

in perpetual watering. There is of course a fort, and equally of course a 'plein.' The cemetery is significantly full. Almost all the tombs are kept whitewashed, and as many of them are curious chapel-like erections with flying buttresses, the effect at a distance is something between an ice palace and a clothes-drying ground. The houses of the Dutch residents, shadowed in peepul or galela trees, stand back a little distance from the road, long, low, and cool, with thick white posts at their entrance gates. A long avenue of magnificent overarching trees leads eastwards from the pier, adown which the Governor may be seen driving any afternoon in a four-in-hand, with sky-blue reins. It is lighted by means of lamps hung midway between the trees, for the Hollander, even although gas may be unattainable, considers civilisation incomplete without these adjuncts. Then too there is the club, with its zinc-topped tables set out *café*-fashion beneath the trees. It is called the 'Harmonie,' as is every Dutch club in Malaysia, and within all is dark and deserted and cool during the mid-day heat. The servants are curled up asleep behind the bar or in the corners of the rooms, and would stare in dumb astonishment at the apparition of a European; for the early business of the day over, and the *rijst tafel*, or lunch, despatched, the white residents get into their *pyjamas* and take a siesta till three or four o'clock. A couple of hours or so are then devoted to business, and towards sunset the male portion of the population meet at the 'Harmonie' to chat and drink *pijtes*. Billiards is the most violent exercise taken; cricket, bowls, and lawn-tennis are unknown" (vol. ii. p. 156).

Among the pleasant reminiscences of the travellers about their travels in the north of Celebes will doubtless be those of their visits to the Tondano Lake with its pretty waterfall; to Talisse Island, where at "Wallace Bay" the habits of the maleo (*Megacephalon maleo*) were observed, and a good store of their eggs and bodies were collected; and to Kema, where a great babiroussa hunt was held.

The name Moluccas, at one time restricted to the little chain of volcanic islets lying off the western coast of Gilolo, of which Ternate is the chief, now includes all the islands between Celebes and the Papuan group. As regards magnificence of scenery, Ternate is perhaps the finest harbour in the Dutch Indies. The Resident, Mr. Morris, kept a large aviary of rare birds, amongst which the gems were two superb specimens—both full-plumaged males—of the twelve-wired bird of paradise. These exquisite creatures were fed on the fruit of the pandanus, with an occasional cockroach as a *bonne bouche*. "The feelings of admiration with which I watched these birds, which are among the most beautiful of all living beings, I need not," says the writer, "attempt to describe." The concluding chapters of this volume bring us to New Guinea, the very home of paradise birds. The portion of this great island visited was the western half, that claimed by the Dutch; which, from the variation in species from island to island, and the peculiarity of these birds of paradise, is perhaps the most interesting to a naturalist. A safe anchorage was secured at the extreme east end of the Island of Batanta, in "Marchesa Bay." The first ramble on shore was unsuccessful. Scrambling over the mangroves' slimy roots, and struggling up to their knees in liquid ooze, they found that the land was hard to reach; the shore rose steeply from the sea; and the dripping wet jungle made progress all the more difficult. The party returned disappointed to the yacht, to find that some of the hunters were already back, equally empty-handed. Presently, however, "Usman and his *compagnon de chasse* appeared triumphant, carefully carrying a prize that we had hoped, but hardly expected, to obtain—the curious and exquisitely lovely little *Diphylodes wilsoni*, smallest of all the birds of paradise. Behind the head, a ruff of canary-coloured feathers stands

erect above the scarlet back and wings. The breast is covered by a shield of glossy green plumes, which towards the throat are marked with metallic green, and violet spots of extraordinary brilliancy. The two centre feathers of the tail, prolonged for five or six inches beyond the others, cross one another, and are curved into a complete circle of bright steely purple. But the chief peculiarity of the bird is the head, which is bald from the vertex backwards, the bare skin being of the brightest imaginable cobalt blue (the figure in Gould's 'Birds of New Guinea' gives no notion of the extreme brilliancy of the colouring of this part). The *bizarre* effect thus produced is still further heightened by two fine lines of feathers which, running lengthways and from side to side, form a dark cross upon the brilliant azure background. I could hardly make up my mind to skin this little ornithological rainbow, whose exquisite plumage it seemed almost a sacrilege to disarrange, but the climate of New Guinea allows of but little delay in this operation, and I set about my task at once. The bird had been scarcely injured by the shot, and I succeeded in making a perfect skin of it" (vol. ii. p. 254).

Dorei Bay, well known as the settlement of the Dutch missionaries, and the residence of Mr. Wallace in 1858, was the next station. Some few miles south of Dorei Bay is Andai, a small village nestling at the foot of the Arfak Mountains. The dense forests that clothe these mountains are the favoured haunts of such magnificent paradise birds as the great velvet-black *Epimachus*, with its tail a yard in length; the *Astrapia*, in its uniform of dark violet, faced with golden-green and copper; and the orange-coloured *Xanthomelus*. There D'Alberty had shot his *Drepanornis*, with its two fan-like tufts, one flame-cloured, the other tipped with metallic violet; and there Beccari braved the climate and made such splendid collections. The summits of the mountains were less than ten miles from where the yacht was, and yet this land of promise could not be entered. Our readers must seek the reason why in the narrative: here we can only add that the homeward voyage had begun.

In so short a sketch it is simply impossible to do more than give the reader an idea of what he may expect to find within the pages of these volumes. Students of geography, ethnology, and, above all, zoology, will discover therein a great deal that is of interest, and also much that is novel; and every reader will be pleased by the writer's freshness of style and keen enjoyment of Nature. To enjoy travelling, especially in the tropics, one must be of an equable, not to say of a cheerful, frame of mind. We close the perusal of Dr. Guillemand's delightful volumes with the impression that the company on board the yacht *Marchesa* was certainly of this kind.

In several appendixes to Volume II. there are lists of the birds met with in the various regions visited, and of the shells. There is also a list of the *Rhopalocera* collected in the Eastern Archipelago, and of the languages of Sulu, of Waigiou, and of Jobi Island. Tables are given of the total export in 1884 of the chief articles of produce in the Netherlands India, North and South Celebes, Amboyna, and Ternate.

THE SMITHSONIAN INSTITUTION

THE annual Report of Prof. Baird, Secretary of the Smithsonian Institution, has just been issued. It relates to the period from July 1, 1885, to the close of June 1886, and includes, in addition to the account of the operations of the Institution itself, a summary of the work done by the branches of the public service placed by Congress under its charge, namely, the National Museum and the Bureau of Ethnology. To this is added a sketch of the work of the U.S. Fish Commission, which is also under Prof. Baird's charge, and of that of the U.S. Geological Survey, which, although independent of the Smithsonian Institution, is in close relation with it by

reason of its field of exploration, and especially through the valuable accessions of material furnished by it to the National Museum.

With regard to the Smithsonian Institution itself there is not much to be said, except that its usual operations were steadily carried on during the year, with a marked increase in routine work. In the way of explorations there was less activity in the year 1886 than there has been in some previous years, but important collections of objects of scientific interest were received from various parts of America and Asia. Of the different classes of works issued by the Institution, the most valuable are the quarto "Contributions to Knowledge." A work in this series, entitled "Researches upon the Venoms of Poisonous Serpents," by Dr. S. Weir Mitchell and Dr. E. T. Reichert, was printed during the past year, and will soon be ready for distribution. Among the "Smithsonian Miscellaneous Collections" of 1885-86 may be mentioned "A Catalogue of Scientific and Technical Periodicals (1665 to 1882), together with Chronological Tables, and a Check-List," "The Scientific Writings of Joseph Henry" (not yet published, but entirely stereotyped), "Index to the Literature of Uranium, 1789-1885" (one of a series of bibliographies especially directed to the indexing of chemical literature), and "Accounts" of the progress of astronomy, chemistry, physics, geography, anthropology, and other sciences in 1885. The Smithsonian Institution has also issued the Bulletins and Reports of the Proceedings of the National Museum, and valuable publications of the Bureau of Ethnology.

It is well known that in bequeathing to the United States the fund with which the Smithsonian Institution was established, Mr. Smithson stipulated that his bequest should be devoted to "the increase and diffusion of knowledge among men." The Institution has always complied with this condition in a most liberal spirit, and now its system of "free exchanges" has reached vast proportions. For the year ended June 30, 1886, the receipts for foreign transmission were 94,093 packages, weighing 195,404 pounds. The transmission filled 764 boxes, having an aggregate bulk of 5208 cubic feet. For domestic exchanges the number of parcels received and distributed during the fiscal year was 14,496, of which 2533 parcels (or about one-sixth) were received for the library of the Institution. Twenty years ago the Institution was made by law the agent of the United States Government for conducting the international exchanges of public official documents between it and foreign Governments, and during the past year 29 boxes, containing 56,229 packages, were received for Government exchanges, and 114 boxes were sent abroad. The exchange system of the Institution is found to be of so much public service that Congress supports it by an annual grant of 10,000 dollars.

Perhaps the most interesting part of the report is that which relates to the National Museum. It is five years since the work of moving into the new Museum building was begun. Two years ago the Director reported that the packing-boxes, several thousand in number, containing the accumulations of many previous years, had for the most part been unpacked, and that the entire floor space of the building would soon be occupied by exhibition collections. During the past year this result was attained, and (with the exception of one corner of one of the central halls still occupied by one or two collections received at the close of the New Orleans Exhibition, and which have not been opened on account of delay in preparation of cases for their reception) the entire floor space of about 100,000 square feet is open to the public, and the collections arranged in accordance with the provisional plan of installation. The work of mounting and labelling is still in progress, and each month shows marked advances.

The development of the Museum during the past year was unexpectedly great. About fifteen hundred separate lots of specimens were received. A certain proportion of

these were obtained from Government expeditions and surveys, and material of perhaps equal value through exchange, but by far the largest part of the increase, both in quantity and value, was in the form of gifts.

A census of the collections made in 1884 showed an estimated total of 1,471,000 "lots" of specimens in the Museum. The number at the present time is 2,420,934. The total number of "lots" of specimens received during the year and separately entered on the record of accessions was 1496, including 6890 separate packages. The construction of cases was constantly in progress, and during the year there were received and fitted for use and placed in the exhibition halls 84 cases, chiefly of the standard patterns. Forty-five storage cases were made for use in the laboratories, 5400 wooden drawers and trays, and 54,000 pasteboard trays. There were also purchased 3504 glass jars, for storage and exhibition of alcoholic specimens, and 24 barrels (1115 gallons) of 98 per cent. alcohol.

The distribution of duplicates was much the same as in previous years. About twenty-four thousand specimens were sent out to 118 institutions and societies: those to institutions in the United States are generally gifts, though many were sent in the way of exchange. For all foreign sendings, equivalents in the way of exchange were received or promised.

Many interesting details are given as to the various Departments in which the collections of the Museum are grouped. In the Department of Arts and Industries a prominent place is held by the section of textiles, which includes a very full series of the animal and vegetable fibres used throughout the world, together with good representations of devices for spinning and weaving, and of the various products of the textile industries. This collection is nearly all permanently installed, provided with printed labels, and illustrated by diagrams. For lack of room, fully half of the material ready for exhibition has been stored away, and the cases prepared for its display are in boxes in the Armoury building. The space assigned to the exhibition series is still so crowded that the objects cannot be satisfactorily examined. To the collection of food substances, in the same Department, is assigned a large quantity of unsorted material. The few cases now on exhibition contain the foods of the North American Indians, of Japan and China, and some of the more curious and unusual articles of diet. There are also two cases of educational importance, which exhibit graphically the composition of the human body and its daily expenditure of tissues, and the manner in which this is compensated for by daily rations of food. This collection is modelled after the famous collection of a similar character prepared by Dr. Lankester and others for the Bethnal Green Museum in London. It is, however, based upon an entirely new series of analyses, and upon a revised plan prepared by Prof. W. O. Atwater, of the Wesleyan University and corresponds to the latest views in physiological chemistry. The collections in chemical technology already have a good nucleus, and the increase during the year in the collections of materia medica was greater than during any previous year except the first. The fisheries collection was opened to the public in May 1884, and since that time there has been constant improvement in the condition of the material exhibited. Some gaps in the series of illustrations of foreign fisheries have been filled by collections received from the Governments of Siam and Japan, and by the extensive collections from Great Britain, Sweden, Spain, France, Holland, and Greece, acquired at the close of the London Exhibition.

Of the collection of historic relics in the Department of Arts and Industries, we learn that it includes several hundred objects of national interest connected with the history of soldiers, statesmen, and important events. Closely related to the historical collection is the series illustrating the history of steam transportation, under the

charge of Mr. J. E. Watkins, of Camden, N.J. The "John Bull" engine, imported from England in 1831, the model after which all subsequent American engines have been constructed, has been given to the Museum by the Pennsylvania Railroad Company, and placed on exhibition; and adjoining this is a case in which there are already assembled about forty objects illustrating the beginnings of the American railroad system. The collection of scientific instruments owes its interest at present chiefly to the historical associations of most of the apparatus displayed, including, as it does, instruments used by Priestley, Henry, and Hare. The original telegraphic instrument of Morse and Vail is also here shown. The collections of musical instruments, modern pottery, and porcelain, lacquer, and the process of engraving are partially displayed, and when cases and floor space shall become available, will soon develop into important features.

The Department of Ethnology, although one of the youngest, is one of the largest in the Museum; and its growth during the last year was very great. Certain large classes of objects, such as weapons of war and the chase, implements of agriculture, and other primitive industries, have been carefully grouped. In addition to these great series of objects, classified according to function, other groups of objects have been arranged in accordance with another idea of classification, which is deemed of equal importance, namely, that of race. The Eskimo collection, for instance, has been arranged in table cases in one of the exhibition halls, in accordance with the ethnic idea, although, in the minor details of classification, function and form, as well as geographical distribution, have been followed. A preliminary study of the collection of basketry has been completed. A paper upon the baskets of uncivilised peoples, with numerous illustrations, was published in the Museum Report for 1884, and a representative series placed on exhibition with provisional labels. The throwing-sticks and sinew back-bows have been the subject of papers, and are now on exhibition. The curator has in progress investigations upon several groups of objects, notably the history and technology of archery; upon transportation as effected by man without the aid of domestic animals or mechanism; upon the peculiar industries of several handicrafts; upon the Hoopah Indians of California. The underlying ideas in these investigations, a first instalment of which was published in the last Report of the Museum, are (1) that the methods of strict classification and nomenclature already applied in the other natural sciences are equally applicable to anthropology; (2) that a trustworthy and minute study of modern savage and barbarous *technique* is absolutely requisite to the archaeologist and technologist in reconstructing the history of civilisation.

The collections in the Department of American Aboriginal Pottery have continued to increase with astonishing rapidity, and the extensive accessions which have been received through the Bureau of Ethnology, and from other sources, have been of the greatest scientific importance and popular interest. One of the four large central halls of the Museum is devoted entirely to this subject, and the removal of the collections of South American aboriginal pottery and of the extensive collections from the mounds which have for many years been accumulating in the Archaeological Hall of the Smithsonian building, have filled it up to such an extent that it is difficult to find room for the new material as it comes in. During the year a portion of the hall was thrown open to the public. The exhibition case surrounding the walls of this room is probably the largest in existence in any museum, being 260 feet in length, 4 feet 9 inches in depth, and, being double throughout, its entire length is virtually 520 feet. Double the space now allotted to this Department is necessary for its proper display, and the value of the material here concentrated is practically inestimable; since even the modern

tribes, who are still making pottery similar in its general character to that which is here preserved, have deteriorated to such a degree in their artistic capacity or skill that their products are not an exponent of their original artistic capabilities. So exhaustive is this collection that it is impossible that any thorough work can be done upon the American aboriginal pottery which shall not in great part be based upon it.

The total number of accessions in the Department of Antiquities was 2751; and all excepting eighty-four were of sufficient importance to be added to the exhibition and study series, which now include over 40,000 specimens. Dr. Rau, the Curator of this Department, is engaged upon the preparation of an illustrated work on North American prehistoric objects, which is designed to serve as a guide for visitors to the Department, and as an explanation of the terminology of North American archaeology. This will bear the title, "A Classification of the North American Prehistoric Relics in the United States National Museum." This book will be fully illustrated, and, it is hoped, will be published in the ensuing year.

The most important accessions to the Department of Mammals, as in previous years, were in the shape of single specimens sent from zoological gardens and menageries, which have shown a great deal of liberality to the Museum in this respect.

The growth of the Department of Birds during the year was very satisfactory, the number of specimens added to the collection being 4147. The largest single accession was the collection made by the U.S. Fish Commission steamer *Albatross* in the Bahamas, of 1000 specimens and about 75 species, of which 5 were new to science. Another valuable collection, 243 specimens, 81 species, 1 new to the fauna of North America, was obtained in Alaska by Mr. Charles H. Townsend, while on a mission for the Fish Commission. Mr. Henry Seebohm, of London, gave to the Museum 171 specimens, 63 species, chiefly from Siberia, and of great value to the collection. The number of specimens in the collection is now 55,945, 7000 of which have been set apart for the exhibition series.

Very much was accomplished during the year in the classification and arrangement of the collection of eggs and nests of birds. The total number of specimens added is 2556, in 253 lots, and there are now more than 44,000 specimens in the collection, of which 1491 are in the exhibition, and 31,124 in the reserve collection, the remainder having been set aside as duplicates.

The remaining Departments of which accounts are presented are those of Reptiles, Fishes, Mollusks, Entomology, Marine Invertebrates, Comparative Anatomy, Invertebrate Fossils, Fossil and Recent Plants, Minerals, Lithology and Physical Geology, and Metallurgy and Economic Geology. In dealing with the Department of Entomology, the author of the Report has to record a fine instance of the generosity and public spirit for which the best class of American citizens are famous. In October last, Dr. C. V. Riley formally presented to the Museum his private collection of North American insects, representing the fruits of his own labours in collecting and study for over twenty-five years. This collection contains over 115,000 pinned specimens, and much additional material unpinned and in alcohol. This generous gift to the Government had long been contemplated by Dr. Riley, who wishes to be, as far as possible, instrumental in forming a national collection of insects. In his letter of presentation he remarked:—"While the future of any institution dependent on Congressional support may not be so certain as that of one supported by endowment, I make this donation in the firm belief and full confidence that the National Museum is already so well established in public estimation that it must inevitably grow until it shall rival, and ultimately surpass, other institutions in this country, or the world, as a repository of natural history collections."

If there shall in the future result the concentration here at the national capital of the extensive entomological material which naturally comes here, and which in the past has been scattered among specialists in all parts of the country, so that in the future the student may find valuable material to further his work in any order, I shall feel amply rewarded for the action I have taken."

The Curators of all the Departments complain that in the new Museum building there is not nearly room enough for the display of the treasures placed under their care, and Prof. Baird presses upon the attention of the Board of Regents' the urgent necessity for "additional quarters." One of the arguments used by him may, perhaps, not be without effect on public opinion. Efforts are being made to secure that in 1892—the four hundredth anniversary of the discovery of America by Columbus—there shall be an exposition, presenting a complete illustration of the New World at that date, and of its progress in the arts and industries in the 400 years intervening. Prof. Baird points out that the collections of the National Museum for the most part tend towards such a display, and expresses his belief that if the new building for which he asks were erected it would be a very easy matter to organise and arrange it with this object in view, without unnecessary labour or great expense, and by the date mentioned, as the result of the current work of the Museum, without any spasmodic or unusual effort.

Of the Bureau of Ethnology we need only say that, during the fiscal year 1885-86, it continued its ethnologic researches among the North American Indians. Enthusiastic investigators carried on mound-explorations, explorations in ancient and modern stone villages, and general field studies. Much good office work was also done. This was, as usual, to a large extent the supplement to, and discussion of, the results obtained by exploration, and was executed by the same officers who had previously sought for materials and information in the field.

We have not space for further details, but probably we have said enough (as far as possible in the words of the Report itself) to indicate the very flourishing condition of the Smithsonian Institution and the establishments associated with it. The Institution is one of which Americans have good reason to be proud, and we cannot doubt that the claim for a new building, advanced by Prof. Baird on behalf of the National Museum, will be promptly and very carefully considered by Congress.

NOTES

PROF. BÉCLARD, Dean of the Medical School of Paris, died a few days ago of pneumonia. He was buried with great ceremony on the 12th inst. A large number of professors and students attended the funeral. His best work is on the thermic phenomena accompanying muscular contraction. He was a pleasant man, of fluent and happy eloquence, and a good writer. His place will probably be filled by Ch. Richet, the editor of the *Revue Scientifique*.

THE Academy of Vienna intends to have a special meeting for the celebration of the centenary of the death of Father Bosovich, the astronomer. A similar ceremony will take place at Ragusa, his native place.

WE have received a proof copy of the annual address to the Asiatic Society, Calcutta, delivered by Mr. E. T. Atkinson, the President, on the 2nd inst. It is an able and very interesting survey of the work done by the Society in the past year, and of the progress made outside the Society in the subjects to which the attention of its members is directed.

THE sixth annual meeting of the Sanitary Assurance Association was held at the offices, 5 Argyll Place, W., on Monday

last. Mr. Joseph Hadley, Secretary, read the annual Report, from which it appeared that the business of the Association during 1886 was much greater than in any previous year. The Report said that, of all the properties inspected, in only two cases of first inspection had the arrangements been such that the Council could certify the sanitary condition of the property without alteration. The Executive Council reported having held several meetings for the purpose of revising the Sanitary Registration of Buildings Bill of 1886, and a new Bill had been prepared for presentation to the House of Commons. In the new Bill, the principle of compulsory registration would be restricted to schools, colleges, hospitals, asylums, hotels, and lodging-houses. On the motion of Mr. Mark H. Judge, seconded by Mr. H. Rutherford, the following resolution was unanimously passed:—"That, as soon as the Sanitary Registration of Buildings Bill, 1887, is in the hands of members of the House of Commons, the President of the Local Government Board be asked to receive a deputation in support of the Bill."

ON Tuesday last the forty-first session of the General Medical Council was opened, and an address was delivered, as usual on such occasions, by the President, Dr. Acland, F.R.S. Starting with a reference to the Jubilee, he traced some of the changes which have taken place during the last fifty years in medicine and in the methods of medical education.

LORD RAYLEIGH will begin a course of six lectures on "Sound" on Saturday, February 26, at the Royal Institution.

IN the latest of his annual reports, President Eliot, of Harvard University, refers to the present position of science in the secondary schools of America. "A serious difficulty," he says, "in the way of getting science well taught in secondary schools has been the lack of teachers who knew anything of inductive reasoning and experimental methods. This he attributes in part to the fact that "good school methods of teaching the sciences have not yet been elaborated and demonstrated," and he urges that "it is the first duty of University departments of science to remove at least this obstacle to the introduction of science into schools."

WE have received the third part of the first volume of "The Proceedings of the Linnean Society of New South Wales," second series. It contains the papers read at the meetings held in July, August, and September 1886, and there are four plates. Among the contents are the fifth part of a "Catalogue of the described Coleoptera of Australia," by Mr. George Masters, an elaborate paper on the "Revision of Australian Lepidoptera," by Mr. E. Meyrick, and "Miscellanea Entomologica: No II. The Genus *Liparetrus*," by Mr. William Macleay.

IN the United States there is a very much larger number of female than of male teachers. According to the *Woman's Journal*, men are hardly ever employed in elementary schools in cities, save as principals or as teachers of some special branch. In the ten cities of Baltimore, Boston, Brooklyn, Chicago, Cincinnati, New Orleans, New York, Philadelphia, San Francisco, and St. Louis together, there are 12,719 public-school teachers, of whom 11,540 are women. The average percentage of male teachers in these cities is 9.

DR. M. TREUB, Director of the Botanical Gardens in Buitenzorg (Java), will be on furlough in Holland from the beginning of March till the end of November. In Dr. Treub's absence Dr. W. Burck will serve as Acting Director of the Gardens. Only the correspondence about the *Annales du Jardin Botanique de Buitenzorg*, together with private correspondence, is to be addressed to Dr. Treub himself (Voorschoten, near Leyden, Holland).