papers in German, French, Italian or Latin; for official documents of the Government of India must be published either in English or in an Indian vernacular.

Bengali by the Trustees. The whole has been edited by Dr. B. L. Chaudhuri of the Zoological and Anthropological Section, but the component parts were prepared under the direct supervision of the heads of the different sections. Great care was taken in making the language as simple as possible, and although several of the authors were anxious to use abstruse Sanskrit words as equivalents of English technical terms, it was decided to substitute for them the nearest vernacular equivalents, giving the English term in brackets when necessary, for in modern Bengali terms of the kind have been adopted freely: it is often possible to follow the discussions of Bengali students in the geological galleries without knowing a word of Bengali. The general guide-book, which is sold for two annas (twopence), is necessarily of a superficial nature, and it is greatly to be hoped that more elaborate ones for the different galleries will be prepared, whether in English or in some Indian vernacular, at an early date.

To produce catalogues of its collections is a particularly important part of the duties of a museum that claims to be a centre of investigation but is isolated geographically from the community of scientific and historical research. Nor has the Indian Museum been remiss in this respect. Museum catalogues are of many species, as they are of many degrees of utility; it is often difficult, as in the case of Dr. Anderson's account of the archaeological collections, to draw a hard and fast line between them and guide-books; but they may as a rule be separated into three main divisions:—

Hand-lists,  
catalogues raisonnés,  
descriptive catalogues.

In zoology the late Mr. G. Nevill's "Hand List of the Mollusca in the Indian Museum," the completion of which was unfortunately prevented by the author's death, is an excellent example of the first division, while the "Catalogue of Mammalia in the Indian Museum" by the late Dr. John Anderson and Mr. W. L. Sclater belongs rather to the category of *catalogues raisonnés*. It is, however, by full descrip-

tive catalogues with numerous plates that the zoological work of the Museum is best represented. Many of these illustrate the biological work of the 'Investigator,' and are referred to in chapter viii at greater length than is necessary here, but others deal with land animals, as for example, Mr. W. L. Distant's "Monograph of Oriental Cicadidae". Indeed the bulk of all taxonomic work undertaken in a museum must consist very largely of what are in effect descriptive catalogues of a more or less elaborate kind.

In archaeology we have not only Dr. Anderson's account of the sculptures in the archaeological galleries, but also a series of descriptive catalogues of coins. The earliest was that prepared by the late Mr. C. J. Rodgers in 1894-6, while the more sumptuous volumes dealing with the conjoined cabinets of the Museum and the Asiatic Society of Bengal and written recently by Mr. Vincent Smith and Mr. Nelson Wright are fine instances of modern numismatic research.

For details as to all these publications the reader should consult the last appendix to this volume.

Apart from publications issued by the Trustees, those of the Geological Survey of India include several catalogues named as such, for example Lydekker's "Catalogue of the Remains of Sivalik vertebrates"; while the different series of "Palaeontologia Indica" practically form elaborate descriptive catalogues of fossils in the Geological Section of the Museum.

In the Industrial Section cataloguing is represented by certain numbers of the Agricultural Ledger, which was formerly issued by the Reporter on Economic Products to the Government of India. This publication consists of several different series of pamphlets, some of which are actual catalogues of economic specimens in the Museum, while one refers to a series now among the anthropological collections, *viz.* Mr. I. H. Burkill's paper on Indian pens (Agricultural Ledger, 1908-09—No. 6: Vegetable Product Series, No. III). The paper is also in a sense a guide-book to the exhibit of pens in the ethnological gallery.

The latest function assumed by the Indian Museum is

that of organizing popular lectures directly or indirectly based on its collections. In the design of the new wing of the buildings provision was made for a commodious lecture-room and in 1913 the Government of Bengal provided funds for the necessary furniture, lantern, etc.; for the preparation of lantern-slides, the payment of lecturers and other incidental expenses. The money came from the grant annually made by the Government of India to the local government for the improvement of education. In the scheme drawn up by the Trustees a special feature was made of the payment of lecturers, although it was recognized that most of these would be members of the staffs of different sections of the Museum. It was realized that the greater part if not the whole of the work of preparation must be done out of office-hours.

It has been arranged that two courses shall be delivered each year, one in the winter season and one in the "rains," between July and September. Both are to be of a popular nature, but the latter course is to be slightly more technical than the former.

The winter course of 1913-14, the only one as yet delivered, was successful so far as attendance was concerned, the average number of visitors at each lecture being over 150 for six lectures. The lectures were given by members of the staffs of the different sections, except the first, on the history of the Museum, which was by the Chairman of the Trustees. It is reproduced in the introductory chapter of this volume. The subjects of the others were as follows:—

- "Sponges as living animals."
- "A visit to the Art Section of the Indian Museum."
- "Trees that weep."
- "Extinct Indian Mammals."
- "The Field of Indian Archaeology."
- "Freshwater Fishes of Bengal."

The last was delivered in Bengali and was the most popular of the series, 263 members of the general public having been present: it was noted that, in addition to numbers of Bengali students, there was a considerable English audience, many of the members of which knew no Bengali but came

merely to see the lantern-pictures. Moreover, one lecture at which no slides were shown, although it was perhaps the most generally interesting in the series both in subject and style, attracted a very poor audience.

The summer course for 1914 will consist of six lectures on the insects and spiders of Calcutta by Mr. F. H. Gravely, Assistant Superintendent in charge of the entomological collections.

APPENDIX I.

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ACTS RELATING TO THE MUSEUM.

ACT No. XVII OF 1866.

PASSED BY THE GOVERNOR GENERAL OF INDIA IN COUNCIL.

*(Received the assent of the Governor General on the 23rd  
March, 1866.)*

An Act to provide for the establishment of a Public  
Museum at Calcutta.

**W**HEREAS it is expedient to provide for the establishment  
of a Public Museum at Calcutta, to be  
called the Indian Museum; It is enacted  
as follows:—

1. The Governor General of India in Council shall cause  
to be erected, at the expense of the  
Government of India, a suitable building  
in Calcutta, on or near the site now  
occupied by the Small Cause Court, to be devoted in part to  
collections illustrative of Indian Archaeology and of the several  
branches of Natural History, in part to the preservation and  
exhibition of other objects of interest, whether historical, physical  
or economical, in part to the records and offices of the Geological  
Survey of India, and in part to the fit accommodation of the  
Asiatic Society of Bengal, and to the reception of their Library,  
Manuscripts, Maps, Coins, Busts, Pictures, Engravings, and other  
property.

2. The said building shall be constructed according to such  
plans and specifications as shall have been  
approved of and agreed upon by and  
between the Secretary to the Govern-  
ment of India in the Public Works  
Department for the time being and the  
Council of the said Society; and in case  
the said Secretary and Council shall be  
unable to agree with reference to any such plans or specifications,  
the point or points on which they shall so disagree shall be  
referred to the final decision of the Governor General of India in  
Council. Such building shall be completed, so far as to be in  
a condition to receive the collections mentioned in Section 11 of  
this Act, within five years from the date of the passing of this  
Act; and the Government of India shall keep the building in

repair, and pay and defray the salaries, allowances, and pensions of the officers and servants, and all other expenses connected with the said Indian Museum.

3. The Chief Justice of the High Court of Judicature at Trustees of the Indian Museum incorporated. Fort William in Bengal,

the Bishop of Calcutta,

the Vice-Chancellor of the University of Calcutta,

the Secretary to the Government of India in the Home Department,

four other persons to be nominated by the Governor General of India in Council,

the President of the Asiatic Society of Bengal and three other Members of the said Society for the time being, to be nominated by the Council of the said Society,

the Superintendent of the Geological Survey of India,

and their successors, appointed as hereinafter directed and subject to the provisions hereinafter contained, shall be and are hereby constituted a Body Corporate by the name of the "Trustees of the Indian Museum," and shall have a common seal, and by such name shall have perpetual succession; and all the powers of the said Corporation may be exercised so long and so often as there shall exist five Members thereof.

4. It shall be lawful for the said Body Corporate to receive Trustees empowered to receive bequests, donations, and subscriptions. bequests, donations, and subscriptions of land, buildings, money, and any such objects of interest as aforesaid, and to hold the same and to lay out such money

for the purposes of the said Indian Museum in the improvement and enlargement of the collections deposited in, presented to or purchased for the said Museum, and all such collections shall become the property of the said Body Corporate for the purposes of their Trust herein mentioned; and the said Body Corporate shall have the exclusive possession, occupation, and control, for the purposes of such Trusts, of the said building, other than those portions thereof which upon its completion shall be set apart by the said Body Corporate for the records and offices of the Geological Survey of India, and for the accommodation of the said Society, and the reception of their Library, Manuscripts, Maps, Coins, Busts, Pictures, Engravings, and other property.

5. The persons for the time being holding the offices, respectively, mentioned in Section 3 of this Act shall be ex-officio Members of the said Body Corporate, and shall cease to be such Members, respectively, upon ceasing to hold the said offices respectively. In the event of any two of the said offices being held by the

same person, it shall be lawful for the Governor General of India

Provision in case of two offices being held by one person.

in Council from time to time to nominate such other person as to him may seem fit, to be a Trustee under this Act so long as the said two offices shall be held by

one person. Provided that when and so often as the said Chief Justice, Bishop, Vice-Chancellor, Secretary to the Government of India in the Home Department, or Superintendent of the Geological Survey of India shall also be the President of the said Society, the Council of the Society may nominate any other person being a Member of the Society to be a Trustee under this Act so long as such Presidency shall be held by the said Chief Justice, Bishop, Vice-Chancellor, Secretary, or Superintendent.

6. If any of the said Trustees to be nominated by the Governor General of India in Council, or by the Council of the said Society, or any Trustee appointed as herein provided,

Power to appoint new Trustees.

shall die or be absent from India for a period exceeding twelve months, or desire to be discharged, or refuse or become incapable to act, then and in every such case it shall be lawful for the Governor General of India in Council, or the Council of the said Society, as the case may be, to appoint a new Trustee in the place of the Trustee so dying or being absent from India, or desiring to be discharged, or refusing or becoming incapable to act as aforesaid, and every Trustee so appointed shall thereupon become and be a Member of the said Body Corporate as fully and effectually as if he had been hereby constituted a Trustee.

7. At all meetings of the said Body Corporate, five shall be a quorum for the transaction of business and for the exercise of any of the powers conferred upon them by this Act.

Quorum.

8. It shall be lawful for the said Body Corporate from time to time to make, alter, and repeal bye-laws consistent with this Act for the management of the said Museum, for the summoning, holding, and adjournment of General and Special Meetings of Mem-

Power to Trustees to make, alter, and repeal bye-laws and to appoint officers and servants.

bers of the Body Corporate, for securing the attendance of the Members at such meetings, for the provision and keeping of minute books and account books, for the compiling of catalogues, and for all other purposes necessary for the execution of their Trust. And all officers and servants, salaried or otherwise, employed in the care or management of the Trust property shall be appointed, and may be removed or suspended by the said Body Corporate, subject to such regulations and conditions as such Body Corporate shall think proper, and such officers and servants shall be considered public servants within the meaning of the Indian Penal Code.

9. It shall be lawful for the Trustees from time to time to order any duplicates of printed books, medals, coins, specimens of Natural History, or other curiosities to be exchanged for manuscripts, books, or other objects of interest, or to direct any such duplicates to be sold, and the money to arise from such sale to be laid out in the purchase of manuscripts, books, maps, medals, coins, specimens of Natural History, or other curiosities that may be proper for the said Museum.

10. The said Trustees shall furnish to the Government of India, on or before the first day of December in each year, a report of their several proceedings, acts and ordinances for the past twelve months, and further shall furnish on or before the same day in each year to such Auditor as the Governor General of India in Council shall appoint in this behalf accounts of all monies expended by the Trustees during the past twelve months supported by the necessary vouchers. The said report and accounts shall be annually published for general information.

11. The Council of the said Society shall cause the collections belonging to the Society and illustrative of Indian Archaeology and the several branches of Natural History, and all additions that may be made thereto, whether before or after the time next hereinafter mentioned, to be removed to and deposited in the said building, at the expense of the Government of India, as soon as the same shall be completed so far as aforesaid.

12. The said Society shall continue to have the same exclusive property in and control over their said Library, Manuscripts, Maps, Coins, Busts, Pictures, and Engravings which they at present possess, and the Council of the said Society shall have the exclusive possession, occupation and control, for the purposes of the said Society, of those portions of the said building which shall, upon its completion, be set apart for the accommodation of the said Society and the reception of their Library and other property mentioned in Section 4 of this Act.

13. Every article in the collections and additions mentioned in Section 11 of this Act shall be marked and numbered, and shall (subject to the provisions contained in Sections 9, 14, and 15 of this Act) be kept and preserved in the said Indian Museum with such marks and numbers, and an inventory of such articles being deposited as aforesaid, one copy of such inventory shall be signed

by the said Trustees, and kept by the said Society, and another copy shall be signed by the Council of the said Society, and kept by the said Trustees. All objects taken in exchange under Section 9 of this Act for, and all monies payable on sale under the same Section of, any of such articles, shall be held on trusts and subject to powers and declarations corresponding as nearly as may be with the trusts, powers, and declarations by this Act limited and declared concerning the same articles.

14. Until the said building shall be completed so far as aforesaid, the said collections of the said Society and all additions that may be made thereto in the meantime shall remain in the house in which they are at present, but under the care of such persons as by the Trustees shall be approved and nominated in this behalf, with such salaries and allowances as, subject to the approval of the Government of India, the Trustees shall limit and direct; and the said collections and additions shall be open to all persons desirous to view the same, under such rules as by the said Trustees shall be established, and the said salaries and allowances shall be paid by the Government of India.

15. In the event of the Trust hereby constituted being determined, all collections then in the said Indian Museum, other than those next hereinafter mentioned, shall become the property of the Government of India, and the collections and additions mentioned in Section 11 of this Act shall become the property of the said Society or their assigns; and the said Society shall vacate the portions of the said building which shall have been set apart as in the twelfth Section of this Act is mentioned; and such portions shall then become the property of the Government of India, anything in this Act contained to the contrary notwithstanding.

## ACT No. XXII OF 1876.

PASSED BY THE GOVERNOR GENERAL OF INDIA IN COUNCIL.

(Received the assent of the Governor General on the 17th of December, 1876.)

An Act to provide for the management of the Public Museum at Calcutta.

**WHEREAS**, by Act No. XVII of 1866, reciting that it was expedient to provide for the establishment of a Public Museum at Calcutta, to be called the Indian Museum, it was enacted that the Governor General in Council should cause to be erected at the expense of the Government of India a suitable building in Calcutta, to be devoted in part to collections illustrative of Indian Archaeology and of the several branches of Natural History, in part to the preservation and exhibition of other objects of interest, whether historical, physical or economical, in part to the records and offices of the Geological Survey of India, and in part to the fit accommodation of the Asiatic Society of Bengal and to the reception of their library, manuscripts, maps, coins, busts, pictures, engravings and other property; and it was also enacted that the Government of India should keep the said building in repair and pay and defray the salaries, allowances and pensions of the officers and servants, and all other expenses connected with the said Museum; and by the Act now in recital certain officials and other persons therein mentioned or referred to, to the number of thirteen, and their successors, were constituted a Body Corporate by the name of the Trustees of the Indian Museum, and the said Trustees were empowered to receive bequests, donations and subscriptions, and to deal with the same in the manner therein mentioned for the purposes of their trusts therein mentioned; and it was also enacted that the said Trustees should have the exclusive possession, occupation and control, for the purposes of such trusts, of the said building, other than those portions thereof which, upon its completion, should be set apart by the said Trustees for the records and offices of the said Geological Survey and for the accommodation of the said Asiatic Society and the reception of their library, manuscripts, maps, coins, busts, pictures, engravings and other property; and it was also enacted that all officers and servants, salaried or otherwise, employed in the care or management of the trust-property, should be appointed, and might be removed or suspended, by the said Trustees, subject to such regulations and conditions as the said Trustees should think proper; and it was also enacted that

the Council of the said Asiatic Society should cause the collections belonging to such Society, and illustrative of Indian Archaeology and the several branches of Natural History, and all additions that might be made thereto, to be removed to and deposited in the said building at the expense of the Government of India as soon as the same should be completed so far as to be in a condition to receive the said collections, and that an inventory of the articles in such collections should be made by the said Society, one copy whereof was to be signed by the said Trustees and kept by the said Society, and another copy was to be signed by the said Society and kept by the said Trustees, and that the said Society should continue to have the same exclusive property in and control over their said library, manuscripts, maps, coins, busts, pictures, and engravings which they then possessed, and that the Council of the said Society should have the exclusive possession, occupation and control, for the purposes of the said Society, of those portions of the said building which should be set apart for the accommodation of the said Society and the reception of their library and other property thereinbefore mentioned;

And whereas the Government of India has caused the said building to be erected, and the Council of the said Society has caused the said collections belonging to the same Society to be removed to and deposited in the said building at the expense of the Government of India; and an inventory of the articles in such collections has been made by the said Society, one copy whereof has been signed by the said Trustees and delivered to the said Society, and another copy has been signed by the Council of the said Society and delivered to the said Trustees;

And whereas the said Trustees have, in pursuance of the said Act, set apart certain portions of the said building for the said records and offices of the Geological Survey of India;

And whereas, in consideration of a sum of one hundred and fifty thousand rupees paid to them by the Government of India, the Council of the said Society has relinquished the exclusive possession, occupation and control secured to them by the said Act, of the portions of the said building which, under the said Act, were to be set apart for the accommodation of the said Society and the reception of their said Library and other property;

And whereas it is expedient to alter the constitution of the said Body Corporate and to amend the law relating to the appointment and salaries of the said officers:

And whereas under the circumstances aforesaid it is expedient to repeal the said Act, and to re-enact it with the modifications hereinafter appearing; It is hereby enacted as follows:—

*Preliminary.*

1. This Act may be called "The Indian Museum Act, 1876."
- Short title.

2. Act No. XVII of 1866 (to provide for the establishment of a Public Museum at Calcutta) shall be repealed. But all persons nominated under the said Act as Trustees of the Indian Museum, and all officers and servants appointed under the same Act and now holding office, shall be deemed to have been respectively nominated and appointed under this Act.

Repeal of Act No. XVII of 1866.

*Incorporation of the Trustees.*

3. The Trustees of the said Indian Museum shall be—

such Secretary to the Government of India as the Governor General in Council from time to time directs in this behalf,

the Accountant General,

five other persons to be nominated by the Governor General of India in Council,

the President of the Asiatic Society of Bengal and four other Members of the Council of the said Society for the time being, to be nominated by the Council of the said Society,

the Superintendent of the Geological Survey of India, and

three other persons to be elected by the Trustees for the time being and appointed under their common seal;

and such Trustees and their successors shall, subject to the provisions hereinafter contained, be and are hereby constituted a Body Corporate by the name of the "Trustees of the Indian Museum," and shall have a common seal, and by such name shall have perpetual succession; and all the powers of the said Corporation may be exercised so long and so often as there shall exist seven Members thereof.

4. The persons for the time being holding the offices respectively mentioned in section three shall be *ex-officio* Members of the said Body Corporate, and shall cease to be such Members respectively upon ceasing to hold the said offices respectively:

Provided that, whenever the said Secretary to the Government of India, Accountant General or Superintendent of the Geological Survey of India is also the President of the said Society, the Council of the said Society may nominate any other person, being a Member of the said Society, to be a Trustee under this Act so long as such presidency is held by the said Secretary, Accountant General or Superintendent.

5. If any of the said Trustees for the time being dies or is absent from India for more than twelve consecutive months, or desires to be discharged, or refuses or becomes incapable to act, or not having been an *ex-officio* Member of the said Body Corporate becomes such, or if any of the Trustees to be nominated

Power to appoint new Trustees.

by the Council of the said Society ceases to be a Member of such Council, then and in every such case the authority which appoints the Trustee so dying, being absent from India, desiring to be discharged, refusing or becoming incapable to act or becoming an *ex-officio* Member as aforesaid, or ceasing to be such Member of Council as aforesaid, may appoint a new Trustee in his place according to the provisions of section three,

and every Trustee so appointed shall thereupon become and be a Member of the said Body Corporate as fully and effectually as if he had been hereby constituted a Trustee.

*Powers of the Trustees.*

6. It shall be lawful for the said Trustees (a) to receive bequests, donations and subscriptions of land, buildings, money and such objects of interest as aforesaid, and (b) to hold the same and to lay out such money for the maintenance, improvement and enlargement of the collections deposited in, presented to, or purchased for, the said Indian Museum, and otherwise for the purposes of the same Museum;

and all such collections shall become the property of the said Trustees for the purposes of their trusts herein mentioned;

and the said Trustees shall have the exclusive possession, occupation and control, for the purposes of such trusts, of the whole of the said building, other than those portions thereof which have been set apart by the said Trustees for the records and offices of the Geological Survey of India.

7. The said Trustees may from time to time make bye-laws consistent with this Act—

Power to Trustees to make bye-laws. (a) for the management of the said Museum;

(b) for the summoning, holding and adjournment of general and special meetings of the said Trustees;

(c) for securing their attendance at such meetings;

(d) for the provision and keeping of minute-books and account-books;

(e) for the compiling of catalogues, and

(f) for all other purposes necessary for the execution of their trusts.

8. Subject to such regulations and conditions as the Trustees think fit, they shall appoint, and may remove or suspend, all officers and servants, salaried or otherwise, employed in the care or management of the trust-property

Power to Trustees to appoint officers and servants.

provided—

(a) that no officer be appointed without the approval of the Governor General in Council if such officer be, at the date of his appointment, in India, or without the approval of the Secretary of State for India in Council if such officer be not then in India;

(b) that no new office be created, and no salaries of officers be altered, without the previous sanction of the Governor General in Council.

9. The said Trustees may from time to time order any duplicates of printed books, medals, coins, specimens of Natural History or other curiosities deposited in the Indian Museum to be exchanged for manuscripts, books or other objects of interest, or direct any such duplicates to be sold and the money to arise from such sale to be laid out in the purchase of manuscripts, books, maps, medals, coins, specimens of Natural History or other curiosities that may be proper for the said Museum.

10. At all meetings of the said Trustees three shall be a quorum for the transaction of business and for the exercise of any of the powers conferred upon them by this Act.

#### *Duties of the Trustees.*

11. The said Trustees shall furnish to the Government of India, on or before the first day of December in each year, a report of their several proceedings for the past twelve months, and further shall furnish, on or before the same day in each year, to such Auditor as the Governor General in Council appoints in this behalf, accounts of all moneys expended by the Trustees during the past twelve months, supported by the necessary vouchers.

The said Trustees shall cause such report and accounts to be annually published for general information.

12. The said Trustees shall cause every article in the said collections belonging to the Asiatic Society, and all additions that may hereafter be made thereto otherwise than by purchase under section six, to be marked and numbered, and (subject to the provisions contained in sections nine and fifteen) to be kept and preserved in the said Indian Museum with such marks and numbers; and an inventory of such additions shall be made by the said Society, one copy whereof shall be signed by the said Trustees and delivered to the said Society, and another copy shall be signed by the Council of the said Society and delivered to the said Trustees, and shall be kept by them along with the inventory already delivered to the said Trustees as aforesaid.

13. All objects taken in exchange under section nine for, and all moneys payable on sale under the same section of, any of such articles, shall be held on trusts and subject to powers and declarations corresponding as nearly as may be with the trusts, powers and declarations by this Act limited and declared concerning the same articles.

#### *Miscellaneous.*

14. All officers and servants appointed under this Act shall be considered public servants within the meaning of the Indian Penal Code; and so far as regards their salaries, allowances and pensions and their leave of absence from duty, they shall be subject to the rules for the time being applicable to uncovenanted civil servants of the Government of India.

15. In the event of the trust hereby constituted being determined, all collections then in the said Indian Museum, other than those next hereinafter mentioned, shall become the property of the Government of India, and the collections and additions mentioned in section twelve shall become the property of the said Society or their assigns.

## ACT No. IV OF 1887.

PASSED BY THE GOVERNOR GENERAL OF INDIA IN COUNCIL.

(Received the assent of the Governor General on the 14th January, 1887.)

An Act to alter the constitution of the Body Corporate known as the Trustees of the Indian Museum, and to confer certain additional powers on that body.

WHEREAS it is expedient to alter the constitution of the Body Corporate known as the Trustees of the Indian Museum, and to amend the law relating to the powers of the said Trustees; It is hereby enacted as follows:—

1. (1) This Act may be called the Indian Museum Act, 1887; and

Title and commencement. (2) It shall come into force at once.

2. Sections 3, 4 and 5 of the Indian Museum Act, 1876, are repealed.

Repeal of certain sections of Act XXII of 1876.

3. For those sections the following shall be substituted, namely:—

Substitution of new sections for sections repealed.

“*Incorporation of the Trustees.*”

“3. The Trustees of the said Indian Museum shall be—

Constitution and incorporation of the Trustees of the Indian Museum.

(a) the person for the time being holding the office of Accountant General of Bengal;

(b) five other persons to be appointed by the Governor General in Council;

(c) five other persons to be appointed by the Lieutenant-Governor of Bengal;

(d) five other persons to be appointed by the Council of the Asiatic Society of Bengal; and

(e) five other persons to be appointed by the Trustees;

and the said Trustees shall be a Body Corporate, by the name of the Trustees of the Indian Museum, and shall have perpetual succession and a common seal.

“4. All the powers of the said Body Corporate may be exercised so long and so often as there are nine members thereof.

Number of corporators.

“5. If a Trustee appointed under section 3 dies, or is absent from the meetings of the Trustees for more than twelve consecutive months, or desires to be discharged, or refuses or becomes incapable to act, or becomes Accountant General of Bengal, then the authority which appointed the Trustee may appoint a new Trustee in his place.”

Power to appoint new Trustees.

becomes incapable to act, or becomes Accountant General of Bengal, then the authority which appointed the Trustee may appoint a new Trustee in his place.”

4. (1) For the purposes of the Indian Museum Act, 1876, as amended by this Act—

Continuance of existing Trustees.

(a) the persons nominated by the Governor General in Council

under the Indian Museum Act 1876, and now holding office as Trustees, shall be deemed to be persons appointed by the Governor General in Council under section 3 of that Act as amended by this Act;

(b) the President of the Asiatic Society of Bengal, and the other members of the Council of that Society nomi-

nated by that Council under the Indian Museum Act, 1876, and now holding office as Trustees, shall be deemed to be persons appointed by the Council of the Asiatic Society of Bengal under the said section; and

(c) the persons elected and appointed by the Trustees under the said Act, and now holding office as Trustees, shall be deemed to have been appointed by the Trustees under the said section.

(2) The Secretary to the Government of India and the Superintendent of the Geological Survey of India shall cease to be *ex-officio* members of the said Body Corporate.

5. Notwithstanding anything in the Indian Museum Act, 1876,—

Power to Trustees to keep collections not belonging to them.

(a) the Trustees of the Indian Museum, if they think fit, may, with the previous sanction of the

Governor General in Council, and subject in each case to such conditions as he may approve and to such rules as he may prescribe, assume the custody and administration of collections which are not the property of the Trustees for the purposes of their trusts in that Act mentioned, and keep and preserve the collections either in the Indian Museum or elsewhere; and

(b) in the event of the trust constituted by that Act being determined, collections of which the Trustees have assumed the custody and administration under the foregoing part of this section shall not by reason of their then being in the Indian Museum become the property of the Government of India.

And whereas it is provided in the Indian Museum Act, 1876, XXII of that the Trustees of the Indian Museum shall have the exclusive possession, occupation and control, for the purposes of their trusts in that Act mentioned, of the whole of the building called the Indian Museum, except certain portions thereof set apart for other purposes; and whereas the Trustees are by virtue of that provision in possession of the property described in the schedule to this Act; It is hereby enacted as follows:—

6. The Trustees may, with the previous sanction of the Governor General in Council, and subject

Power to Trustees to part with certain property in their possession.

to such conditions as he may approve, deliver possession of the whole or any part of that property to such person as

the Lieutenant-Governor of Bengal may appoint in that behalf.

## THE SCHEDULE.

Land bounded on the north by a straight line drawn between the east and the west boundaries parallel to the main south wall of the Museum at a distance of twenty-five feet from the said wall; on the west and the south-west by the Chowringhee Road and the walls of the premises known as No. 29, Chowringhee Road; on the south by Kyd Street; and on the east by the walls of the premises known as No. 15, Kyd Street, and No. 4, Chowringhee Lane; measuring in all four acres three roods and sixteen perches; together with all buildings, roads and tanks existing or erected thereon, and all easements appertaining thereto.

## ACT No. X OF 1910.

PASSED BY THE GOVERNOR GENERAL OF INDIA IN COUNCIL.

*(Received the assent of the Governor General on the 18th March, 1910.)*

An Act to consolidate and amend the law relating to the Indian Museum.

WHEREAS it is expedient to consolidate and amend the law relating to the Indian Museum; It is hereby enacted as follows:—

## PRELIMINARY.

1. (1) This Act may be called the Indian Museum Act, 1910.

Short title and commencement.

(2) It shall come into force on such date as the Governor General in Council, by notification in the Gazette of India, may direct.

*Incorporation of the Trustees.*

2. (1) The Trustees of the Indian Museum (hereinafter called the Trustees) shall be—

Constitution and incorporation of the Trustees of the Indian Museum.

(a) the six persons for the time being performing the duties of the following offices, namely:—

(i) the Accountant General of Bengal;

(ii) the Principal, Government School of Art, Calcutta;

(iii) the Director, Geological Survey of India;

(iv) the Superintendent of the Zoological and Anthropological Section of the Museum;

(v) the Director General of Archæology; and

(vi) the Officer in charge of the Industrial Section of the Museum;

(b) one other person to be nominated by the Governor General in Council;

(c) three other persons to be nominated by the Lieutenant-Governor of Bengal;

(d) one other person to be nominated by the Council of the Asiatic Society of Bengal;

(e) one other person to be nominated by the Bengal Chamber of Commerce;

(f) one other person to be nominated by the British Indian Association, Calcutta;

(g) one other person to be nominated by the Syndicate of the Calcutta University; and

(h) three other persons to be nominated by the Trustees.

(2) The Trustees shall be a body corporate, by the name of "The Trustees of the Indian Museum," with perpetual succession and a common seal, and in that name shall sue and be sued, and shall have power to acquire and hold property, to enter into contracts, and to do all acts necessary for and consistent with the purposes of this Act.

(3) The nominated Trustees shall, save as herein otherwise provided, hold office for a period of three years:

Provided that the authority nominating a Trustee may extend his term of office for one or more like periods.

3. (1) The powers of the said body corporate may only be exercised so long and so often as there are nine members thereof.

(2) The quorum necessary for the transaction of business at a meeting of the Trustees shall not be less than six.

4. If a nominated Trustee—

(a) dies, or  
(b) is absent from the meetings of the Trustees for more than twelve consecutive months, or

(c) desires to be discharged, or

(d) refuses or becomes incapable to act, or

(e) is appointed to perform the duties of any office specified in section 2. clause (a),

the authority which nominated the Trustee may nominate a new Trustee in his place.

5. From the commencement of this Act the term of office of all persons appointed to be Trustees under the Indian Museum Act, 1876, shall cease.

Vacation of office by existing Trustees.

*Property and powers of the Trustees.*

6. (1) All the property, whether moveable or immovable, which at the commencement of this Act is held by the Trustees of the Indian Museum constituted by the Indian Museum Act, 1876, on trust for the purposes of the said Museum shall, together with any such property which may hereinafter be given, bequeathed, transferred or acquired for the said purposes, vest in the Trustees of the Indian Museum constituted by this Act on trust for the purposes of the said Museum:

Provided that the Trustees may expend the capital of any portion of such property which may consist of money on the maintenance, improvement and enlargement of the collections deposited in, presented to or purchased for the said Museum or otherwise for the purposes of the same as they may think fit.

(2) The Trustees shall have the exclusive possession, occupation and control, for the purposes of such trust, of the land specified in the schedule, including any buildings which may have been, or may hereafter be, erected thereon, other than those portions thereof which have been set apart by the Trustees for the records and offices of the Geological Survey of India.

7. Subject to the provisions of any bye-laws made in this behalf, the Trustees may, from time to time,—

Power to Trustees to exchange, sell and destroy articles in collections.

(a) deliver, by way of loan, to any person the whole or any portion of, or any article contained in, any collection vested in them under this Act;

(b) exchange or sell duplicates of articles contained in any such collection and take or purchase, in the place of such duplicates, such articles as may in their opinion be worthy of preservation in the Museum;

(c) present duplicates of articles contained in any such collection to other Museums in British India; and

(d) remove and destroy any article contained in any such collection.

3. (1) The Trustees may from time to time, with the previous sanction of the Governor General in Council, make bye-laws consistent with this Act for any purpose necessary for the execution of their trust

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for—

(a) the summoning, holding and adjournment of general and special meetings of the Trustees;

(b) the securing of the attendance of Trustees at such meetings;

(c) the provision and keeping of minute-books and account-books;

(d) the compiling of catalogues;

(e) the lending of articles contained in the collections vested in the Trustees;

(f) the exchange and sale, and the presentation to other Museums in British India, of duplicates of articles contained in such collections;

(g) the removal and destruction of articles contained in such collections; and

(h) the general management of the Museum.

9. Subject to such regulations and conditions as may be prescribed by them in this behalf, the Trustees shall appoint such officers and servants as may be necessary or proper for the care or management of the trust-property, and may assign to such officers and servants such pay as they may think fit.

Power to Trustees to appoint officers and servants.

Provided that—

(a) no officer shall be appointed—

(i) if such officer is, at the date of his appointment, in India, without the approval of the Governor General in Council, or

(ii) if such officer is not then in India, without the approval of the Secretary of State for India in Council; and

(b) no new office shall be created, and no salaries of officers shall be altered, without the previous sanction of the Governor General in Council.

*Duties of the Trustees.*

10. (1) The Trustees shall furnish on or before the first day of December in each year—

Trustees to furnish annual reports and accounts.

(a) to the Government of India a report of their several proceedings for the previous financial year, and

(b) to such auditor as the Governor General in Council appoints in this behalf, accounts of all moneys expended by the Trustees during the previous financial year, supported by the necessary vouchers.

(2) The Trustees shall cause such report and accounts to be published annually for general information.

11. (1) The Trustees shall cause every article in the collections in the said Indian Museum formerly belonging to the Asiatic Society of Bengal and all additions that may hereafter be made thereto otherwise than by purchase under section 6, to be marked and numbered and (subject to the provisions contained in sections 7 and 16) to be kept and preserved in the said Museum with such marks and numbers.

(2) An inventory of such additions shall be made by the said Society, one copy whereof shall be signed by the Trustees and delivered to the said Society, and another copy shall be signed by the Council of the said Society and delivered to the Trustees, and shall be kept by them along with the inventory delivered to the predecessors in office of the Trustees when the said collections were deposited in the said Museum.

12. All objects taken in exchange and articles purchased under section 7 and all moneys realized from sales made in accordance with the terms of the same section shall be held on trust and subject to powers and declarations corresponding as nearly as may be with the trusts, powers and declarations by this Act limited and declared.

#### *Supplemental Provisions.*

13. All officers and servants appointed under this Act shall be deemed to be public servants within the meaning of the Indian Penal Code; and, so far as regards their salaries, allowances and pensions and their leave of absence from duty, they shall be subject to the rules which under the Civil Service Regulations for the time being in force would be applicable if their service was service under Government.

14. Notwithstanding anything hereinbefore contained, the Trustees may, if they think fit, with the previous sanction of the Governor General in Council and subject in each case to such conditions as he may approve and to such rules as he may prescribe, assume the custody and administration of collections which are not the property of the Trustees for the purposes of their trust under this Act and keep and preserve such collections either in the Indian Museum or elsewhere:

Provided that if the trust constituted by this Act is at any time determined, any such collections shall not by reason of their then being in the Indian Museum become the property of His Majesty.

15. The Trustees may, with the previous sanction of the Governor General in Council, and subject to such conditions as he may approve, deliver possession of the whole or any part of the property described in the schedule to such person as the Lieutenant-Governor of Bengal may appoint in that behalf.

16. If the trust constituted by this Act is at any time determined,—  
Property in collections on determination of trust. (a) the collections and additions mentioned in section 11 shall become

the property of the said Asiatic Society or their assigns, and

(b) all the other collections then in the said Indian Museum shall, save as otherwise provided by section 14, become the property of His Majesty.

17. The Indian Museum Act, 1876, and the Indian Museum Act, 1887, are hereby repealed.

Repeals.

XXII of 1876.  
IV of 1887.

#### THE SCHEDULE.

(See sections 6 and 15.)

Land bounded—

on the north side by the premises No. 2, Sudder Street, and by Sudder Street;

on the west side by Chowringhee Road and by the premises No. 29, Chowringhee Road (occupied by the Bengal United Service Club);

on the south side by the premises No. 29, Chowringhee Road, by Kyd Street, and by premises No. 4, Chowringhee Lane, and

on the east side by the premises No. 15, Kyd Street, and the premises Nos. 4, 3, 2, and 1, Chowringhee Lane,

together with all buildings, roads and tanks existing or erected thereon, and all easements appertaining thereto.

APPENDIX II.

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BYE-LAWS RELATING TO THE MUSEUM.

*Bye-laws sanctioned by the Government of India  
on 4th March 1912, in accordance  
with Act X of 1910.*

[These bye-laws, with the exception of the first part, refer only to the Zoological and Anthropological and the Art Sections of the Museum, as the other sections are not under the direct control of the Trustees.]

PART I.

BYE-LAWS RELATING TO THE MUSEUM AS A WHOLE.

SECTION I.

*The Sections of the Museum and the officers in charge of each.*

1 The following Sections are recognized as constituting the Indian Museum :—

- (1) The Zoological and Anthropological Section.
- (2) The Art Section.
- (3) The Archaeological Section.
- (4) The Industrial Section.
- (5) The Geological Section.

2. The first two Sections, viz., the Zoological and Anthropological and the Art Sections, remain under the direct control of the Trustees, through whom the officer in charge of each Section shall make arrangements necessary for the upkeep of the establishment, for the proper preservation, classification and arrangement of the specimens, and for scientific or artistic work done in connection with the Museum. Separate bye-laws have been drawn up as regards these Sections.

3. As regards the other Sections, viz., the Archaeological, Geological and Industrial Sections, the Trustees retain visiting powers. The officer in charge of each Section shall submit to the Trustees an annual report as to the working of that Section and shall communicate directly with the Trustees as regards matters within their jurisdiction. He will, however, arrange directly with the Government of India as regards the staff and grant necessary for the proper preservation, classification and display of the

specimens in his charge and for any scientific work carried out in connection with his Section.

4. The Superintendent of the Zoological and Anthropological Section is recognized as officer in charge of that Section; the Principal of the Government School of Art, Calcutta, of the Art Section; the Director-General of Archaeology in India, of the Archaeological Section; the Director of the Geological Survey, of the Geological Section; and the Director of Botanical Surveys, of the Industrial Section.

5. The officer in charge of a Section who is not resident in Calcutta shall have the power, with the consent of the Trustees, of delegating his functions as officer in charge of a Section to any gazetted officer appointed for the purpose by, or with the consent of the Government of India or the Government of Bengal, as the case may be. The officer thus appointed shall correspond directly with the Trustees as regards matters within their jurisdiction and shall attend their meetings if invited to do so, in order that he may advise them as regards technical questions.

## SECTION II.

### *Duties of the Superintendent.*

6. The Superintendent of the Zoological and Anthropological Section is recognized as Superintendent of the Museum, and as representative of the Trustees resident on the premises shall exercise control of the Museum buildings, the land held by the Trust and the servants on duty as durwans in the public galleries or resident at night in the servants' quarters attached to the Museum.

7. The Superintendent shall not, however, interfere as regards the internal arrangements of galleries, offices or laboratories of Sections other than the Zoological and Anthropological Section, except in cases of extreme urgency or unless it shall be decided by the Trustees that such arrangements are dangerous to the public, or to the Museum buildings or collections.

8. The Superintendent shall not dismiss any servant attached to any Section other than the Zoological and Anthropological Section without first referring the matter to the officer in charge of the Section to which the servant is attached.

9. The keys of all the public galleries of the Museum shall be formally handed over to the Superintendent or to his accredited deputy every evening at such time as the offices of the Museum are closed and shall remain in his charge until the offices are opened again. He shall have free access to all parts of the Museum out of office hours and shall be responsible for the safety of the galleries and their contents so long as the keys are in his charge.

10. The Superintendent shall not leave Calcutta without

making arrangements for a properly accredited officer to take his place as Resident Superintendent.

11. The Superintendent shall be empowered, in exceptional circumstances, to close the public galleries of the Museum to the public, duly informing the officers in charge of Sections of his intention and reporting the matter at the next ordinary meeting of the Trustees.

12. The Superintendent shall be empowered to draw up such rules as seem necessary from time to time to regulate the sale of sweetmeats, etc., at the entrance to the Museum. Such rules shall be laid before the Trustees at a monthly meeting.

## SECTION III.

### *Relating to the Meetings, Committees, Publications, and Privileges of the Trustees.*

13. All meetings of the Trustees shall be called by circular specifying the hour and the place of the meeting and signed by the Secretary or the Librarian of the Zoological and Anthropological Section.

14. An ordinary meeting of the Trustees shall be held on the second Monday of every month. If no quorum be present 15 minutes after the time of meeting, the meeting shall be called for the Monday following.

15. The following shall be the order of business at ordinary meetings :—  
Order of business there-  
at.

- (i) The minutes of the previous meeting shall be read, and, if approved, confirmed and signed by the Chairman.
- (ii) The accounts of the preceding month shall be submitted, and, if passed, signed by the Chairman.
- (iii) Reports of the Committees shall be read and considered, and orders passed thereon.
- (iv) Letters and communications received by the Secretary shall be read and considered and order passed thereon.
- (v) Recommendations by the officers in charge of Sections shall be considered and orders passed thereon.

16. An Annual General Meeting of the Trustees shall be held on the second Monday in March, at which the order of business shall be as follows :—

- (i) The election of a Chairman, Vice-Chairman and Treasurer for the ensuing year.

(ii) The appointment of Visitors for each section of the Museum and of such annual Committees as shall be considered necessary from time to time. The Committees shall consist of not less than five Trustees, of whom any three shall form a quorum. Vacancies in the Committees or in the list of Visitors shall be filled up from time to time at an Ordinary Meeting.

17. The Annual Reports of the officers in charge of Sections and of the Superintendent shall be read at the Ordinary Meeting of the Trustees in August, after circulation in proof.

18. The Administration Report of the Trustees, with which shall be incorporated the reports of the officers in charge of Sections and the Superintendent, shall be read at the Ordinary Meeting of the Trustees in November, after circulation in proof.

19. In accordance with the orders of Government (Home Department No. 895, dated the 15th February 1870), it shall be particularly stated in the Trustees' Annual Report whether the whole of the Museum property, collections and library, is safe and in good condition.

20. The Chairman (or in his absence the Vice-Chairman) may of his own proper motion and shall at any time at the request in writing of four Trustees call an extraordinary meeting.

21. Minutes of each meeting of the Trustees or Committees shall be taken during their progress and shall be circulated by the Secretary to the members resident in Calcutta, before being copied into the minute book.

22. If any member considers that any matter discussed at the meeting is of sufficient importance to be referred to the whole body of members, he shall inform the Secretary, who shall refer the matter to each member. The opinions of members submitted in writing shall then be discussed at the next ordinary meeting or at an extraordinary meeting held for the purpose.

23. At the end of each financial year a complete index to the minutes for the whole year shall be prepared.

24. The Annual Reports shall be printed, with a statement of additions and presentations to the Museum and Libraries, and be distributed to the Trustees and Officers of the Museum, to Government and to other institutions. Two copies of the yearly volume shall be kept in the Secretary's office and two copies in the library of each Section.

25. The publications of the Trustees shall be distributed according to the list annually sanctioned by the Trustees. Three copies of all publications of the Trustees shall be sent to the Asiatic Society of Bengal.

26. Any Trustee shall have free access to any of the Museum collections and libraries between the hours of 10 and 5 on all days when the officers of the Museum are in attendance, and may take with him such persons as he may please to introduce.

#### SECTION IV.

##### *Relating to the Powers and Duties of the Officers of the Trust.*

27. The Chairman or Vice-Chairman shall preside at the meetings of the Trustees: in their absence the meeting shall elect a Chairman for the day.

28. The Chairman (or in his absence from Calcutta the Vice-Chairman), the Treasurer and the Secretary shall be *ex-officio* members of all Committees.

29. The Superintendent of the Zoological and Anthropological Section shall ordinarily be *ex-officio* Secretary to the Trustees.

30. The duties of Secretary shall be—

(1) To conduct the correspondence of the Trust, and sign, in the name of the Trustees, all letters and papers emanating from the Trustees. He shall be empowered, in urgent cases, to sign on behalf of the Trustees in anticipation of sanction.

(2) To attend all meetings of the Trustees and of Committees and take minutes of their proceedings; to see that the minutes are properly circulated and entered in the minute book before the following meeting, and that all letters, papers and documents of every kind connected with the Trustees' office are properly filed and preserved.

31. The following books shall be kept by the Secretary and shall be submitted at every meeting of the Trustees, or of the Committees, if required and shall be at all times open to the inspection of any Trustee on application to the Secretary:—

(i) A minute book, in which shall be entered a report of all business transacted at the meeting of the Trustees, reports of the Committees and orders passed by the Trustees being entered *in extenso*.

(ii) Registers of all letters, circulars and public notices received and issued on behalf of the Trustees.

32. All letters, circulars and public notices shall be properly classified and filed by the Secretary.  
Records, etc., to be filed.

33. The Treasurer shall draw and disburse all sums due to and by the Trustees, and shall keep accounts of all receipts and payments. He will see that proper vouchers are produced for all disbursements, and that they are cancelled so that they cannot be used again. Vouchers shall be kept three years and then destroyed.  
Duties of the Treasurer.

34. All moneys received by the Treasurer on behalf of the Trustees shall be lodged at the Bank of Bengal.  
Sums to be lodged in Bank.

35. The Treasurer shall keep the following records, which shall be submitted at each meeting of the Trustees:—  
Books to be kept by Treasurer.

(i) A cash book.

(ii) A ledger.

(iii) Establishment pay-book.

(iv) Contingent bill file.

#### SECTION V.

*Relating to Accounts, Indents, etc., in connection with the Sections directly under the control of the Trustees.*

36. Except in the case of petty disbursements from the cash imprests provided for in the special bye-laws in Parts II and III, all payments shall be made by the Treasurer, on presentation of bills supported by vouchers and certified by the officers in charge of the Zoological and Anthropological and Art Sections.  
All payments to be made through Treasurer.

37. All the larger items of contingent expenditure shall be paid by cheque and signed by the Treasurer.  
Payment of large contingent items.

38. All payments by cheques shall be entered in the cash book as separate items, so that the amount may tally with those of the cheques drawn. The number of the cheque shall also be entered against each item and be written on the bill or receipt on which the payment is made.  
Payments of cheques.

39. The monthly accounts for each Section shall be examined by the officer in charge of the Section, and the correctness of the charges certified by his signature for submission to the Trustees.  
Contingent bills.

40. The officer in charge of each of the Sections shall cause a detailed classified account to be maintained for it, and shall satisfy himself at the end of each month that the total receipts and payments for the month as shown in the account agree with those recorded in the Treasurer's books.  
Verification of accounts.

41. All orders to tradesmen for bazaar stores and petty items shall be entered in counterfoil registers to be kept by the officers in charge of the two Sections, and shall bear a consecutive number, which shall run throughout the official year. No such order shall be issued before the original and counterfoil copy shall have been signed and dated by the officer in charge of the Section.  
Counterfoil books for petty bazaar items.

42. When orders are sent to tradesmen for books or stores, etc., the officer in charge of the Section forwarding the order shall in each case give instructions that the parcels are to be addressed to the Trustees of the Indian Museum with the name of the Section added, and that the bills shall be made out in the name of the Trustees and addressed to him officially as officer in charge of the Section. In cases when this rule is not complied with by tradesmen, the officer ordering the stores shall write and point out the error.  
Parcels to be addressed to Trustees and bills made out in their name.

43. On receipt of parcels of books, stores, etc., the officer in charge of the Section shall compare the contents with the invoice and see that they are of the proper description and quality and correspond with the order, certifying to this effect, and noting any differences on the invoice. In case of the officer in charge of the Section finding that the stores, etc., are damaged, or of inferior quality, or otherwise do not correspond with the order, he shall take such action as he deems necessary and report such action at a meeting of the Trustees.  
Disposal and examination of parcels of books, stores, etc.

44. It shall be the duty of the officers in charge of the two Sections to check all bills for books, stores, etc., and certify on the bills, if found correct, "compared with invoice and found correct": if found incorrect, they shall note the differences and report them to the Trustees.  
Heads of departments to check bills.

45. Advances made on private account are not to be paid from the Museum funds.  
Advances from Museum funds forbidden.

46. Special sanction shall be obtained beforehand by the officers in charge of the two Sections for expenditure on account of extra attendance specially necessary during holidays.  
Payment of extra attendance during holidays.

47. In accordance with the orders of Government that a record of service shall be kept by the Trustees of everyone who, under section 2 of Act XVII of 1886, may be eligible for pension, a statement shall be furnished to the Comptroller General annually in April, duly filled up with the names and other information, in respect of all the persons employed under the Trustees in situations qualifying them for pension, and a leave statement of such persons shall be forwarded monthly to the Assistant Accountant General.

48. Under order of Government (Revenue, Agricultural and Commerce Department No. 95, dated the 19th February 1874), the Trustees of the Indian Museum are exempted from the operation of the rule laid down in Financial Resolution No. 3263, dated 27th November 1873, requiring that moneys payable in England for books, etc., should be remitted through Government.

## SECTION VI.

*Relating to Officers and Servants of the Museum who are directly under the control of the Trustees.*

49. No officer of the Museum shall be permitted to form a private collection of objects similar to those of which he is officially in charge. All such objects received by an officer of the Museum shall be considered as sent to the Museum.

50. No paid officer of the Museum shall accept any other employment, or engage in other business, without the special consent of the Trustees.

51. Every donation to the Museum shall be immediately acknowledged in the name of the Trustees on a printed or lithographed form by the officer in charge of the Section to which the donation has been made.

52. Every article presented or bequeathed to the Museum shall, immediately on receipt, be entered in the Museum Register, and shall bear a number corresponding to the number in the Register. All specimens, as far as practicable, shall have the names of the donors marked on or attached to them. Specimens received from the Asiatic Society of Bengal shall be marked A.S.B.

53. The officers in charge of Sections shall have the power to remove any specimen which shall appear to them unfit for the Museum and to destroy any specimen immediately injurious to other collections, reporting the

same to the Trustees for their orders in the case of particularly valuable specimens.

54. The officers in charge of Sections shall be empowered to make exchanges of duplicate specimens, immediately reporting all such transactions to the Trustees in the case of particularly numerous or valuable specimens. They shall also be empowered to present duplicate specimens, on the same conditions, to provincial or other Museums in India.

55. The officers in charge of Sections may take or lend specimens for exhibition at public meetings in Calcutta, on their personal responsibility, without reporting to the Trustees.

56. The keys of all cases containing specimens belonging to the Museum shall be kept by the officer in charge of the Section, who shall be responsible for their safe custody.

57. The following register books shall be kept by the officers in charge of Sections and shall be submitted at every meeting of the Trustees, or of the Committees, if required, and shall be at all times open to the inspection of any Trustee on application to the officers in charge of Sections:—

(i) Registers of all the specimens in their respective Sections; those specimens which were the property of the Asiatic Society being distinguished in the Registers by the letters A.S.B.

(ii) Registers of all the specimens added to the collections either by donation or purchase, together with the name of the donor or seller, the date of donation or purchase, and the price (if any) paid for the specimen.

58. Unless permitted to be absent, the servants of the Museum shall attend daily from 10 A.M. to 5 P.M. Attendance-books showing the hour of arrival shall be kept under the control of the officers in charge, each in his own Section.

59. Servants of the Museum shall be bound to attend at such hours on any day (not excepting Sundays and holidays) as the officer in charge, each in his own Section, shall order.

60. Casual leave, not exceeding ten days, may be granted by the officers in charge, each in his own Section, to any of their subordinates. Any further leave must receive the sanction of the Trustees. The total amount of casual leave shall not exceed fifteen days in a year.

61. All leave (except casual) granted to gazetted officers under the provisions of the Civil Leave Code shall be notified in the *Gazette of India*, Part II, under authority of the

Trustees.

62. The officers in charge, each in his own Section, shall have power to suspend or dismiss any servant or subordinate guilty of carelessness or neglect, or of injuring the property of the Trustees, reporting each case at the next meeting of the Trustees for final orders.

63. During the continuance of such suspension the subordinate so suspended shall be liable to total or partial loss of pay, as the Trustees may decide.

64. Absence from duty, unless sanctioned by the officer in charge, each officer in his own Section, shall render the absentee liable to the loss of his appointment.

65. No servant of the Trustees shall, on any pretence whatever, accept any fee or gratuity from a visitor.

66. Any servant of the Trustees who may be detected taking fees shall be liable to be prosecuted, and, in any case, shall be immediately discharged, and forfeit all salary due to him at the time.

67. The families of Museum durwans and servants, or persons not connected with the Museum, shall not be permitted to reside on the premises. Breach of this rule renders the offender liable to immediate dismissal.

#### SECTION VII.

##### *Relating to Admission of Visitors.*

68. The Museum shall be closed to the public for the execution of repairs, cleaning, etc., from the 1st to 15th May and from the 1st to 15th November in each year. At all other periods the Museum shall in ordinary circumstances be open to the public, free, except on Friday and Thursday in each week.

69. On Thursday the Museum shall be open from 10 A.M. to 12 noon to students only, and from 12 to 4 P.M. (or to 5 P.M. in accordance with the time of year) to women and children only.

70. On Friday the Museum shall be open to students free, and to the public on payment of 4 annas per person.

71. The hours during which the Museum shall be open shall be from 10 A.M. to 5 P.M. from the 1st February to the 1st November and from 10 A.M. to 4 P.M. from the 15th November to the 31st January.

72. A daily register of the number of visitors shall be kept. The register shall show the number, sex and nationality of the visitors.

73. Visitors are to be decent and orderly in their appearance and behaviour. The officers are to exclude all disorderly persons, or cause them to withdraw.

74. No smoking or pan-chewing can be permitted in the Museum.

75. At times when the Museum is closed to the public, the gazetted officers of the Museum shall have the power of admitting any student or visitor.

#### SECTION VIII.

##### *Relating to Students consulting the Collections which are directly under the control of the Trustees.*

76. Persons engaged in the study of any Sections of science or art represented in the Museum, who may desire to examine any part of the collections with more attention than can be done in the ordinary way of viewing the Museum, or who may have occasion to make drawings of anything contained in the collections shall apply, in writing, either to the Superintendent of the Museum or to the officer in charge of the Section they wish to consult, stating their profession or business, their place of abode, the purpose for which the application is made, and specifying the specimens or other articles they wish to examine. The Superintendent, or such other officer shall exercise his discretion in granting or refusing such applications, or referring them for the orders of the Trustees. In the case of an application being granted, the officer concerned shall make the necessary arrangement, and shall inform the applicant when the specimens, etc., will be at his disposal.

77. It shall be the duty of the officers of the Museum to give every facility to students in their researches, and an assistant shall be set apart in each instance to wait on those consulting the collections.

78. It shall be the duty of the assistant to keep a register of the specimens given out to students, and to ascertain that all are returned and are uninjured; he shall also restore each specimen to its proper place in the collections.

Specimens given out to students to be registered by assistant.

collections.

79. Any injury to a specimen must at once be reported to the officer in charge of the Section to which it belongs.

Injury to specimens.

80. No student shall on any account dissect, or in any way disarrange, a specimen, without the special permission of the officer in charge of the Section to which the specimen belongs.

Dissection or disarranging of specimens forbidden.

81. In those instances in which injury is likely to result to a specimen if it were removed from its cabinet, the student, accompanied by the assistant, may have access to the specimen in its cabinet.

Examination of specimens in the cabinets.

82. As it is desirable that objects should not be removed from the exhibition galleries, full permission shall be granted to students to examine the specimens by having the cases opened in the presence of a Museum officer or the appointed assistant.

Examination of objects in exhibition cases.

83. No person other than an officer in charge of a Section or the special assistant shall have the use of the keys of any cabinet for the purpose of consulting the collections.

Use of keys by students, etc., forbidden.

#### SECTION IX.

##### *Relating to the Common Seal and Deeds.*

84. The common seal and deeds shall be kept in an iron box, the key of which shall be kept by the Secretary.

Custody of the common seal and deeds.

85. The common seal shall not be affixed to any deed or writing, except at a meeting of the Trustees, and by their authority; after the affixing of the seal such deed or writing shall be signed by the Chairman of the meeting and by two other Trustees present.

Mode of affixing the common seal to deeds, etc.

86. These Rules shall take effect from the 1st March 1912. All previous Bye-laws, Regulations and Orders hitherto in force are hereby rescinded as from that date.

Rescinding clause.

## PART II.

### BYE-LAWS RELATING TO THE ZOOLOGICAL AND ANTHROPOLOGICAL SECTION ONLY.

*(With Appendices.)*

The following rules are to be regarded as supplementary to those in Part I of the Bye-Laws and are to be applied to the Zoological and Anthropological Section only.

#### SECTION I.

##### *Finance.*

1. Under orders of Government (Revenue and Agricultural Department Resolution No.  $\frac{69}{12-2}$ , dated the 25th July 1898) the Secretary is empowered to draw in advance annually, by a single bill, the whole grant for the Zoological and Anthropological Section for the year, less the estimated pay of the non-gazetted establishment, which is drawn monthly.

2. The Superintendent will be allowed a permanent advance of Rs. 500 from which he will meet items of petty expenditure. All other payments are to be made by the Treasurer on bills certified by the Superintendent in charge of the Section. The Superintendent shall, however, invite the attention of the Treasurer to any item over Rs. 500. The permanent advance may be recouped when necessary by the presentation of detailed contingent bills to the Treasurer.

3. The Superintendent shall draw up each year and circulate to the Trustees, before the annual meeting in March, a budget showing (i) the expenditure for the current financial year, (ii) the proposed expenditure for the next financial year, (iii) the funds, if any, actually in hand, (iv) those to be realized from the Government grant or grants during the next financial year, and (v) any other sums which may reasonably be expected to accrue during the year to the Trust. He shall include a statement showing the actual expenditure for the preceding three years.

4. The budget shall be drawn up systematically under separate headings to be decided from time to time by the Trustees.

5. The budget shall be discussed by the Trustees either at their annual meeting or at an extraordinary meeting called for the purpose, and, if it is approved, the Superintendent shall be empowered to spend the funds of the Trust in accordance with it.

6. In the event of a re-appropriation from one heading to another in the budget becoming necessary, the matter shall be referred immediately to the Trustees.

7. If the Treasurer considers that any item of the expendi-

ture proposed by the Superintendent is extravagant or that expenditure is being incurred unduly in any direction, he shall bring the matter to the notice of the Trustees, who shall appoint a committee to consider it and to report at the next ordinary meeting.

## SECTION II.

*Duties of the Scientific Officers.*

8. The attention of scientific officers shall be given in the first place to determining, cataloguing, arranging and preserving the collections under their charge. They shall not, however, neglect descriptive work subservient to these duties and shall be encouraged to undertake morphological and biological research, so long as it does not interfere with their Museum work.

9. Each Assistant Superintendent shall be placed in charge of a collection of certain specified groups of animals and shall be responsible for their preservation and arrangement and for the display of suitable representatives of them in the public galleries. The Superintendent shall decide for which group each Assistant Superintendent shall be responsible, retaining under his own immediate care those groups not assigned to one of the Assistant Superintendents.

10. The scientific work of officers of the Section shall, when practicable, be issued either in India in such form as the Trustees may from time to time direct, or in the "Fauna of British India and Ceylon" published in London under the authority of the Secretary of State in Council.

11. The Superintendent shall be editor of all publications issued by the department.

12. The Superintendent shall be empowered to send any officer or servant of the Section to any part of India or Burma in furtherance of the work of the Museum, provided that the travelling expenses of the officer or servant can be met from the budget sanctioned by the Trustees for the year.

## SECTION III.

*Regarding the Lending of Specimens to Specialists not connected with the Museum.*

13. The Superintendent and the Assistant Superintendent are empowered to send specimens other than type specimens to specialists in India or abroad for examination, determination or description under the following conditions:—

(i) No specimen or specimens shall ordinarily be despatched to a private address.

(ii) All specimens sent out from the Museum shall be accompanied by a printed form in which the number

or approximate number and the nature of the specimens is stated. The specialist to whom the specimens are sent shall be asked to sign and return this form. If he does not do so within a reasonable time, the Secretary to the Trustees shall write to him and ask him whether he has received the specimens.

(iii) So long as the specimens are out of the Museum the officer who has sent them, or the head of the Section shall write at least once in six months to the specialist to whom they have been sent, to enquire what progress is being made in their determination or examination and when they are likely to be returned.

(iv) All specimens sent out for determination shall be accompanied by a form signed by the Secretary to the Trustees, stating that under the provisions of the Museum Act the Trustees are not empowered to alienate any but duplicate specimens, and that therefore all type specimens and specimens unique in the collection must be returned to the Indian Museum.

14. If the Superintendent or an Assistant Superintendent considers that it is in the interests of the Museum to refuse an application for the loans of specimens, he shall be empowered to do so, referring the matter to the Trustees, if he considers it desirable.

15. The following rules shall be strictly observed in sending out type specimens for examination:—

(i) Type specimens shall only be allowed to leave the Museum in exceptional circumstances and with the express consent of the Trustees.

(ii) No type specimen that is in any way damaged or that is exceptionally fragile shall be allowed to leave the Museum under any circumstance.

(iii) Under no circumstances shall a type specimen be sent to a private address.

(iv) Type specimens shall only be allowed to leave the Museum in the personal charge of an officer of the Museum or on receipt of a signed application in writing from the head of a recognized scientific institution, or from the head of a laboratory attached to a recognized university or college, who is willing to make himself responsible in his official capacity for the safety of the specimens and for their return in good condition within a period of six months.

(v) A receipt for the specimens must be signed immediately on their arrival by the applicant (that is to say, by the head of the institution or laboratory), and returned to the Trustees.

- (vi) No one outside the Museum shall be permitted to have more than six type specimens from the collection in his possession at any one time.
- (vii) A copy of these rules shall be sent to any specialist applying for the loan of a type specimen, and before the specimen is sent he shall be requested to sign a declaration stating that he is willing to abide by them. Should he not be the head of a scientific institution or of a laboratory in a university or college, he shall be requested further to submit his application through and in the name of the head of the institution or laboratory to which he belongs or in which he works. Unless the head of the institution or laboratory is willing to submit an application, the specimens shall not be sent.
- (viii) If an officer of the Museum desires to remove a type specimen from the Museum for comparison with specimens in other collections in India or abroad, he shall only do so after obtaining the express consent of the Trustees and undertaking to observe such regulations as they shall lay down in each case.

## SECTION IV.

*Relating to the Library.*

16. The library shall be under the direct supervision of the Superintendent.
17. All correspondence relating to the library shall be conducted by the Librarian under the orders of the Superintendent.
18. The Librarian shall keep the following register books:—
- (i) An order book, showing what books have been ordered, of whom they were ordered, their cost and when they were supplied.
- (ii) A register of books belonging to the Museum library, showing their registered number, title, date of receipt, price, donor, edition, number of volumes, number of plates, size, place and date of publication.
- (iii) A register of photographs, negatives, drawings, maps, plans, etc., belonging to the Trustees, showing their registered number, date of receipt, how they were acquired, subject, etc.
- (iv) A register of all books removed from the library for the use of Museum officers. This register shall show the title and number of the book, the name of the person taking it, the date of its removal, and the date of its return.

19. As a general rule, books, copies of which are already accessible in other libraries in Calcutta, shall not be purchased for the Museum library, the only exceptions being works which are so constantly in use by the officers of the Museum as to render it desirable to have copies in the Museum.

20. In selecting books for purchase, preference shall be given to works which, whether general monographs, periodicals, or descriptions of local collections and faunas, have reference to Asia and Asiatic seas.

21. Under orders of the Government (Home Department No. 3786, dated 15th August 1870, confirmed, after withdrawal, by Revenue, Agricultural and Commerce Department No. 151, date 15th February 1872), the Trustees are exempted from the operation of the rule which requires the purchase of books, etc., to be made through the agency of the Secretary of State for India.

22. A list of books purchased each year by the Trustees, with their cost, shall be submitted to Government annually with the Trustees' report (Revenue, Agricultural and Commerce Department No. 193, dated 10th April 1874).

23. All books received for the library shall immediately on receipt be stamped with the library stamp, and shall be entered in the register with a continuous numbering, the number and date of receipt being written in each book in the centre of the stamp. Each plate shall be carefully stamped on the back with the library stamp. All new works shall be placed on the Trustees' table for inspection at each monthly meeting.

24. All photographs, negatives, drawings, maps, plans, etc., acquired by the Trustees shall form part of the library, shall be stamped and numbered in the same way as books, and shall be entered in separate registers.

25. Donation to the library of books, drawings, photographs, etc., shall be acknowledged officially by the Superintendent in the name of the Trustees on a lithographed or printed form.

26. The Librarian shall submit to the Superintendent, for inclusion in his annual report, a detailed list of the additions to the library made during the year, with the names of donors.

27. No book, drawing, photograph or maps, etc., entered in the library registers shall be removed from the Museum buildings under any circumstances, except in the case of duplicate volumes set aside for the use of officers on tour.

28. As soon as space can be provided, special accommodation shall be set aside for the use of students consulting the library.

29. Any person wishing to consult the library for purposes of study can do so under such restrictions as the Superintendent shall consider necessary. Application should be made to the Superintendent either personally or in writing.

## PART III.

## BYE-LAWS RELATING TO THE ART SECTION ONLY.

## SECTION I.

*Finance.*

1. The officer in charge shall draw up each year and circulate to the Trustees before the annual meeting in March a budget showing (i) the expenditure for the current financial year, (ii) the proposed expenditure for the next financial year, (iii) the funds, if any, actually in hand, (iv) those to be realized from the Government grant or grants during the next financial year, and (v) any other sums which may reasonably be expected to accrue during the year to the Trust. He shall include a statement showing the actual expenditure for the preceding three years.

2. The officer in charge will be allowed a permanent advance of Rs. 500 from which he will meet items of petty expenditure. All other payments are to be made by the Trustees on bills certified by the officer in charge. The latter shall, however, invite the attention of the Treasurer to any item over Rs. 500. The permanent advance may be recouped when necessary by the presentation of detailed contingent bills to the Treasurer.

3. The budget shall be drawn up systematically under separate headings to be decided from time to time by the Trustees.

4. The budget shall be discussed by the Trustees either at their annual meeting or at an extraordinary meeting called for the purpose, and, if it is approved, the officer in charge shall be empowered to spend the funds of the Trust in accordance with it.

5. In the event of a re-appropriation from one heading to another in the budget becoming necessary, the matter shall be referred immediately to the Trustees.

6. If the Treasurer considers that any item of the expenditure proposed by the officer in charge is extravagant or that expenditure is being incurred unduly in any direction, he shall bring the matter to the notice of the Trustees, who shall appoint a committee to consider it and to report at the next ordinary meeting.

## SECTION II.

*Duties of the Officer in charge.*

7. The attention of the officer in charge shall be given in the first place to determining, cataloguing, arranging and preserving the collections under his charge. He shall not, however, neglect

descriptive work subservient to these duties and shall be permitted to undertake investigations in various branches of Industrial Art, provided this does not interfere with his Museum work.

8. The officer in charge shall, without detriment to his other duties and with the permission of the Trustees, be allowed to visit any part of India in furtherance of the work of the Museum, the travelling expenses for this being met from the budget sanctioned by the Trustees for the year.

## SECTION III.

*Regarding the Lending of Specimens.*

9. The officer in charge is permitted to lend specimens to properly authorized persons or associations, reporting such action to the Trustees.

10. If the officer in charge considers that it is in the interests of the Museum to refuse an application for the loan of specimens, he shall be empowered to do so, referring the matter to the Trustees, if he considers it desirable.

## SECTION IV.

*Regarding Copyright of Specimens.*

11. No specimen may be photographed or mechanically reproduced in any manner except on an application being made to the officer in charge, who may, if he considers this necessary, refer the matter to the Trustees.

12. Sketches and drawings may however be made, during the hours the Museum remains open to the public, of any of the objects, provided these are not required to be removed or taken out of their cases. In any other circumstances applications must be made to the officer in charge.

## SECTION V.

*Relating to the Library.*

13. The library shall be under the direct supervision of the officer in charge.

14. All correspondence relating to the library shall be conducted under the orders of the officer in charge.

15. The following register books shall be kept:—

(i) An order book, showing what books have been ordered, of whom they were ordered, their cost and when they were supplied.

(ii) A register of books belonging to the Museum library, showing their registered number, title, date of receipt, price, donor, edition, number of volumes, number of plates, size, place and date of publication.

- (iii) A register of photographs, negatives, drawings, maps, plans, etc., belonging to the Trustees, showing their registered number, date of receipt, how they were acquired, subject, etc.
- (vi) A register of all books removed from the library for the use of Museum officers. This register shall show the title and number of the book, the name of the person taking it, the date of its removal, and the date of its return.

16. As a general rule, books, copies of which are already accessible in other libraries in Calcutta, shall not be purchased for the Museum library, the only exceptions being works which are so constantly in use by the officers of the Museum as to render it desirable to have copies in the Museum.

17. In selecting books for purchase preference shall be given to works which, whether general monographs, periodicals, or descriptions of local collections, have reference to Oriental Art.

18. Under orders of the Government (Home Department No. 3786, dated 15th August 1870, confirmed, after withdrawal, by Revenue, Agricultural and Commerce Department No. 151, dated 15th February 1872), the Trustees are exempted from the operation of the rule which requires the purchase of books, etc., to be made through the agency of the Secretary of State for India.

19. A list of books purchased each year by the Trustees, with their cost, shall be submitted to Government annually with the Trustees' report (Revenue, Agricultural and Commerce Department No. 193, dated 10th April 1874).

20. All books received for the library shall immediately on receipt be stamped with the library stamp, and shall be entered in the register with a continuous numbering, the number and date of receipt being written in each book in the centre of the stamp. Each plate shall be carefully stamped on the back with the library stamp. All new works shall be placed on the Trustees' table for inspection at each monthly meeting.

21. All photographs, negatives, drawings, maps, plans, etc., acquired by the Trustees shall form part of the library, shall be stamped and numbered in the same way as books, and shall be entered in separate registers.

22. Donations to the library of books, drawings, photographs, etc., shall be acknowledged officially by the officer in charge in the name of the Trustees on a lithographed or printed form.

23. The officer in charge will include, in his annual report, a detailed list of the additions to the library made during the year, with the names of donors.

24. No book, drawing, photograph or map, etc., entered in the library registers shall be removed from the Museum buildings

under any circumstances, except in the case of duplicate volumes set aside for the use of officers on tour.

25. Any person wishing to consult the library for purposes of study can do so under such restrictions as the officer in charge shall consider necessary. Application should be made to the officer in charge either personally or in writing.

APPENDIX III.

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NUMBER OF VISITORS, 1904 - 1914.

## NUMBER OF VISITORS, 1904-1914.

The yearly average number of visitors, both Asiatics and Europeans, for the past 10 years is 643,688: Asiatics (male and female) 636,699; Europeans (male and female) 9,989. The lowest number of visitors during any year of the last decade was 503,377 for the year ending 31st March, 1910, the highest was 829,910 for the year ending 31st March, 1913.

Number of Visitors from 1st April, 1904, to 31st March, 1905.

MONTHS.	ASIATICS.		EUROPEANS.		TOTAL.
	Male.	Female.	Male.	Female.	
April .. .. .	23,053	5,166	717	186	29,122
May* .. .. .	14,964	3,333	272	118	18,687
June .. .. .	36,748	7,205	594	283	44,830
July .. .. .	47,749	9,376	455	150	57,730
August .. .. .	41,161	7,950	428	132	49,671
September .. .. .	39,518	8,238	450	133	48,339
October .. .. .	84,695	15,719	620	257	101,291
November* .. .. .	10,367	4,692	326	148	21,533
December .. .. .	43,426	7,572	858	391	52,247
January .. .. .	51,804	10,328	1,429	764	64,325
February .. .. .	40,150	8,482	832	597	50,061
March .. .. .	30,686	7,814	580	295	39,375
GRAND TOTAL ..	470,321	95,875	7,561	3,454	577,211

The number of visitors to the Museum during the 237 days on which the Institution was open to the general public was 577,211, or a daily average of 2,438.

\* Closed for minor repairs from 1st to 15th May and 1st to 15th November.

Number of Visitors from 1st April, 1905, to 31st March, 1906.

MONTHS.	ASIATICS.		EUROPEANS.		TOTAL.
	Male.	Female.	Male.	Female.	
April .. .. .	31,136	7,748	420	132	39,436
May* .. .. .	17,079	4,185	295	96	21,655
June .. .. .	34,996	10,778	358	117	46,249
July .. .. .	47,463	8,885	381	131	56,860
August .. .. .	43,516	7,483	320	160	51,479
September .. .. .	40,857	9,802	385	124	51,168
October .. .. .	80,926	13,588	462	166	95,142
November* .. .. .	22,731	3,584	284	105	26,704
December .. .. .	47,032	8,346	694	318	56,390
January .. .. .	47,172	9,789	1,279	553	58,793
February .. .. .	44,525	10,528	1,059	544	56,656
March .. .. .	33,337	8,002	884	389	42,612
GRAND TOTAL .. .. .	490,770	102,718	6,821	2835	603,144

The number of visitors to the Museum during the 237 days on which the Institution was open to the general public was 603,144, or a daily average of 2,544 persons.

Number of Visitors from 1st April, 1906, to 31st March, 1907.

MONTHS.	ASIATICS.		EUROPEANS.		TOTAL.
	Male.	Female.	Male.	Female.	
April .. .. .	28,080	6,348	626	183	35,237
May* .. .. .	13,416	4,135	202	84	17,837
June .. .. .	31,808	11,299	460	162	43,729
July .. .. .	37,825	10,273	375	105	48,578
August .. .. .	33,572	8,117	324	106	42,119
September .. .. .	63,168	11,575	571	165	75,479
October .. .. .	48,574	9,574	529	183	58,860
November* .. .. .	25,400	5,659	273	107	31,439
December .. .. .	61,141	8,686	785	403	71,015
January .. .. .	61,353	15,739	1,298	526	78,916
February .. .. .	32,949	7,679	819	245	41,692
March .. .. .	33,473	10,113	507	171	44,264
GRAND TOTAL .. .. .	470,759	109,197	6,769	2,440	589,165

The number of visitors to the Museum during the 240 days on which the Institution was open to the general public was 589,165, or a daily average of 2,454.

\* Closed for minor repairs from 1st to 15th May and 1st to 15th November.

Number of Visitors from 1st April, 1907, to 31st March, 1908.

MONTHS.	ASIATICS.		EUROPEANS.		TOTAL.
	Male.	Female.	Male.	Female.	
April .. .. .	30,887	8,687	621	139	40,334
May* .. .. .	14,380	3,971	244	85	18,680
June .. .. .	35,389	10,709	388	117	46,603
July .. .. .	44,476	11,493	265	74	52,308
August .. .. .	33,572	8,210	312	74	42,168
September .. .. .	39,445	12,171	352	75	52,043
October .. .. .	62,233	10,673	405	148	73,459
November* .. .. .	14,110	5,395	180	78	19,763
December .. .. .	41,515	10,020	732	351	52,617
January .. .. .	44,197	10,942	583	339	56,061
February .. .. .	48,988	21,259	522	258	71,027
March .. .. .	39,542	10,904	466	186	51,098
GRAND TOTAL .. .. .	448,733	124,434	5,070	1,924	580,161

The number of visitors to the Museum during the 237 days on which the Institution was open to the general public was 580,161, or a daily average of 2,447.

Number of Visitors from 1st April, 1908, to 31st March, 1909.

MONTHS.	ASIATICS.		EUROPEANS.		TOTAL.
	Male.	Female.	Male.	Female.	
April .. .. .	35,118	9,167	411	104	44,800
May* .. .. .	17,509	3,956	295	54	21,814
June .. .. .	36,140	11,902	580	167	48,789
July .. .. .	33,034	10,476	365	90	43,965
August .. .. .	54,986	11,833	471	156	67,446
September .. .. .	45,490	12,318	442	112	58,362
October .. .. .	79,456	17,506	511	221	97,694
November* .. .. .	16,128	3,843	270	78	20,319
December .. .. .	30,666	6,466	724	292	38,148
January .. .. .	37,722	9,082	677	332	47,813
February .. .. .	40,169	8,674	572	230	49,645
March .. .. .	32,335	5,713	377	186	38,611
GRAND TOTAL .. .. .	458,753	110,936	5,695	2,022	577,406

The number of visitors to the Museum during the 238 days on which the Institution was open to the general public was 577,406, or a daily average of 2,426.

\* Closed for minor repairs from 1st to 15th May and 1st to 15th November.

Number of Visitors from 1st April, 1909, to 31st March, 1910.

MONTHS.	ASIATICS.		EUROPEANS.		TOTAL.
	Male.	Female.	Male.	Female.	
April .. .. .	31,187	5,965	377	141	37,670
May* .. .. .	19,879	4,842	239	97	25,057
June .. .. .	29,681	5,390	289	141	35,501
July .. .. .	28,758	5,429	321	112	34,620
August .. .. .	37,782	6,943	342	97	45,164
September .. .. .	34,727	6,670	321	87	41,805
October .. .. .	73,095	15,217	574	172	89,058
November* .. .. .	15,535	4,020	444	294	20,293
December .. .. .	34,552	6,965	573	245	42,335
January .. .. .	40,912	10,643	1,128	443	53,126
February .. .. .	29,476	9,042	822	396	39,736
March .. .. .	30,285	7,929	623	175	39,012
GRAND TOTAL ..	405,869	89,055	6,053	2,400	503,377

The number of visitors to the Museum during the 237 days on which the Institution was open to the general public was 503,377, or a daily average of 2,123.

Number of Visitors from 1st April, 1910, to 31st March, 1911.

MONTHS.	ASIATICS.		EUROPEANS.		TOTAL.
	Male.	Female.	Male.	Female.	
April .. .. .	28,090	9,608	765	436	38,899
May* .. .. .	17,053	4,405	400	174	22,032
June .. .. .	41,447	16,735	658	233	59,073
July .. .. .	51,852	17,254	904	273	70,283
August .. .. .	52,468	17,680	785	234	71,167
September .. .. .	53,904	22,422	695	255	77,276
October .. .. .	98,263	29,934	1,204	562	129,963
November* .. .. .	27,003	8,219	533	140	35,895
December .. .. .	57,919	15,167	1,512	708	75,306
January .. .. .	61,189	21,854	1,604	839	85,486
February .. .. .	49,074	17,676	1,103	558	68,411
March .. .. .	39,170	12,648	622	288	52,728
GRAND TOTAL ..	577,432	193,602	10,785	4,700	786,519

The number of visitors to the Museum during the 237 days on which the Institution was open to the general public was 786,519, or a daily average of 3,318.

\* Closed for minor repairs from 1st to 15th May and 1st to 15th November.

Number of Visitors from 1st April, 1911, to 31st March, 1912.

MONTHS.	ASIATICS.		EUROPEANS.		TOTAL.
	Male.	Female.	Male.	Female.	
April .. .. .	31,646	9,543	424	142	41,755
May* .. .. .	12,786	4,111	313	90	17,300
June .. .. .	43,082	15,780	302	101	59,265
July .. .. .	42,565	10,847	322	93	53,827
August .. .. .	38,628	9,768	276	168	48,840
September .. .. .	50,994	13,245	323	180	64,742
October .. .. .	72,332	25,406	369	146	98,253
November* .. .. .	13,863	3,962	220	129	18,174
December .. .. .	42,285	8,388	865	284	51,822
January .. .. .	47,732	12,807	1,301	816	62,656
February .. .. .	33,152	9,807	804	465	44,228
March .. .. .	32,519	9,786	510	195	43,010
GRAND TOTAL ..	461,584	133,450	6,029	2,809	603,872

The number of visitors to the Museum during the 234 days on which the Institution was open to the general public was 603,872, or a daily average of 2,584.

Number of Visitors from 1st April, 1912, to 31st March, 1913.

MONTHS.	ASIATICS.		EUROPEANS.		TOTAL.
	Male.	Female.	Male.	Female.	
April .. .. .	31,903	14,282	439	185	46,809
May* .. .. .	19,059	9,518	186	81	28,844
June .. .. .	47,943	14,156	418	209	62,726
July .. .. .	73,984	27,247	434	189	101,854
August .. .. .	46,684	14,148	444	262	61,538
September .. .. .	64,346	24,627	605	402	89,980
October .. .. .	77,979	24,499	627	407	103,512
November* .. .. .	31,535	10,294	358	156	42,343
December .. .. .	60,790	17,631	1,074	651	80,146
January .. .. .	52,044	19,345	980	703	73,072
February .. .. .	48,033	16,266	810	527	65,636
March .. .. .	51,324	20,912	746	468	73,450
GRAND TOTAL ..	605,624	212,925	7,121	4,240	829,910

The number of visitors to the Museum during the 238 days on which the Institution was open to the general public was 829,910, or a daily average of 3,487.

\* Closed for minor repairs from 1st to 15th May and 1st to 15th November.

Number of Visitors from 1st April, 1913, to 31st March, 1914.

MONTHS.	ASIATICS.		EUROPEANS.		TOTAL.
	Male.	Female.	Male.	Female.	
April .. .. .	48,540	16,679	442	219	65,880
May* .. .. .	25,585	9,072	303	140	35,100
June .. .. .	49,010	18,459	483	299	68,251
July .. .. .	52,634	19,381	515	250	72,780
August .. .. .	53,260	18,106	567	306	72,239
September .. .. .	69,705	35,257	639	290	105,891
October .. .. .	73,628	23,344	559	414	97,945
November* .. .. .	21,454	9,364	412	238	31,468
December .. .. .	52,817	19,005	972	547	73,341
January† .. .. .	36,154	15,540	733	498	52,925
February .. .. .	50,330	19,011	737	437	70,515
March .. .. .	49,893	18,717	787	383	69,780
GRAND TOTAL .. .. .	583,010	221,935	7,149	4,021	816,115

The number of visitors to the Museum during the 233 days on which the Institution was open to the general public was 816,115, or a daily average of 3,502.

\* Closed for minor repairs from 1st to 15th May and 1st to 15th November.

† Closed from 12th to 19th January on account of Centenary Celebrations.

APPENDIX IV.

LIST OF MEMBERS OF THE BOARD OF TRUSTEES  
PAST AND PRESENT.

## BOARD OF TRUSTEES, January, 1914.

[The name of the electing body, etc., is given in brackets in the case of each Trustee.]

### *Chairman.*

The HON. JUSTICE SIR ASUTOSH MOOKERJEE, KT., C.S.I., M.A.,  
D.L., D.Sc., F.R.S.E., F.R.A.S., F.A.S.B., etc. (A.S.B.)

### *Vice-Chairman.*

H. H. HAYDEN, C.I.E., B.A., B.A.I., HON. D.Sc., F.G.S., F.A.S.B.,  
Director of the Geological Survey of India (*ex officio*).

### *Hon. Treasurer.*

The HON. RAJA RESHEE CASE LAW, C.I.E. (Trustees.)

### *Secretary (ex officio).*

N. ANNANDALE, B.A., D.Sc., F.A.S.B., C.M.Z.S., F.L.S.,  
Superintendent.

The Rt. Hon. Lord Carmichael of Skirling, G.C.I.E., K.C.M.G.,  
etc. (Trustees.)

H. G. Tomkins, C.I.E., Accountant General of Bengal (*ex officio*).  
F.R.A.S.

Percy Brown, A.R.C.A. .. Principal, Government School of  
Art, Calcutta (*ex officio*).

J. H. Marshall, C.I.E., Director General of Archaeology in  
Litt.D., F.S.A. .. India (*ex officio*).

C. C. Calder, B.Sc., F.L.S. Offg. Director, Botanical Survey of  
India (*ex officio*).

H. G. Graves .. .. Patent Secretary, by designation  
(Government of India).

H. F. Samman, I.C.S. .. (Government of Bengal).

Sir Rajendra Nath Mooker-  
jee, K.C.I.E. (Government of Bengal).

J. B. Lloyd .. .. (Bengal Chamber of Commerce).

The Hon. Maharaja Bahadur Sir Prodyot Coomar Tagore, Kt.  
(British Indian Association).

The Hon. Dr. Deva Prasad (Calcutta University).  
Sarbadhikari, C.I.E.,  
M.A., Litt.D.

The Hon. Mr. W. W. (Government of Bengal).  
Hornell, M.A.

## FORMER TRUSTEES.

## EX OFFICIO.

Date of appointment.		
June, 1866	The Hon. Sir Barnes Peacock.	Chief Justice of the High Court.
do.	The Rt. Rev. R. Milman, D.D.	Lord Bishop of Calcutta.
do.	The Hon. Mr. H. S. Maine	Vice-Chancellor of the Calcutta University.
do.	E. C. Bayley, I.C.S.	Secy., Govt. of India, Home Department.
do.	T. Oldham, LL.D.	Supdt., Geol. Survey of India.
Jan., 1867	J. Fayrer, M.D.	Pres., Asiatic Society of Bengal.
Apl., 1867	H. B. Medicott	Offg. Supdt., Geol. Survey of India.
Oct., 1867	The Hon. Mr. W. S. Seton Karr, I.C.S.	Vice-Chancellor of the Calcutta University.
Feb., 1870	The Hon. Mr. J. B. Phear	Pres., Asiatic Society of Bengal.
May, 1870	„ „ Sir R. Couch	Chief Justice of the High Court.
Oct., 1870	„ „ Mr. J. P. Norman	Offg. Chief Justice of the High Court.
Dec., 1872	H. L. Dampier, I.C.S.	Secy., Govt. of India, Home Department.
Feb., 1873	A. C. Lyall, I.C.S.	Secy., Govt. of India, Home Department.
Apl., 1873	Col. H. Hyde, R.E.	Pres., Asiatic Society of Bengal.
May, 1873	H. B. Medicott	Offg. Supt., Geol. Survey of India.
May, 1874	A. P. Howell, I.C.S.	Secy., Govt. of India, Home Department.
Feb., 1875	The Hon. Mr. E. C. Bayley, C.S.I., I.C.S.	Pres., Asiatic Society of Bengal.
Feb., 1875	The Hon. Mr. A. G. MacPherson.	Offg. Chief Justice of the High Court.
Mar., 1875	The Hon. Mr. A. Hobhouse	Vice-Chancellor of the Calcutta University.
June, 1875	„ „ Sir R. Garth	Chief Justice of the High Court.
Apl., 1876	„ „ Sir E. C. Bayley, K.C.S.I., I.C.S.	Pres., Asiatic Society of Bengal.
Apl., 1876	H. B. Medicott	Supdt., Geol. Survey of India.
Feb., 1877	H. A. Mangles, I.C.S.	Accountant General.
Feb., 1877	D. M. Barbour	Offg. Accountant General.
Feb., 1879	W. T. Blanford	Offg. Supdt., Geol. Survey of India, and Pres., Asiatic Society of Bengal.

Date of appointment.		
Dec., 1877	The Hon. Mr. J. O'Kinealy	Secy., Govt. of India, Home Department.
Apl., 1878	C. Bernard, C.S.I.	Secy., Govt. of India, Home Department.
May, 1878	C. Kiernander	Offg. Accountant General.
Oct., 1878	J. Westland	Accountant General.
Jan., 1880	Dr. T. R. Lewis	Offg. for the Pres., Asiatic Society of Bengal, H. B. Medicott (Trustee <i>ex officio</i> ).
Mar., 1880	H. F. Clogstoun	Offg. Accountant General.
Dec., 1880	D. Barbour	„ „ „
Feb., 1881	The Hon. Mr. C. Grant	Secy., Govt. of India, Home Department.
Apr., 1881	The Hon. Sir Ashley Eden, K.C.S.I.	Pres., Asiatic Society of Bengal.
May, 1881	A. P. MacDonell	Offg. Accountant General.
Sep., 1881	R. Logan	„ „ „
do.	A. Mackenzie	Secy., Govt. of India, Home Department.
Nov., 1881	S. Jacob	Offg. Accountant General.
Jan., 1882	A. P. MacDonnell	„ „ „
Apl., 1882	J. A. Cook	„ „ „
May, 1882	The Hon. Mr. H. J. Reynolds, I.C.S.	Pres., Asiatic Society of Bengal.
May, 1882	S. Jacob	Offg. Accountant General.
June, 1882	E. T. Atkinson	„ „ „
July, 1882	J. A. Cook	„ „ „
Aug., 1882	S. Jacob	„ „ „
Dec., 1882	A. C. Tupp	„ „ „
Feb., 1883	E. C. Buck, I.C.S.	*Secy., Govt. of India, Rev. and Agril. Department.
Aug., 1883	E. W. Kellner	Offg. Accountant General.
Oct., 1883	A. C. Tupp	„ „ „
Nov., 1883	J. E. Cooke	„ „ „
Nov., 1884	E. J. Sinkinson	„ „ „
Jan., 1884	E. T. Atkinson	„ „ „
Feb., 1884	H. F. Blanford, F.R.S.	Pres., Asiatic Society of Bengal.
Mar., 1884	R. Logan	Accountant General, Bengal.
Apr., 1884	E. T. Atkinson	„ „ „
Feb., 1885	Rajendra Lala Mitra, Rai Bahadur, C.I.E., LL.D.	Pres., Asiatic Society of Bengal.
Feb., 1886	E. T. Atkinson	Pres., Asiatic Society of Bengal.
May, 1886	E. W. Kellner	Accountant General, Bengal.
Jan., 1887	E. T. Atkinson, I.C.S.	„ „ „
Apr., 1891	O. T. Barrow, I.C.S.	„ „ „
Mar., 1892	R. E. Hamilton	Offg. Accountant General, Bengal.
1893	O. T. Barrow, I.C.S.	Accountant General, Bengal.
Feb., 1894	G. E. Manisty, I.C.S.	„ „ „
Apl., 1895	A. F. Cox, I.C.S.	Offg. Accountant General, Bengal.

\* Trusteeship transferred from Secy., Home Department, to Secy., Rev. and Agricult. Department, by order of Government.

Date of appointment.	Name	Office
Mar., 1896	R. E. Hamilton	Offg. Accountant General, Bengal.
do.	T. H. S. Biddulph	Offg. Accountant General, Bengal.
do.	R. E. Hamilton	Accountant General, Bengal.
May, 1897	T. H. Biggs	Offg. Accountant General, Bengal.
Mar., 1898	W. L. Harvey, I.C.S.	Accountant General, Bengal.
Apl., 1898	W. H. Dobbie	Offg. Accountant General, Bengal.
May, 1898	W. H. Michael, I.C.S.	Offg. Accountant General, Bengal.
Nov., 1899	J. C. E. Branson, I.C.S.	Accountant General, Bengal.
Oct., 1900	W. H. Dobbie	Offg. Accountant General, Bengal.
Apr., 1901	W. H. Michael, I.C.S.	Accountant General, Bengal.
July, 1904	J. C. E. Branson, I.C.S.	" " "
	M. F. Gauntlett, I.C.S.	" " "
Aug., 1904	J. C. E. Branson, I.C.S.	" " "
May, 1905	H. Keene, I.C.S.	Offg. Accountant General, Bengal.
Aug., 1905	A. M. Brigstocke, I.C.S.	Offg. Accountant General, Bengal.
Apr., 1907	W. S. Adie, I.C.S.	Offg. Accountant General, Bengal.
Oct., 1907	J. C. E. Branson, I.C.S.	Accountant General, Bengal.
Nov., 1909	M. F. Gauntlett, I.C.S.	" " "
June, 1910	T. H. D. La Touche, F.G.S.	Offg. Director, Geol. Survey of India.
do.	J. Ph. Vogel, Ph.D.	Offg. Director General of Archaeology.
do.	I. H. Burkill, M.A.	Officer in charge, Industrial Section.
Aug., 1911	Rai N. G. Basu Bahadur, C.I.E.	Offg. Accountant General, Bengal.
Sep., 1911	S. W. Kemp, B.A.	Offg. Supdt., Zool. and Anthrop. Section.
Jan., 1912	Major A. T. Gage, I.M.S.	Officer in charge, Industrial Section.
Mar., 1912	A. N. Tagore	Offg. Principal, School of Art.
Apl., 1912	H. N. Bose	" " "
June, 1912	S. W. Kemp, B.A.	Offg. Supdt., "Zool." and Anthrop. Section.
Jan., 1913	A. N. Tagore	Offg. Principal, School of Art.
Mar., 1913	S. W. Kemp, B.A.	Offg. Supdt., Zool. and Anthrop. Section.

NOMINATED BY THE GOVERNOR GENERAL IN COUNCIL.

June, 1866	The Hon. Mr. J. P. Norman	
do.	" " A. Eden, I.C.S.	
do.	A. Grote, I.C.S.	
do.	V. H. Schalch, I.C.S.	
Apl., 1868	H. L. Dampier, I.C.S.	Vice the Hon. A. Eden.
Aug., 1868	J. Fayrer, M.D.	Vice A. Grote.
June, 1869	Babu Rajendralal Mullick, Rai Bahadur.	Vice V. H. Schalch.

Date of appointment.	Name	Office
June, 1869	Col. H. L. Thuillier, C.S.I.	Offg. for E. C. Bayley, Vice-Chancellor of the University.
Aug., 1869	Col. H. L. Thuillier, C.S.I.	Vice H. L. Dampier.
do.	C. B. Clarke	Offg. for E. C. Bayley, Vice-Chancellor of the University.
Feb., 1871	Raja Jotendro Mohun Tagore.	Offg. for J. P. Norman, Offg. Chief Justice.
Aug., 1871	A. O. Hume, C.B.	Offg. for E. C. Bayley, Vice-Chancellor of the University, vice C. B. Clarke, resigned.
Dec., 1871	Raja Jotendro Mohun Tagore.	Vice J. P. Norman.
Apl., 1872	Col. H. Hyde, R.E.	Vice Dr. Fayrer.
Nov., 1873	A. O. Hume, C.B.	Vice Col. Hyde.
Jan., 1877	Maj.-Genl. A. Cunningham, R.E., C.S.I.	Additional Trustee under Act XXII of 1876.
Feb., 1878	Col. J. T. Walker, R.E., C.B.	Vice Maj.-Genl. Thuillier.
Aug., 1884	Lt.-Col. H. R. Thuillier, R.E.	Vice Lt.-Genl. J. T. Walker, retired.
Mar., 1887	Dr. J. Burgess, C.I.E., LL.D.	Vice Maj.-Genl. Sir A. Cunningham, retired.
Apl., 1887	Surgn.-Major G. King, M.B.	Vice Raj Rajendralal Mullick.
1889	J. Eliot	Vice A. O. Hume.
Apl., 1891	H. H. Risley, I.C.S.	Vice Dr. J. Burgess.
Aug., 1893	E. Thurston	Vice the Hon. H. H. Risley.
Feb., 1895	Col. C. Strahan, R.E.	Vice Col. H. R. Thuillier.
Sep., 1894	R. E. S. Thomas	Vice E. Thurston.
Sep., 1896	Maharaj Kumar Prodyot Coomar Tagore.	Vice Maharaja Sir J. M. Tagore.
Apl., 1898	Maj. D. Prain, I.M.S.	Vice Sir G. King, retired.
May, 1899	A. Tocher	Vice R. E. S. Thomas, resigned.
Oct., 1899	Lt.-Col. St. G. C. Gore, R.E.	Vice Maj.-Genl. C. Strahan, resigned.
Mar., 1904	Lt.-Col. F. B. Longe, R.E.	Vice Col. St. G. C. Gore, retired.
do.	G. T. Walker, M.A., F.R.S.	Vice Sir J. Eliot, retired.
Feb., 1906	N. McLeod	Vice A. Tocher, resigned.
Mar., 1907	Capt A. T. Gage, I.M.S.	Vice Lt.-Col. D. Prain, retired.
May, 1907	L. Smith	Vice N. McLeod, resigned.
June, 1910	J. W. Meares	By designation (Patent Secretary.)

NOMINATED BY THE LIEUTENANT-GOVERNOR OF BENGAL.

Jan., 1887	P. Nolan, I.C.S.	Act IV of 1887.
do.	M. Finucane, I.C.S.	" "
do.	A. Simson	" "
do.	Haji Jakaria Nur Mahomed.	" "
do.	Babu Amrita Nath Mitter	" "
Sep., 1889	Prince Jehan Kader Mirza Bahadur.	Vice Haji "Jakaria Nur Mahomed.
Mar., 1891	C. E. Buckland, I.C.S.	Vice P. Nolan.
Apl., 1891	J. D. Maxwell	Vice A. Simson.

Date of appointment.		
May, 1892	W. C. Macpherson, I.C.S.	<i>Vice</i> M. Finucane.
May, 1892	A. Simson	<i>Vice</i> J. D. Maxwell.
July, 1892	W. Maude, I.C.S.	<i>Vice</i> C. E. Buckland.
do.	The Hon. Mr. H. H. Risley	<i>Vice</i> W. Maude.
do.	C. E. Buckland, I.C.S.	<i>Vice</i> H. H. Risley.
Mar., 1896	P. C. Lyon, I.C.S.	<i>Vice</i> W. C. MacPherson.
Apl., 1896	The Hon. Mr. M. Finucane, I.C.S.	<i>Vice</i> C. E. Buckland.
July, 1896	Moulvi Abdul Jubbar, Khan Bahadur, C.I.E.	<i>Vice</i> The Hon. Prince Sir Jahan Kader Mirza Mahomed Wahed Ali.
— 1897	W. C. MacPherson, I.C.S.	<i>Vice</i> P. C. Lyon.
July, 1897	The Hon. Sahibzada Muhammed Bukhtyar Shah, C.I.E.	<i>Vice</i> Moulvi Abdul Jubbar, Khan Bahadur.
Nov., 1897	P. C. Lyon, I.C.S.	<i>Vice</i> W. C. MacPherson.
Mar., 1898	D. J. MacPherson, I.C.S., C.I.E.	<i>Vice</i> M. Finucane.
June, 1898	The Hon. Mr. M. Finucane, I.C.S., C.S.I.	<i>Vice</i> D. J. MacPherson.
Oct., 1898	F. A. Slacke, I.C.S.	<i>Vice</i> M. Finucane.
Mar., 1899	The Hon. Mr. M. Finucane, I.C.S., C.S.I.	
Apl., 1899	Col. T. H. Hendley, I.M.S., C.I.E.	<i>Vice</i> A. Simson.
Aug., 1899	The Hon. Mr. F. A. Slacke, I.C.S.	<i>Vice</i> M. Finucane.
Dec., 1899	S. L. Maddox, I.C.S.	<i>Vice</i> P. C. Lyon.
— 1902	C. G. H. Allen, I.C.S.	
do.	G. H. Sutherland	<i>Vice</i> Col. T. H. Hendley.
do.	The Hon. Mr. A. Earle, I.C.S.	
Mar., 1905	The Hon. Mr. R. W. Carlyle, I.C.S., C.I.E.	<i>Vice</i> A. Earle.
July, 1905	N. D. Beatson Bell, I.C.S.	<i>Vice</i> S. L. Maddox.
— 1906	C. E. A. W. Oldham, I.C.S.	
Apl., 1907	The Hon. Mr. E. A. Gait	<i>Vice</i> R. W. Carlyle.
Dec., 1907	W. R. Gourlay, I.C.S.	<i>Vice</i> C. E. A. W. Oldham.
June, 1908	The Hon. Mr. F. W. Duke	<i>Vice</i> E. A. Gait.
July, 1909	The Hon. Sir C. Allen	<i>Vice</i> F. W. Duke.
June, 1910	Shamsul-ulma Mahomed Yusoof, Khan Bahadur.	
Dec., 1910	J. G. Cumming, I.C.S.	<i>Vice</i> W. R. Gourlay.
Jan., 1912	The Hon. Mr. J. H. Kerr, I.C.S., C.I.E.	<i>Vice</i> J. G. Cumming.

## NOMINATED BY THE ASIATIC SOCIETY OF BENGAL.

June, 1866	J. Fayrer, M.D.	Offg. for E. C. Bayley, President.
do.	S. B. Partridge, M.D.	
do.	W. S. Atkinson	
do.	H. F. Blanford	
Sept., 1868	Col. J. E. Gastrell	Offg. for Dr. T. Oldham, President.
May, 1871	Dr. F. Stoliczka	<i>Vice</i> Dr. Partridge.
Mar., 1872	Col. J. E. Gastrell	Offg. for Dr. T. Oldham, President.
July, 1873	Col. J. E. Gastrell	<i>Vice</i> Dr. Stoliczka.

Date of appointment.		
Apl., 1874	J. Geoghegan, I.C.S.	<i>Vice</i> H. F. Blanford.
Mar., 1875	S. B. Partridge, M.D.	<i>Vice</i> J. Geoghegan.
Apl., 1875	T. R. Lewis, M.B.	Offg. for Dr. T. Oldham, President.
June, 1875	Col. H. Hyde, R.E.	<i>Vice</i> W. S. Atkinson.
Mar., 1876	Capt. J. Waterhouse	<i>Vice</i> Col. Hyde.
do.	H. Blochmann, M.A.	<i>Vice</i> Dr. Partridge.
Apl., 1876	T. R. Lewis, M.B.	<i>Vice</i> Col. J. E. Gastrell.
Mar., 1877	T. S. Isaac, C.E.	Additional Trustee under Act XXII of 1876.
Aug., 1878	E. Gay	<i>Vice</i> H. Blochmann, deceased.
Sep., 1878	C. H. Tawney	<i>Vice</i> E. Gay, resigned.
Dec., 1878	H. Beverley	<i>Vice</i> T. R. Lewis, resigned.
Oct., 1879	Dr. A. F. R. Hoernle	<i>Vice</i> T. S. Isaac, resigned.
Jan., 1880	J. Crawford	<i>Vice</i> Maj. J. Waterhouse.
do.	Dr. T. R. Lewis	<i>Vice</i> H. B. Medicott (an <i>ex-officio</i> Trustee).
May, 1880	A. Pedler	<i>Vice</i> J. Crawford.
May, 1881	J. Eliot	<i>Vice</i> A. Pedler.
Feb., 1882	Maj. J. Waterhouse	<i>Vice</i> C. H. Tawney.
	Dr. H. W. McCann	<i>Vice</i> H. Beverley.
Mar., 1884	The Hon. Mr. H. J. Reynolds, I.C.S.	<i>Vice</i> J. Eliot.
June, 1884	F. E. Pargiter	<i>Vice</i> Dr. H. W. McCann, deceased.
Feb., 1886	H. F. Blanford, F.R.S.	<i>Vice</i> F. E. Pargiter.
do.	Babu Rajendralala Mitra, Rai Bahadur, C.I.E., LL.D.	
Nov., 1886	E. Gay	<i>Vice</i> The Hon. H. J. Reynolds. [nolds.
Jan., 1887	E. T. Atkinson, I.C.S.	<i>Vice</i> The Hon. H. J. Reynolds.
— 1887	A. Pedler	<i>Vice</i> H. F. Blanford.
do.	Surg.-Maj. D. D. Cunningham.	<i>Vice</i> E. T. Atkinson.
Feb., 1890	C. Little	<i>Vice</i> Raja Rajendra Lala Mitra.
May, 1890	H. Beveridge, I.C.S.	<i>Vice</i> E. Gay, resigned.
Feb., 1891	Sir A. W. Croft, K.C.I.E.	<i>Vice</i> H. Beveridge.
May, 1892	The Hon. Dr. Mohendra Lal Sircar, C.I.E.	<i>Vice</i> Sir A. W. Croft.
Feb., 1898	R. D. Oldham	<i>Vice</i> Surg. Lt.-Col. D. D. Cunningham.
Jan., 1898	G. W. Küchler	<i>Vice</i> C. Little, resigned.
May, 1899	His Grace the Most Rev. Dr. Paul Goethals, S.J.	<i>Vice</i> Dr. A. F. R. Hoernle, retired.
Jan., 1901	T. H. Holland, F.G.S.	<i>Vice</i> R. D. Oldham.
Feb., 1902	W. K. Dods	
Feb., 1903	Sir J. A. Bourdillon, K.C.I.E.	<i>Vice</i> W. K. Dods.
Feb., 1905	J. Macfarlane	<i>Vice</i> Dr. M. L. Sircar, deceased.
Apl., 1906	R. P. Ashton	<i>Vice</i> Sir A. Pedler, retired.
Dec., 1906	Lt.-Col. D. C. Phillott, I.A.	<i>Vice</i> J. Macfarlane, deceased.
Feb., 1908	Lt.-Col. G. F. A. Harris, I.M.S.	<i>Vice</i> G. W. Küchler.
Feb., 1910	Lt.-Col. F. P. Maynard, M.B., F.R.C.S.	<i>Vice</i> Lt.-Col. G. F. A. Harris.

## ELECTED BY THE BOARD OF TRUSTEES.

Date of appointment.		
Feb., 1877	H. J. Reynolds .. ..	Under Act XXII of 1876.
do.	H. F. Blanford .. ..	" " "
do.	Babu Rajendralala Mittra, Rai Bahadur, LL.D.	" " "
June, 1878	The Hon. Mr. A. Mackenzie	Vice H. J. Reynolds.
Dec., 1879	The Hon. Mr. H. J. Reynolds.	Vice A. MacKenzie.
May, 1882	F. J. Fergusson .. ..	Vice H. J. Reynolds.
Feb., 1883	The Hon. Col. S. T. Trevor, R.E.	Vice F. J. Fergusson.
do.	E. T. Atkinson .. ..	Vice H. F. Blanford (Pres., Asiatic Society of Bengal, <i>ex-officio</i> Trustees).
Dec., 1884	R. Logan .. ..	Vice E. T. Atkinson (Ac- countant General, Bengal, <i>ex-officio</i> Trustee).
Mar., 1885	Maj. J. Waterhouse .. .. C. H. Tawney .. ..	Vice R. Logan, resigned. Vice Dr. Rajendra Lala Mittra (Pres., Asiatic Society of Bengal, <i>ex-officio</i> Trustee).
Jan., 1887	Lt.-Col. R. V. Riddell, R.E.	Vice The Hon. Col. S. T. Trevor.
Jan., 1887	H. B. Medlicott, F.R.S. ..	} Act IV of 1887. Two addi- } tional Trustees.
do.	Dr. J. Scully .. ..	
June, 1887	Dr. W. King .. ..	Vice H. B. Medlicott.
July, 1887	Lt.-Col. G. S. Neill .. ..	Vice Lt.-Col. R. V. Riddell.
July, 1889	E. T. Atkinson .. ..	Vice Col. G. S. Neill.
Sep., 1889	Col. A. W. Baird .. ..	Vice C. H. Tawney.
do.	Major J. H. Sadler .. ..	Vice E. T. Atkinson (Ac- countant-General, Bengal, <i>ex-officio</i> Trustee).
Dec., 1890	Sir J. W. Edgar, K.C.I.E.	Vice Maj. J. H. Sadler.
May, 1892	G. A. Grierson, I.C.S. ..	Vice Sir J. W. Edgar.
Aug., 1893	W. B. Gwyther .. ..	Vice Surg.-Maj. J. Scully.
Feb., 1891	Sir A. W. Croft, K.C.I.E.	Vice Col. A. W. Baird.
Sep., 1894	C. L. Griesbach, C.I.E. ..	Vice Dr. W. King.
Nov., 1896	The Hon. Mr. H. H. Risley	Vice C. L. Griesbach.
Mar., 1897	W. B. Colville .. ..	Vice Sir A. Croft.
May, 1897	E. Upton .. ..	Vice G. A. Grierson.
June, 1897	F. J. Rowe .. ..	Vice Col. J. Waterhouse.
Jan., 1900	The Hon. Justice Stanley, Q.C.	Vice F. J. Rowe.
do.	The Hon. Justice Haring- ton.	
do.	R. D. Oldham .. ..	
do.	A. Forsyth .. ..	
Jan., 1905	Col. G. M. Porter, R.E. ..	Vice R. D. Oldham.
Apr., 1907	F. Noel-Paton .. ..	Vice Sir H. H. Risley.
Nov., 1907	B. K. Finnimore .. ..	Vice W. B. Gwyther.
do.	Maharaj Adhiraj of Burdwan.	Vice A. Forsyth.
Jan., 1910	Dr. E. D. Ross .. ..	Vice Col. G. M. Porter.
do.	F. St. George Manners Smith.	Vice B. K. Finnimore.
June, 1910	Lt.-Col. D. C. Phillott, I.A.	
do.	Maj. A. T. Gage, I.M.S. ..	

## NOMINATED BY THE BENGAL CHAMBER OF COMMERCE.

Date of appointment.		
Jan., 1912	I. H. Burkill, M.A. ..	Vice Maj. A. T. Gage, I.M.S.
June, 1910	Sir G. Sutherland .. ..	
Dec., 1910	R. P. Ashton .. ..	Vice Sir G. Sutherland.
Dec., 1911	R. G. D. Thomas .. ..	Vice R. P. Ashton.

## NOMINATED BY THE BRITISH INDIAN ASSOCIATION.

June, 1910	Maharaja Sir Prodyot Coomar Tagore (re- elected).	Seat vacant, Jan., 1912.
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## FORMER HONORARY OFFICERS.

## 1. Chairmen.

Date of appointment.	
Dec., 1867	The Hon. Sir Barnes Peacock.
May, 1870	" " Sir R. Couch.
May, 1871	" " Mr. J. P. Norman.
May, 1872	" " Sir R. Couch.
May, 1875	" " Mr. A. G. MacPherson (Offg.).
June, 1875	" " Mr. Sir R. Garth.
June, 1877	" " Mr. Sir E. C. Bayley, K.C.S.I.
May, 1879	Col. J. T. Walker, R.E.
May, 1880	The Hon. Maharaja J. M. Tagore.
May, 1882	Lt.-General J. T. Walker, R.E.
May, 1883	The Hon. Mr. H. J. Reynolds.
May, 1885	Maharaja Sir J. M. Tagore.
May, 1886	E. T. Atkinson, I.C.S.
May, 1891	Brig. Surg. G. King, C.I.E., LL.D.
June, 1894	A Pedler, F.R.S.
May, 1895	Col. J. Waterhouse, I.S.C.
May, 1897	The Hon. Mr. H. H. Risley, I.C.S., C.I.E.
Mar., 1906	T. H. Holland, F.R.S. (retired Sep. 1909).

## 2. Vice-Chairmen.

Dec., 1867	J. Fayrer, M.D.
May, 1869	T. Oldham, LL.D.
May, 1870	The Hon. Mr. J. B. Phear.
May, 1872	T. Oldham, LL.D.
May, 1873	Col. H. Hyde, R.E.
May, 1875	T. Oldham, LL.D.
June, 1876	The Hon. Sir E. C. Bayley, K.C.S.I.
June, 1877	Maharaja J. M. Tagore.
May, 1880	The Hon. Mr. H. J. Reynolds.
May, 1883	H. F. Blanford.
May, 1885	The Hon. Mr. H. J. Reynolds.
May, 1887	Maharaja Sir J. M. Tagore, K.C.S.I.
May, 1888	Dr. J. Scully.
May, 1889	E. Gay.
May, 1890	Dr. J. Scully.
May, 1891	A. Pedler, F.R.S.

Date of Appointment.	
June, 1894 .. .. .	Surg. Lt.-Col. D. D. Cunningham, I.M.S., F.R.S., C.I.E.
May, 1897 .. .. .	Brig.-Surg. Lt.-Col. G. King, I.M.S., F.R.S., C.I.E.
May, 1898 .. .. .	Maj.-Genl. C. Strahan, R.E.
May, 1899 .. .. .	A. Pedler, F.R.S.
Mar., 1906 .. .. .	The Hon. Mr. Justice Mookerjee.
June, 1910 .. .. .	T. H. D. La Touche, F.G.S.
Mar., 1911 .. .. .	Major A. T. Gage, I.M.S.

### 3. *Honorary Secretaries.*

Sep., 1866 .. .. .	H. F. Blanford, also Treasurer.
Mar., 1867 .. .. .	T. Oldham, LL.D., also Treasurer.
April, 1867 .. .. .	H. B. Medlicott, also Treasurer.
Nov., 1867 .. .. .	H. F. Blanford.
April, 1874 .. .. .	J. Geoghegan, C.S.
May, 1875 .. .. .	T. R. Lewis, M.B.
Mar., 1876 .. .. .	Capt. J. Waterhouse.
June, 1876 .. .. .	H. B. Medlicott.
do. .. .. .	W. T. Blanford.
Oct., 1876 .. .. .	H. B. Medlicott.
May, 1887 .. .. .	Lt.-Col. J. Waterhouse.
May, 1889 .. .. .	Dr. J. Scully.
May, 1890 .. .. .	Dr. W. King.
May, 1895 .. .. .	C. Little.
May, 1898 .. .. .	G. W. Küchler.
May, 1900 .. .. .	W. Banks Gwyther, F.R.I.B.A.

*Note.*—The post of Honorary Secretary was abolished in 1901.

### 4. *Treasurers.*

Nov., 1867 .. .. .	V. H. Schalch.
April, 1868 .. .. .	W. S. Atkinson.
Aug., 1868 .. .. .	Dr. S. B. Partridge.
April, 1871 .. .. .	T. Oldham, LL.D.
May, 1872 .. .. .	Col. H. Hyde, R.E.
May, 1873 .. .. .	H. B. Medlicott.
Jan., 1874 .. .. .	Col. J. E. Gastrell.
May, 1875 .. .. .	Dr. S. B. Partridge.
Mar., 1876 .. .. .	H. Blochmann.
June, 1878 .. .. .	W. T. Blanford.
Aug., 1878 .. .. .	T. S. Isaac.
Nov., 1878 .. .. .	Capt. J. Waterhouse.
Aug., 1879 .. .. .	J. Westland.
Sept., 1879 .. .. .	C. R. Kiermander.
Nov., 1879 .. .. .	J. Westland.
May, 1880 .. .. .	H. F. Clogstoun.
Jan., 1881 .. .. .	D. Barbour.
May, 1881 .. .. .	A. P. MacDonnell.
Sep., 1881 .. .. .	R. Logan.
Nov., 1881 .. .. .	S. Jacob.
Jan., 1882 .. .. .	A. P. MacDonnell.
April, 1882 .. .. .	J. A. Cook.
May, 1882 .. .. .	S. Jacob.
June, 1882 .. .. .	E. T. Atkinson.
July, 1882 .. .. .	J. A. Cook.
Aug., 1882 .. .. .	S. Jacob.

Date of appointment.	
Dec., 1882 .. .. .	A. C. Tupp.
Aug., 1883 .. .. .	E. W. Kellner.
Oct., 1883 .. .. .	A. C. Tupp.
Nov., 1883 .. .. .	J. E. Cooke.
	E. J. Sinkinson.
Jan., 1884 .. .. .	E. T. Atkinson.
May, 1891 .. .. .	A. Pedler.
June, 1894 .. .. .	Dr. A. F. R. Hoernle.
May, 1895 .. .. .	Rai Omrito Nath Mitter, Bahadur.
Mar., 1909 .. .. .	Col. G. M. Porter, R.E.
Sep., 1909 .. .. .	R. P. Ashton.
June, 1910 .. .. .	Lt.-Col. D. C. Phillott, I.A. (retired May, 1912).

APPENDIX V.

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LIST OF MEMBERS OF THE STAFF  
PAST AND PRESENT.

## MEMBERS OF THE STAFF, January, 1914.

(Gazetted appointments only.)

### ZOOLOGICAL AND ANTHROPOLOGICAL SECTION.

#### *Superintendent.*

N. ANNANDALE, B.A. (Oxon), D.Sc. (Edin.), F.A.S.B., C.M.Z.S.,  
F.L.S. (Appointed, 1907.)

#### *Senior Assistant Superintendent.*

S. W. KEMP, B.A. (T.C.D.), F.A.S.B. (Appointed 1910.)

#### *Assistant Superintendents.*

B. L. CHAUDHURI, B.A. (Calc.), D.Sc. (Edin.), F.R.S.E., F.L.S.  
(Appointed, 1909.)

F. H. GRAVELY, M.Sc. (Manch.). (Appointed, 1910.)

#### *Honorary Assistants.*

Major R. E. Lloyd, I.M.S., Professor of Biology, Calcutta Medi-  
cal College; formerly Surgeon-  
M.B., D.Sc. Naturalist to the Marine Survey of  
India.

Capt. F. H. Stewart, I.M.S., Formerly Surgeon-Naturalist to the  
M.A., M.B., D.Sc. Marine Survey of India.

Capt. R. B. Seymour Sewell, Surgeon-Naturalist to the Marine  
I.M.S., M.R.C.S., L.R.C.P. Survey of India.

T. Southwell, A.R.C.S., Deputy Director of Fisheries (Bengal).  
F.Z.S., F.L.S.

Ekendranath Ghosh, M.Sc. Asst. Professor of Biology, Calcutta  
Medical College.

#### *Honorary Correspondents.*

J. Coggin Brown, M.Sc. Geological Survey of India.  
(Dunelm.), F.G.S., F.C.S.,  
Assoc. M.I.M.E.

J. Hornell, F.L.S. .. Superintendent of Pearl and Chank  
Fisheries, Tuticorin.

C. G. Rogers .. Conservator of Forests, Pegu Circle,  
Burma.

S. P. Agharkar, M.A. (Bom.) Rashbihari Ghosh Professor of  
Botany, Calcutta University.

L. W. Middelton .. Tea Planter, Sonapur, Assam.

G. Mackrell .. Tea Planter, Sylhet, Assam.

INDUSTRIAL SECTION.

*Officer in Charge—Director of the Botanical Survey of India.*  
(ex officio.)

C. C. Calder, B.Sc., F.L.S., Officiating.

*Economic Botanist to the Botanical Survey of India.*

H. G. Carter, M.B., Ch.B.

*On special duty.*

D. Hooper, F.C.S., F.L.S., F.A.S.B. (Formerly Economic Botanist.)

ARCHAEOLOGICAL SECTION.

*Officer in Charge—Director General of Archaeology in India.*  
(ex officio.)

J. H. Marshall, C.I.E., M.A., Litt.D., F.S.A.

*Deputy Officer in Charge.*

D. B. Spooner, Ph.D.

*Assistant to Deputy Officer in Charge.*

R. D. Banerji, M.A.

ART SECTION.

*Officer in Charge—Principal of the Calcutta School of Art.*  
(ex officio.)

Percy Brown, A.R.C.A.

GEOLOGICAL SECTION.

*Officer in Charge—Director of the Geological Survey of India.*  
(ex officio.)

H. H. Hayden, C.I.E., B.A., B.A.I., Hon. D.Sc., F.G.S., F.A.S.B.

*Curator.*

J. Coggin Brown, M.Sc. (Dunelm.), F.G.S., F.C.S., Assoc. M.I.M.E.

PAST MEMBERS OF THE STAFF.

(Gazetted appointments only.)

ZOOLOGICAL AND ANTHROPOLOGICAL SECTION.

(Formerly Natural History Section.)

*Superintendents.*

(At first Curator.)

Sep., 1866	.. Dr. John Anderson (Curator).
Jan., 1868	.. Dr. J. A. P. Colles (Offg.).
April, 1868	.. { Dr. F. Stoliczka } (Joint Offg. Curators). .. { Mr. V. Ball }
Nov., 1868	.. Dr. John Anderson.
Oct., 1870	.. J. Wood-Mason (Offg.).
Mar., 1871	.. Dr. John Anderson (re-appointed).
July, 1873	.. J. Wood-Mason (Offg.).
June, 1876	.. Dr. John Anderson.
Mar., 1877	.. Dr. John Anderson (Supdt., title changed).
Dec., 1879	.. J. Wood-Mason (Offg.).
Nov., 1880	.. Dr. John Anderson.
Nov., 1881	.. J. Wood-Mason (Offg.).
April, 1882	.. Dr. John Anderson.
Mar., 1884	.. J. Wood-Mason (Offg.).
Dec., 1884	.. Dr. J. Anderson.
Feb., 1885	.. J. Wood-Mason (Offg.).
Mar., 1886	.. J. Wood-Mason (sub. <i>pro tem.</i> Supdt.).
Mar., 1887	.. J. Wood-Mason (Superintendent).
April, 1893	.. Surgn.-Capt. A. W. Alcock, I.M.S. (Offg.).
May, 1893	.. Surgn.-Capt. A. W. Alcock, I.M.S. (Superintendent).
June, 1895	.. Surgn.-Capt. A. R. S. Anderson, I.M.S. (Offg.).
Jan., 1896	.. Surgn.-Capt. A. W. Alcock, I.M.S.
Oct., 1896	.. Surgn.-Capt. A. R. S. Anderson, I.M.S. (Offg.).
Oct., 1897	.. Surgn.-Maj. A. W. Alcock, I.M.S.
April, 1902	.. Capt. A. F. McArdle, I.M.S. (Offg.).
Nov., 1902	.. H. H. Hayden (Offg.).
Feb., 1903	.. E. P. Stebbing (Offg.).
Nov., 1903	.. Maj. Alcock, I.M.S.
June, 1906	.. Dr. N. Annandale (Offg.).
Aug., 1907	.. Capt. R. E. Lloyd, I.M.S. (Offg.).
Nov., 1907	.. Dr. N. Annandale (Superintendent).
Sep., 1909	.. G. H. Tipper (Offg.).
June-Nov., 1912	.. S. W. Kemp (Offg.).
Mar.-April, 1913	.. S. W. Kemp (Offg.).

*Deputy Superintendents.**(At first Assistant Curator: post abolished in 1908.)*

Oct., 1869	..	J. Wood-Mason (Asst. Curator).
Mar., 1870	..	G. Nevill (Offg.).
Oct., 1870	..	J. Wood-Mason.
Mar., 1877	..	J. Wood-Mason (title changed to Depy. Supdt.).
Mar., 1881	..	G. Nevill (Offg.).
Dec., 1881	..	J. Wood-Mason.
Nov., 1887	..	W. L. Sclater, <i>vice</i> J. Wood-Mason, Supdt.
Dec., 1891	..	E. C. Cotes (Offg.).
May, 1892	..	E. C. Cotes, <i>vice</i> W. L. Sclater, resigned.
April, 1895	..	F. Finn, <i>vice</i> E. C. Cotes.
Aug., 1897	..	Dr. T. Bloch (Offg.).
Nov., 1897	..	F. Finn.
July, 1904	..	Dr. N. Annandale, <i>vice</i> F. Finn, resigned.

*First Assistants to Superintendent.**(Post abolished in 1909.)*

Oct., 1879	..	G. Nevill.
Dec., 1879	..	O. L. Fraser (Offg.).
Mar., 1881	..	O. L. Fraser (Offg.).
Oct., 1881	..	G. Nevill.
April, 1884	..	E. C. Cotes.
Dec., 1891	..	R. L. Chapman (Offg.).
Mar., 1892	..	E. C. Cotes.
Oct., 1894	..	F. Finn.
Nov., 1896	..	Dr. T. Bloch.

## INDUSTRIAL SECTION.

*(Formerly Economic and Art Section.)**(Reporters on Economic Products to the Government of India.)*

April, 1887	..	Dr. G. Watt.
Sep., 1891	..	E. Thurston (Offg.).
Nov., 1893	..	Dr. G. Watt.
Sep., 1896	..	D. Hooper (Offg.).
Dec., 1896	..	Dr. G. Watt.
May, 1898	..	D. Hooper (Offg.).
Jan., 1899	..	Dr. G. Watt.
April, 1901	..	I. H. Burkill (Offg.).
Feb., 1902	..	Dr. G. Watt.
Mar., 1902	..	D. Hooper (Offg.).
April, 1902	..	I. H. Burkill (Offg.).
Oct., 1902	..	D. Hooper (Offg.).
Jan., 1903	..	I. H. Burkill (Offg.).
Dec., 1903	..	D. Hooper (Offg.).

Mar., 1904	..	I. H. Burkill (Offg.).
Jan., 1905	..	D. Hooper (Offg.).
Oct., 1905	..	I. H. Burkill (Offg.).
April, 1910	..	D. Hooper (Offg.).
Oct., 1910	..	I. H. Burkill (Offg.).
June, 1906	..	I. H. Burkill.

*Officer in Charge.*

Feb., 1912	..	The Director of the Botanical Survey of India became <i>ex officio</i> officer in charge).
Feb., 1912	..	Major A. T. Gage (Director of the Botanical Survey of India).

*Curators.*

May, 1897	..	D. Hooper.
May, 1898	..	R. Abbey-Yates (Offg.).
Jan., 1899	..	D. Hooper.
Mar., 1899	..	R. Abbey-Yates (Offg.).
Sep., 1899	..	D. Hooper.
Aug., 1902	..	C. B. Bhaduri (Offg.).
Oct., 1902	..	D. Hooper.
July, 1903	..	J. Weinberg (Offg.).
Aug., 1903	..	O. Reinherz (Offg.).
Sep., 1903	..	D. Hooper.
April, 1909	..	B. B. Dutt (Offg.).
Oct., 1909	..	D. Hooper.
April, 1910	..	S. C. Mukharji, M.A. (Offg.).
Oct., 1910	..	D. Hooper.
Feb., 1912	..	I. H. Burkill (Economic Botanist in executive charge).
Feb., 1912	..	D. Hooper (Offg. Econ. Bot.).
Mar., 1912	..	I. H. Burkill (Econ. Bot.).
April, 1912	..	D. Hooper (Offg.).
Oct., 1912	..	D. Hooper (Economic Botanist, Botanical Survey of India).

*Assistant Curators.*

April, 1887	..	T. N. Mukharji.
Oct., 1888	..	R. L. Chapman (Offg.).
Dec. 1888	..	T. N. Mukharji.
Jan., 1896	..	R. Abbey-Yates (Offg.).

## ARCHAEOLOGICAL SECTION.

*(Separated from the Natural History Section in 1911).**Officer in Charge—Director General of Archaeology in India.*

April, 1911	..	Dr. J. Ph. Vogel (Offg.).
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*Deputy Officers in charge.*

April, 1911	..	R. D. Banerji.
June, 1911	..	Pandit Daya Ram Sahni (Offg.).
July, 1911	..	R. D. Banerji.
June, 1912	..	R. D. Banerji.

ART SECTION.

*(Constituted in 1911.)*

*Officers in Charge.*

*(Superintendents of the Calcutta School of Art, ex officio.)*

April, 1911	..	Percy Brown.
Mar., 1912	..	A. N. Tagore (Offg.).
May, 1912	..	H. N. Bose (Offg.).
Jan., 1913	..	A. N. Tagore (Offg.).

GEOLOGICAL SECTION.

*(This section has formed an integral part of the Indian Museum since 1911 only.)*

*Officer in Charge—Director of the Geological Survey of India.*

Dec., 1910	..	H. H. Hayden.
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*Curators.*

Aug., 1910	..	G. H. Tipper.
Oct., 1911	..	J. Coggin Brown.
Nov., 1911	..	H. S. Bion.
June, 1912	..	G. de P. Cotter.
Nov., 1912	..	J. Coggin Brown.

APPENDIX VI.

PUBLICATIONS OF THE TRUSTEES.

## PUBLICATIONS OF THE TRUSTEES.

### (a) GENERAL.

- Centenary of the Indian Museum, 1814-1914. (The History of the Indian Museum (Chapter I, this volume) and Catalogue of the Centenary Exhibition) (1914).  
মিউজিয়ামের পরিচয় পত্র। (1914) (Bengali Guide-Book to the Indian Museum).

### (b) ARCHAEOLOGICAL.

- Catalogue of the Archaeological Collections in the Indian Museum, Parts I (*out of print*) and II (1883). By J. Anderson, M.D., F.R.S., etc.  
Catalogue of Coins of the Indian Museum, Parts I to IV (1894-96). By C. J. Rodgers, M.R.A.S., M.N.S.  
Catalogue of the Coins in the Indian Museum, Calcutta, including the Cabinet of the Asiatic Society of Bengal. Vol. I (1906). By Vincent A. Smith, M.A., F.R.N.S., M.R.A.S., I.C.S., Retd. Vols. II and III (1907-8). By H. Nelson Wright, I.C.S., F.R.N.S., M.R.A.S.

### (c) ANTHROPOLOGICAL.

- <sup>1</sup>Craniological Data from the Indian Museum, Calcutta, 1909. Ethnographic Survey of India. By Rai Bahadur B. A. Gupté, B.A.

### (d) ZOOLOGICAL.

- Account of the Deep-Sea Brachyura collected by the R.I.M.S. 'Investigator', 1899. By A. Alcock, M.B., C.M.Z.S.  
Account of the Deep-Sea Madreporaria collected by the R.I.M.S. 'Investigator', 1898. By A. Alcock, M.B., C.M.Z.S.  
Account of the Triaxon (Hexactinellid) sponges collected by the R.I.M.S. 'Investigator', 1902. By F. E. Schulze, Ph.D., M.D.  
Account of the Alcyonarians collected by the R.I.M.S. 'Investigator', Part I, 1906. By J. Arthur Thomson, M.A., and W. D. Anderson, M.A., B.Sc.  
Account of the Alcyonarians collected by the R.I.M.S. 'Investigator', Part II, 1909. By J. Arthur Thomson, M.A., and J. J. Simpson, M.A., B.Sc.  
Aids to the Identification of Rats connected with Plague in India, 1st and 2nd editions, 1907. By W. C. Hossack, M.D.  
Annotated List of the Asiatic Beetles in the Indian Museum. Part I, Family Carabidae, Subfamily Cicindelinae, 1909. By N. Annandale, D.Sc., and W. Horn.

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<sup>1</sup> These illustrations, which are now incorporated with the Memoirs of the Indian Museum, were formerly issued through the Museum by the Directors of the Royal Indian Marine.

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- No. II.—An account of the Internal Anatomy of *Bathynomus giganteus*. By R. E. Lloyd, M.B., B.Sc., Capt., I.M.S.
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- No. IV.—A Gephyrean Worm hitherto undescribed, the type of a new order. By F. H. Stewart, M.A., D.Sc., M.B., Capt., I.M.S.

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- No. III.—Indian Trypaneids (Fruit-Flies) in the collection of the Indian Museum, Calcutta. By M. Bezzi.
- No. IV.—An account of the Oriental Passalidae (Coleoptera) based chiefly on the collection in the Indian Museum. By F. H. Gravely, M.Sc.

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<sup>1</sup> These are now incorporated with the publications of the Agricultural Department of the Government of India.

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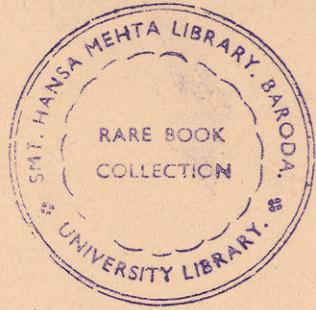
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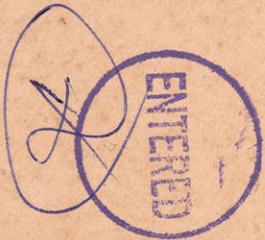
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