
AN ACCOUNT OF THE UNITED STATES NATIONAL
MUSEUM.

BY

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Among the powers conferred on Congress by the Constitution is authority "to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."² A result of this provision was the establishment of the Patent Office and the assembling in connection therewith of numerous models of inventions.

A building for the Patent Office was erected in 1812, but it was destroyed by fire in 1836, and with it the models and records it contained.

"In the Patent Office building and with it destroyed," writes Dr. Goode,³ "there was gathered a collection of models which was sometimes by courtesy called the 'American Museum of Arts,' and which afforded a precedent for the larger collection of models and natural products, which remained under the custody of the Commissioner of Patents until 1858, when it was transferred to the Smithsonian Institution and became a part of the present National Museum."

Though an assemblage of objects of more or less scientific interest was thus early formed as an indirect result of the policy pursued by the Government, the establishment of a national museum was earlier in the minds of many American statesmen, especially in connection with the educational institutes which it was thought the Government should found for the intellectual advancement of the people.

In the plan for a Federal university published in the Pennsylvania Gazette in 1788, and commonly credited to Madison,⁴ section 8 relates to natural history, and in connection therewith the remark is made:

To render instruction in these branches of science easy, it will be necessary to establish a museum, and also a garden, in which not only all the shrubs, etc., but all the forest trees of the United States should be cultivated.

¹ This article is reprinted from the recently published volume commemorating the close of the first fifty years of the existence of the Smithsonian Institution, entitled "The Smithsonian Institution, 1846-1896: The History of its First Half Century." Edited by George Brown Goode. City of Washington, 1897.—F. W. T.

² Article I, section 8.

³ Goode, G. Brown. "The Origin of the National Scientific and Educational Institutions of the United States," Annual Report of the American Historical Association for the year 1889, page 7.

⁴ See Goode, *ibid.*, pp. 66, 126, who believed Benjamin Rush of Pennsylvania to have been the author of the plan.

The plan for a "National Institution" put forth by Joel Barlow in 1806 includes mention of the natural history and art museums of France in the preamble, and in the plan itself (though ambiguously worded) are provisions for collections of minerals and philosophical instruments.

While these and other similar plans show that the formation of national collections of art and science was thought desirable by the fathers, they did not result directly in the establishment of museums under the Government. The first really scientific collection that came into the possession of the Government was probably, as Dr. Goode has remarked,¹ Smithson's cabinet of minerals, which was delivered, with the remainder of the Smithson estate, into the hands of Richard Rush, the agent of the United States, in 1838. The collection is described by a committee of the National Institute as follows:

Among the effects of the late Mr. Smithson is a cabinet which, so far as it has been examined, proves to consist of a choice and beautiful collection of minerals, comprising probably eight or ten thousand specimens. The specimens, though generally small, are extremely perfect, and constitute a very complete geological and mineralogical series, embracing the finest varieties of crystallization, rendered more valuable by accompanying figures and descriptions by Mr. Smithson, and in his own writing. The cabinet also contains a valuable suite of meteoric stones, which appear to be suites of most of the important meteorites which have fallen in Europe during several centuries.

Three years later, in 1841, there was formed in Washington, chiefly through the exertions of Hon. Joel R. Poinsett, of South Carolina, a scientific organization under the name of the National Institute with the avowed purpose of assembling scientific collections. Article 14 of the bill of incorporation reads thus:

The resident and corresponding members shall exert themselves to procure specimens of natural history, and so forth; and the said specimens shall be placed in the cabinet, under the superintendence of a board of curators, to be appointed by the directors. All such specimens, and so forth, unless deposited specially, shall remain in the cabinet; and, in case of the dissolution of the institution, shall become the property of the United States.²

The Institute was dissolved in 1861 and its collections deposited in the Smithsonian Institution. "By this society," remarks Dr. Goode, "the nucleus for a national museum was gathered in the Patent Office Building in Washington, and public opinion was educated to consider the establishment of such an institution worthy of the attention of the Government of the United States."³

The first collections of any magnitude which the National Institute

¹ Goode. "Genesis of the National Museum," Report United States National Museum, 1891, p. 273.

² Rhees, W. J. "The Smithsonian Institution: Documents Relative to its Origin," p. 240.

³ Report of the United States National Museum, 1893, page 3. For a full account of the National Institute and its relation to the Smithsonian Institution, by Dr. Goode, the reader is directed to "The Smithsonian Institution, 1846-1896, the History of its First Half Century," 1897, pp. 38-48.

took under its care were those of the United States Exploring Expedition which was sent out by the Navy Department, under Lieutenant Wilkes, in 1838. Earlier expeditions under the auspices of the Government had been organized, but they either made no collections or deposited such as they did make in private museums outside of Washington.

The first collections of the exploring expedition were received in Philadelphia in 1840 and were temporarily stored in a room belonging to the Philadelphia Museum. Poinsett induced the Secretary of the Navy, James K. Paulding, to forward these collections to Washington, and interested himself to secure from Congress an appropriation of \$5,000 to defray the cost of their transportation and subsequent arrangement.

In April, 1841, the collections were deposited in a portion of a room in the new Patent Office, designated for the purpose by the Secretary of State. Dr. Henry King, a geologist and mining expert and curator of the National Institute, was in direct charge. The compensation of the curator was paid from the appropriation of Congress already referred to.

With what rapidity collections accumulated under the charge of the National Institute may be learned from the report of the committee of the Institute dated January 1, 1842. This report recites that "the entire collection is deposited in the upper rooms of the Patent Office; it consists of:¹

Donations from foreign governments.

Donations from other institutions, foreign and domestic.

Donations from ministers and consuls abroad, and from officers of our Army and Navy.

Donations from individuals and from members of the Institution. The Iowa collection of mineralogical and geological specimens, made by R. D. Owen, esq., under the direction of the Treasury Department.

The collection of mineralogical and geological specimens which had been on deposit in the bureau of the Corps of Topographical Engineers.

The collection of portraits of distinguished Indians, and the collection of Indian curiosities which had been on deposit in the War Department.

The minerals, books, papers, and personal effects of the Smithsonian bequest.

The two shipments which have been received from the exploring squadron, consisting of minerals, specimens of natural history, works of art, implements of war, and curiosities.

The books, minerals, and works of art belonging to the late Columbian Institute.

The books, papers, and proceedings of the late American Historical Society.

Cabinets and specimens, deposited by members in trust, for public use.

These collections, according to the same report, comprised about 1,000 books and pamphlets, 50 maps and charts, 500 castings in plaster, medals and seals, 186 paintings, about 1,600 birds' skins, 160 skins of quadrupeds, 50 skins of fishes; 200 jars, 2 barrels, and 10 kegs of fishes, reptiles, etc., in spirits; 50,000 botanical specimens, 3,000 insects,

¹Goode. "Genesis of the United States National Museum," page 347.

several hundred thousand shells, 500 corallines, more than 2,000 crustaceans, 300 starfishes, etc., 100 sponges, 7,000 separate specimens of minerals, and 50 boxes of the minerals and geological specimens. Those engaged in caring for the collections at this time were the curator of the Institute, Dr. King, a taxidermist, a botanical assistant and two other assistants, a mechanic, and a laborer.

Thus was established what in reality was a national museum, containing collections belonging to the Government, sustained by an appropriation from Congress, and employing a curator and assistants. For a time prosperity seemed assured, but complications soon arose which proved disastrous in the highest degree not only to the Museum but to the National Institute itself.

The room in the Patent Office set apart for the collections by direction of the Secretary of State was needed for the display of models of inventions, and the Commissioner of Patents made strong protests against its occupancy by the Institute.

In August, 1842, Congress authorized the occupancy, "until other provisions be made by law," and also appropriated \$20,000 for the care and arrangement of the collections, but in addition ordered that the persons having the work in charge should be appointed by the Joint Committee on the Library.

Only a month earlier a charter had been granted to the Institute, in which all trusts previously held were confirmed. "The supporters of the Institute," writes Dr. Goode,¹ "were disposed to urge that this was applicable to the collections of the 'exploring squadron' at that time in the custody of the Institute. The question did not come up in a troublesome way at this time, for the Library Committee, at that time [not] unfriendly, simply confirmed the choice of curator made by the National Institute, and appointed Dr. Pickering to the position, Dr. Pickering being thenceforth subject to the Congressional committee, and only by courtesy acting for the National Institute."

A little later, in 1843, the Library Committee, having no longer any consideration for the Institute, without consulting its officers, appointed the Commissioner of Patents to have general charge of the Government collections, and Captain Wilkes, the head of the exploring expedition, to arrange and display them. Captain Wilkes proceeded with the work, pushing aside the collections of the Institute to make place for those of the Government, yet professing an interest in the welfare of the Institute and the security of its property. The drift of matters came to the attention of the officers of the Institute only by rumor, but Col. J. J. Abert initiated a correspondence with Captain Wilkes, inquiring whether he or his assistants would devote any time to the care of the collections of the Institute, and stating that if such was not the case the attention of the Institute would be immediately called to the necessity of otherwise protecting its property. The replies were not satisfactory. Captain Wilkes held that as he and his

¹ Goode. "Genesis of the United States National Museum," page 311.

assistants were paid by the Government they could not spend any time in working upon collections belonging to a private organization. Nevertheless, he expressed an intention not to disturb the collections of the Institute more than should be really necessary in working out those of the Government, and to watch over them as far as possible.

A few months later, in a correspondence relative to the "Ontonagon" copper boulder now in the National Museum, the Commissioner of Patents took the same ground, and held also that he had entire control over the room in which the property of the Institute was deposited.

At the end of 1843, therefore, the National Institute found itself bereft of the control of the Government collections, without funds, except the membership dues, which were much in arrears, and without quarters for its large and rapidly accumulating collections.

"The real cause of the decline of the National Institute," writes Dr. Goode,¹ "was simple enough. Failing to secure grants of money from Congress, the society was overwhelmed by the deluge of museum materials, which in response to its enthusiastic and widely circulated appeals came to it from all quarters of the world. The annual receipts from the assessment of members were insufficient to pay for the care of the collections, and although by virtue of the long term of its charter the collections were kept together until 1861, there was little science and little energy manifested in this administration."

While the events we have mentioned were taking place extended discussions were going on in Congress, and in the country generally, regarding the proper disposition to be made of the bequest of James Smithson. It is unnecessary in the present connection to consider the various views put forth, further than to remark that several schemes included provisions for museums of natural history and the arts.

The act of incorporation of the Smithsonian Institution, passed August 10, 1846, provided that the Regents, having selected a proper site, "shall cause to be erected a suitable building, of plain and durable materials and structure, without unnecessary ornament, and of sufficient size, and with suitable rooms or halls for the reception and arrangement, upon a liberal scale, of objects of natural history, including a geological and mineralogical cabinet; also, a chemical laboratory, a library, a gallery of art, and the necessary lecture rooms."

It is further provided that the Regents "may so locate said building, if they shall deem it proper, as in appearance to form a wing to the Patent Office building, and may so connect the same with the present hall of said Patent Office building, containing the National Cabinet of Curiosities,² as to constitute the said hall, in whole or in part, the deposit for the cabinet of the said Institution, if they deem it expedient to do so." This plan was not adopted.

Section 6 of the same act provides that "in proportion as suitable

¹ Goode. "Genesis of the United States National Museum," page 328.

² See Goode, *op. cit.*, page 301.

arrangements can be made for their reception, all objects of art and of foreign and curious research, and all objects of natural history, plants, and geological and mineralogical specimens belonging, or hereafter to belong, to the United States, which may be in the city of Washington, in whosoever custody the same may be, shall be delivered to such persons as may be authorized by the Board of Regents to receive them, and shall be arranged, in such order and so classed as best to facilitate the examination and study of them, in the building so as aforesaid to be erected for the Institution."

Considering the section relating to buildings mandatory, and under the belief that the collections belonging to the Government must be accepted and housed, the Board of Regents of the newly established Institution proceeded at once with the erection of a large brown stone structure.

For various reasons the building was many years in construction, and during this period the first secretary, Joseph Henry, became more and more pronounced in his opinion that the Government collections should not be cared for at the expense of the Smithsonian fund. Indeed, he was in doubt whether the Institution ought to form extensive miscellaneous collections to be maintained permanently at the expense of its funds, although he fully appreciated the value of collections, and, as will presently appear, labored to carry out the programme adopted for the Institution by acquiring and caring for such special collections as could be made the direct means of increasing and diffusing knowledge. In the report for 1850 he remarked:

It would not be in accordance with the spirit of the organization to expend the income in the reproduction of collections of objects which are to be found in every museum of the country. Natural history can be much more effectively promoted by special collections of new objects, by appropriations for original explorations and researches, and, above all, by assistance in the preparation of the necessary drawings, and by presenting to the world, in a proper form, the labors of naturalists. In conformity with these views it has been resolved to confine the collections principally to objects of a special character, or to such as may lead to the discovery of new truths, or which may serve to verify or disprove existing or proposed scientific generalizations.¹

Again, in the report for 1851, perhaps thinking that his position regarding museums might be misunderstood, he wrote:

I would distinctly disavow the intention of underrating the importance of collections in themselves. On the contrary, it ought to be the duty of the Smithsonian Institution to point out the means by which they may be made, and to aid in the work to the extent of its ability by embracing all opportunities which may offer for procuring specimens for distribution and by facilitating exchange and assisting explorations.²

In the same connection he expressed his views regarding the importance of a National Museum in the following words:

Though the formation of a general collection is neither within the means nor the province of the Institution, it is an object which ought to engage the attention of

¹ Smithsonian Report, 1850, page 21 (reprinted in report for 1853, page 202).

² *Ibid.*, 1851, page 24 (reprinted in report for 1853, page 227).

Congress. A general museum appears to be a necessary establishment at the seat of Government of every civilized nation. * * * An establishment of this kind can only be supported by Government; and the proposition ought never to be encouraged of putting this duty on the limited though liberal bequest of a foreigner. The Smithsonian Institution will readily take the supervision of an establishment of this kind, and give plans for its organization and arrangement, provided it be requested to do so and the means for effecting the object be liberally supplied.¹

In 1850 Prof. Spencer F. Baird was appointed assistant secretary of the Institution, in charge of publications and museum. He brought with him from Carlisle, Pa., not only a considerable zoological collection assembled by his own activity, but, what was vastly more important, a system of recording, assorting, and distributing collections which was sufficiently comprehensive and elastic to meet the needs of a great museum. In December, 1850, he placed in the hands of Secretary Henry a full outline of operations, which he afterwards carried into practice with the most signal success. He perceived that the numerous surveying parties which the Government was sending out from year to year into the Western Territories would be powerful agencies in increasing the knowledge of the natural history of the country if they could be induced to make collections of natural objects along the various routes they traversed. To this end the influence of the Institution was brought to bear on those officials of the Government who had the several surveys in charge.

The extent and form of participation by the Institution in the explorations of the Government surveys varied in different cases. In some instances the Secretary of War was induced to grant an officer of the Army leave of absence for the purpose of making scientific explorations in some little-known part of the country. Again, the Institution furnished outfits and directions for collecting to such surgeons and other officers of the surveying and exploring parties as manifested an interest in natural-history explorations. In some cases the personnel of an exploring party included a naturalist of known abilities and experience, and the Institution furnished every facility for collecting.

On this point Professor Baird, referring to the Mexican Boundary and Pacific Railroad surveys, reported in 1853 as follows:

Without a single exception, all these parties have been fitted out at the Smithsonian Institution with all necessary instruments and apparatus for natural-history research, much of it contrived with special reference to the exigencies of the particular service involved. Full instructions were also supplied, by which persons without previous practice were enabled to master all the general principles required for making observations and collections of every kind.²

The participation of the Institution also took the form of aid in the publication of results. Every year one or more publications based on the collections of the Government parties were published.

Fostered by the Institution to whose interest Professor Baird lent enthusiasm and untiring energy, the work of collecting yielded abun-

¹ Smithsonian Report, 1851, page 25 (reprinted in report for 1853, page 227).

² *Ibid.*, 1853, page 52.

dant fruits. In 1853, three years after his arrival at the Institution, Professor Baird, having worked along the lines laid down by Henry in procuring such series of specimens as were calculated to open up new fields of study and to increase knowledge, was able to report on the wonderful development of the natural-history collections in the following words:

It may be well to call attention to the fact that it has been the work of but three years to raise this collection from nothing to the front rank among American cabinets, exceeding all, perhaps, in the number of new species first brought to light within its limits. Nor has effort been confined merely to the acquisition of specimens, but to their concentration in mass, so as to supply all working naturalists with the materials of research. As already stated, applications for such assistance are constantly being received, and always met with all possible promptness; so that scarcely any natural history monograph or memoir of any extent has been published in this country within a year or two which has not been indebted in this way to the Institution. From the care, too, taken to keep separate all the localities, however near together, of any species, the collection affords information in reference to the geographical distribution of species of the very highest value.¹

At the end of a decade, in 1860, Professor Henry was able to say:

The scientific material thus collected is very valuable, and, in number and variety of specimens and duplicates to illustrate the natural productions of the North American Continent, far excels any other collection ever made.²

While the Institution was thus exerting itself to obtain special collections to serve as the basis of research, the Commissioner of Patents was growing each year more desirous of having the use of the space occupied in the Patent Office by the national collections, and appealed frequently to Congress and to the Regents of the Institution to relieve him of their care.

In 1857, when Professor Henry brought the matter before them anew, they finally agreed that the transfer of the collections to the Smithsonian building should take place, but stipulated that an appropriation should be made to cover the expense of the transfer and the construction of cases in the Smithsonian building, and that the Secretary of the Interior should undertake to obtain from Congress, as before, an annual appropriation for the care of the collections. In his report for 1856, Secretary Henry said:

For the present, it may be well to adopt the plan suggested in a late report of the Commissioner of Patents, namely, to remove the museum of the Exploring Expedition, which now fills a large and valuable room in the Patent Office, wanted for the exhibition of models, to the spacious hall of the Institution, at present unoccupied, and to continue, under the direction of the Regents, the appropriation now annually made for the preservation and display of the collections.

Although the Regents, a few years ago, declined to accept this museum as a gift, yet, since experience has shown that the building will ultimately be filled with objects of natural history belonging to the General Government, which, for the good of science, it will be necessary to preserve, it may be a question whether, in consideration of this fact, it would not be well to offer the use of the large room immedi-

¹ Smithsonian Report, 1853, page 54.

² *Ibid.*, 1860, page 44.

ately for a national museum, of which the Smithsonian Institution would be the mere curator, and the expense of maintaining which should be paid by the General Government.¹

"I can find no record in the minutes of the Regents," writes Dr. Goode, "but have been informed by Mr. W. J. Rhees, of the Smithsonian Institution, that an urgent request for the use of the hall was made by the Commissioner of Patents and the Secretary of the Interior, and that the board decided to grant this request on the condition that Congress should appropriate money for the construction of the cases and the transfer of the collections, and that the Secretary of the Interior should provide for the expenses of the care of the collections after their transfer in the same manner as before."²

The collections were transferred to the Institution in 1858. Professor Baird reported that year³ that twelve separate collections were received from the Patent Office, of which the most considerable was the collection of the exploring expedition under Captain Wilkes. He estimated that the Patent Office collections together constituted about one-fifth of the objects in the Smithsonian museum. He pointed out also that there were then in the museum twenty-three other Government collections which had never been in the Patent Office. These were chiefly assembled by the different field parties of the Pacific Railroad Survey, the Mexican Boundary Survey, and other Government expeditions engaged in exploring the national domain.

The policy relating to the treatment of the collections adopted by the Institution was fully explained in the report of the Secretary for 1861, though in most of its essential features it was in operation as early as 1857. Secretary Henry remarks:⁴

The specimens may be divided into two classes—first, those which have been described in the reports of Government expeditions or the transactions of the Smithsonian and other institutions; and, second, those which have not been described, and which consequently are considered of much value by the naturalists who are interested in extending the several branches of natural history. Of both classes the Institution possesses a large number of duplicates, in the disposition of which some general principles should be kept constantly in view. After due consultation with naturalists, the following rules, which were presented in the last report, have been adopted relative to the described specimens:

First. To advance original science, the duplicate type specimens are to be distributed as widely as possible to scientific institutions in this country and abroad, in order that they may be used in identifying the species and genera which have been described.

Second. To promote education, as full sets as possible of general duplicates, properly labeled, are to be presented to colleges and other institutions of learning that profess to teach the principal branches of natural history.

Third. It must be distinctly understood that due credit is to be given to the Institution in the labeling of the specimens, and in all accounts which may be published

¹ Smithsonian Report, 1856, page 22.

² Goode. "Genesis of the United States National Museum," page 342.

³ Smithsonian Report, 1858, page 52.

⁴ *Ibid.*, 1861, page 41.

of them, since such credit is not only due to the name of Smithson, but also to the directors of the establishment, as vouchers to the world that they are faithfully carrying out the intention of the bequest.

Fourth. It may be proper, in the distribution to institutions abroad, as a general rule, to require, in case type specimens to illustrate species which have been described by foreign authors may be wanted for comparison or other uses in this country, that they be furnished at any time they may be required.

Fifth. In return for specimens which may be presented to colleges and other educational establishments, collections from localities in their vicinity, which may be desirable, shall be furnished when required.

In the disposition of the undescribed specimens of the collection, it is impossible to be governed by rules quite as definite as those which relate to the previous class, but the following considerations have been adopted as governing principles:

1. The original specimens ought not to be intrusted to inexperienced persons, or to those who have not given evidence of their ability properly to accomplish the task they have undertaken.

2. Preference should be given to those who are engaged in the laborious and difficult task of preparing complete monographs.

3. As it would be illiberal to restrict the use of the specimens and confine the study of them to persons who can visit Washington, the investigator should be allowed to take them to his place of residence and to retain them for a reasonable time.

4. The investigator must give assurance that he will prepare a set of type specimens for the Smithsonian museum, and will return all the duplicates, if required.

5. In any publication which may be made of the results of the investigation, full credit must be accorded to the Institution for the facilities which have been afforded.

All these provisions on the part of the Institution were carried out as far as the circumstances would permit. The money available was insufficient for employing paid assistants to any considerable extent, and the Institution had the benefit of the voluntary assistance both of many recognized authorities in the several branches of science and of young students. The extent and importance of this aid can not be overestimated. Collections which would have remained useless for years were rapidly classified by competent naturalists and separated into series, some to be reserved by the Institution and others to be distributed to kindred scientific establishments and to colleges and schools.

The list of collaborators includes almost every name prominent in American natural history in the last half century. Nor is this a matter for wonderment. The collections made by the exploring parties of the Government in the twenty-five or thirty years following the founding of the Institution contained a great number of highly interesting forms of animals and plants previously unknown to science, and the naturalists in whose hands the various series were placed constantly enjoyed the delight of discovering these and making them known to the world. The boundaries of American natural history were widened in every direction. As regards vertebrates, Professor Baird remarked as early as 1856:

Messrs. Audubon and Bachman describe about 150 North American species of mammals. This Institution possesses about 130 of these; and about 50 additional

species have already been detected, although the examination of the entire collection has not yet been completed.

Of North American birds, the Institution possesses nearly all described by Audubon and at least 150 additional species.

Of reptiles, the North American species in the museum of the Smithsonian Institution amount to between 350 and 400. Of the 150 species described in Holbrook's North American Herpetology, the latest authority on the subject, it possesses every genuine species, with one or two exceptions, and at least 200 additional ones. It has about 130 species of North American serpents for the 49 described by Holbrook.

Of the number of species of North American fishes it is impossible to form even an approximate estimate, the increase having been so great. It will not, however, be too much to say that the Institution has between 400 and 500 species either entirely new or else described first from its shelves.¹

The scientific elaboration of the collections resulted in the publication of a great number of monographs and preliminary papers in the Smithsonian Contributions to Knowledge and Miscellaneous Collections, in the reports of the Government surveys, and in the journals of learned societies at home and abroad. Many of the more comprehensive of these works remained as standards for a quarter of a century, and some have not been supplanted at the present day.

In this work no one labored with more enthusiasm or more success than Professor Baird, who, while carrying the burden of caring for the collections and planning for the exploration of new fields, prepared and published a series of works on North American vertebrates which commanded the admiration of naturalists throughout the world.

Side by side with the activities resulting in the increase of knowledge, the work of diffusing knowledge by the distribution of named natural history specimens was carried forward on an extensive scale. In the first twenty years of its history the Institution, according to the estimate of Professor Baird,² distributed more than one hundred thousand specimens, of which the larger part were identified and labeled.

In 1861 the charter of the National Institute expired and the various objects belonging to that organization became the property of the Government and were transferred to the care of the Smithsonian Institution.

At this date, therefore, all the scientific and art collections belonging to the Government and the collections made by the Institution itself were assembled in the Smithsonian building. They comprised many thousands of objects, and were administered by Professor Baird as Assistant Secretary of the Institution.

From the time the Government came into possession, in 1841, of the collection made by the Wilkes Exploring Expedition Congress appropriated each year a small sum for the preservation of the objects accumulated in the Patent Office, which money was disbursed at first by the National Institute, afterward by the Commissioner of Patents or the Joint Library Committee of Congress.

¹ Smithsonian Report, 1856, page 60.

² *Ibid.*, 1865, page 85.

After these collections were transferred to the Smithsonian Institution, in 1858, the appropriations for maintenance continued year by year, though small in amount. In 1858 the appropriation was \$3,650; in 1859, and for eight years following, \$4,000. The Institution never received any compensation for the occupancy of its building. As early as 1856¹ Professor Henry expressed the opinion at an early day that the Government might with propriety and advantage purchase the Smithsonian building from the Institution for housing the Government collections "of natural history and the fine arts," but no action in that direction was ever taken.

When these collections were transferred from the Patent Office a series of new cases, designed by Thomas U. Walter, were erected in the main hall of the Smithsonian building for their display. Great progress has been made in museum methods in the last two decades, but the cases, arrangement, labeling, and taxidermy in the Smithsonian museum thirty-five years ago were probably as good as could be found in any scientific museum in the world at that time. The exhibition of many examples of a single species of animal or mineral, or of a single kind of ethnological or geological object, was not considered objectionable, and it was a common practice to mount and exhibit type specimens of animals. To such matters as the size of glass in cases, the color of woodwork and labels, the effect of different groupings of specimens, little attention was devoted. Indeed, the amount of money spent upon scientific museums was not sufficient for great refinement in display. Collections were exhibited for the satisfaction of the mature man of science, rather than the youthful student and the layman. Yet these latter classes were neither purposely neglected nor did they complain of the methods in vogue.

It is with interest that we read the following comment by Professor Henry on the Smithsonian museum in 1861:

During the past year Washington has been visited by a greater number of strangers than ever before since the commencement of its history. The museum has consequently been continually thronged with visitors, and has been a never-failing source of pleasure and instruction to the soldiers of the Army of the United States quartered in this city or its vicinity. Encouragement has been given them to visit it as often as their duties would permit them to devote the time for the purpose.²

In 1865 an event of much importance occurred. A fire broke out in the second floor of the Smithsonian building and destroyed the upper portions of the edifice. Many collections were entirely destroyed or injured beyond repair, among which the most important were Smithson's personal effects and cabinet of minerals, a large series of portraits of Indians painted and owned by J. M. Stanley, and the collection of physical instruments, including Hare's experimental apparatus and "the leus used by Priestley for the evolution of oxygen from the oxide

¹ Smithsonian Report, 1856, page 22.

²*Ibid.*, 1861, page 44.

of mercury, and by means of which the first distinct recognition of this elementary substance was effected."¹

This event produced results affecting the Museum in many ways. It called attention to the fact that the library of the Institution was kept in rooms not fireproof, and the transfer of the books to the Library of Congress was hastened, the space being subsequently occupied by the less valuable portions of the natural history collections. By the destruction of the Stanley portraits of Indians, which, though really an ethnological collection and only on deposit in the Institution, formed an important part of what (with frequent apologies) was called "the gallery of art," the attempts to form an art collection of merit received discouragement. The reconstruction of the building, made necessary by the fire, led to a new assignment of rooms for the ethnological collections. Previous to the fire the upper story had been used principally as a lecture room, but the interest in lectures flagging for a time it was determined after the reconstruction to place the ethnological collections in that portion of the building, but the transfer was not effected until several years later.

Though the formation of an art gallery was provided for in the organization of the Institution and a few art objects came into the possession of the Government from time to time, Professor Henry took the position at an early day that with the funds available the establishment of an art collection worthy of the name was impossible. When Mr. W. W. Corcoran first took active steps toward the formation of the Corcoran Art Gallery, in 1869, Henry recommended that art objects belonging to the Institution should be deposited therein. In 1873 the Board of Regents approved the plan, and in the following year a few paintings, sculptures, and engravings were transferred.

In the early days of the Institution the valuable collection of engravings made by Hon. George P. Marsh was purchased (the only large purchase by the Institution in the direction of art), and soon after the fire in the Smithsonian building it was transferred to the Library of Congress.

By 1874, therefore, the Institution had definitely abandoned all efforts toward the establishment of an art gallery, and though some few objects connected with the fine arts have come under its care in later years, they have never been assembled so as to form a proper "gallery."

In 1871 Congress established the United States Fish Commission and Professor Baird was placed at its head. The organization of the Commission on this basis had a most important effect upon the development of the National Museum in certain directions. The work of the Commission had to do largely with the natural history of fish and other aquatic animals, and in the course of a few years very large collections

¹ Smithsonian Report, 1865, page 18.

of marine life were deposited in the Museum. Later the work of the Commission turned toward the investigation of the phenomena of the deep sea, and in 1882 a seagoing steamer, the *Albatross*, was built, and extensive sounding and dredging operations in great depths were carried on.

The collections made during the progress of this work, and deposited in the Museum, were of the highest scientific interest, and the results already published by Goode, Verrill, Bean, Rathbun, Smith, and other naturalists have attracted worldwide attention. In many other ways, which can not be detailed in the present connection, the work of the Commission was of direct and indirect benefit to the Museum, and the cooperation of these two governmental organizations has continued until the present.

Not many years after the organization of the Commission the question of the desirability of holding a great world's fair to commemorate the hundredth anniversary of the Declaration of Independence began to be agitated in the country. The movement culminated in the organization of the Centennial Exhibition of 1876, held in Philadelphia. This event was destined to have a more important effect upon the National Museum than any which had occurred since the founding of the Smithsonian Institution.

The Government determined that the various departments and bureaus should make extensive exhibits indicating their several functions, and on January 23, 1874, the President appointed a Government board to have general charge. The Smithsonian Institution was represented by Professor Baird. In the first plans of the board the National Museum exhibit was included under that of the Institution, and the Fish Commission apparently under the Interior Department. They included also an item of \$200,000 for an exhibition building which should be "capable of removal to Washington after the close of the Exhibition, to be used as a National Museum at the capital of the nation."¹ Congress, however, saw fit to modify these plans and provided for the erection of a general Government building, to be paid for pro rata from the appropriations of the several departments and bureaus, and to be sold at the close of the Exhibition. An appropriation of \$67,000 was made for the Smithsonian Institution, and of \$5,000 for the Fish Commission, the provision for the National Museum being included in the former. When the several officers of the board began to examine the situation in detail it became apparent that different bureaus would duplicate one another's exhibits unless some compromise were made. Accordingly the exhibits of the Institution, the National Museum, and the Fish Commission were merged into one comprehensive exhibit; while, on the other hand, the National Museum cooperated with the Indian Bureau of the Interior Department in an

¹ Smithsonian Report, 1875, page 59.

exhibit representing North American anthropology. The combined exhibit was divided into five sections—Smithsonian Activities, Animal Resources, Fisheries, Mineral Resources, Anthropology.

In the preparation of the exhibits of animal resources and fisheries, Professor Baird, then curator of the National Museum, had the assistance of G. Brown Goode, who held the position of assistant curator of the National Museum, Tarleton H. Bean, and H. C. Chester; in ethnology, Charles Rau, Edward Foreman, and F. H. Cushing; in mineral resources, William P. Blake and Thomas Donaldson.

When the idea of holding a great exhibition under the Government was first put forth, both Secretary Henry and Professor Baird foresaw that the effect on the National Museum must be of the greatest moment. The objects purchased and exhibited by the Government of the United States would find their final resting place in the Museum, and many foreign governments and private exhibitors would doubtless present their exhibits to the United States, with the result that they also would find their way into the Museum.

The results of the operations of the Institution in connection with the Centennial Exhibition [wrote Professor Henry in 1875] will probably have a much greater effect on the future of the establishment than is at first sight apparent. The large number of specimens which have been collected by the several departments of Government and by the Institution itself in view of this exhibition will greatly increase the contents of the National Museum, and if we add to these the specimens which will be presented by foreign powers, of which we have already had intimations, the number will be swelled to an extent far beyond the capacity of the present building to contain them, and an additional edifice will be required for their accommodation.

In the consideration of this matter the questions will arise whether the building required shall consist of an extension of the present Smithsonian edifice or an entirely separate building, and these questions will involve another, viz, whether it is advisable to continue, at least without some modification, the connection which now exists between the Smithsonian Institution and the National Museum.

The Museum is destined to an extension far beyond its present magnitude. It is an object of much interest to all who visit the national capital, and is of great value as exhibiting the natural resources of the country, as well as a means of public education.

Professor Baird, as exhibition representative of the Institution, wrote in the report of the same year as follows:

It will, however, be readily understood that the Smithsonian building will be entirely inadequate to accommodate this collection on its return from Philadelphia, especially as even now it is overcrowded and packed from top to bottom with thousands of boxes, for the proper exhibition of the contents of which there is no space or opportunity at the present time. It is to be hoped that action at an early day will be taken by Congress looking toward a proper provision for this emergency, especially when it is realized that the materials are thus available for a national museum that shall be equal in its extent and completeness and in its educational advantages to that of any nation in the world.

The collections made directly through the Government appropriations will also be very largely supplemented by the donation of series of American and foreign exhibitors, a very large proportion of which will be placed at the disposal of the United States Government.

The anticipations of Henry and Baird were fully met. In the report for the centennial year Professor Baird wrote:

At no period in the history of the National Museum, from the time when it was organized to the present, has the increase been so great as during the year 1876.¹

After referring to the accessions from the Government exhibits, he remarks:

In addition, however, to the sources of increase to the Museum during the years 1875 and 1876, mentioned above, still another presented itself of perhaps even greater productiveness, viz, acquisitions from foreign exhibits. With scarcely an exception, the best and most important of these were presented to the United States at the close of the exhibition, embracing as they did many complete series of objects illustrating the geology, metallurgy, the ethnology, and the general resources of all nations. Of about forty governments and colonies, the choicest of the exhibits of thirty-four were presented to the Smithsonian Institution for the National Museum, the remainder either having nothing to give or being restricted in the disposal of their articles.

It was, however, not from foreign commissions alone that collections were received by the Institution. Several entire State exhibits and many belonging to private parties were also added to the general increase. Nevada, Montana, and Utah presented the whole of their mineral exhibits, while partial collections were received from several other States and Territories.

The Regents of the Institution submitted a memorial to Congress the same year (1876) asking an appropriation of \$250,000 for a building for the National Museum. A bill was introduced, but failed of passage that year, and it was not until 1879 that the amount asked for was provided.

As soon as the law was enacted a building commission appointed by the Regents of the Institution was organized, consisting of the resident members of the executive committee of the Institution (Hon. Peter Parker and Gen. W. T. Sherman) and Secretary Baird. General Sherman was chosen as chairman and Gen. M. C. Meigs was invited to act as consulting engineer.

The commission selected the firm of Cluss & Schulze, whose design for the building had been approved by Congress, as superintending architects, and received the benefit of the advice of Mr. Edward Clarke, Architect of the Capitol.

The erection of the building was begun April 17, 1879, and completed in 1881. In design the structure is of the type commonly employed for exhibition buildings, being entirely open above the ground floor. It covers a space of $2\frac{1}{2}$ acres. On account of the relatively small amount appropriated for the building and the enormous growth of the national collections, it was necessary to use building materials of low cost and to cover in as much space as possible. The building is regarded as one of the cheapest of its size ever erected. While admirably adapted in most respects for the purpose for which it was built, it does not, of course, present, either externally or internally, an appearance as pleas-

¹ Smithsonian Report, 1876, page 38.

ing or dignified as would have resulted from the use of a more expensive system of construction and more costly materials.

While the building was under construction, Congress decided that the United States Government should be represented at the Berlin Fisheries Exhibition of 1880 by the Fish Commission. Professor Baird, then both Secretary of the Institution and Fish Commissioner, appointed G. Brown Goode, the curator of the National Museum, as his deputy at the exhibition. By this fortunate combination of circumstances, Dr. Goode, the working head of the National Museum, was afforded an opportunity to study the museums of Germany and other parts of Europe, and brought home with him a knowledge of the most approved methods of installation of collections, labeling, and storage, which was invaluable. Far more fortunate was it that the Museum at this critical time in its history had as its curator a man of such surpassing merit as the lamented editor of this volume.¹ Gifted with a philosophical mind, a profound love of nature, a marvelously retentive memory, and untiring energy, he acquired a range of knowledge and a grasp of affairs which astonished his associates, while his modesty, gentleness, and love of fair play attracted to him and bound to his service men of the most diverse capacities and opinions. His genius was known to Secretary Baird, but hitherto he had not found a sufficiently wide field for the exercise of his powers. The reorganization of the Museum afforded an opportunity, and Baird gave him free scope for the development of his plans, aiding him as no one else could have done, from the stores of a lifetime of experience along the same lines.

Out of the heterogeneous materials accumulated by the Government, especially as a result of the Centennial Exhibition, Dr. Goode organized, under the approving guidance of Secretary Baird, a public museum of wide scope, attractive, instructive, orderly, and full of the elements of life. He elaborated with the greatest pains a philosophical and comprehensive classification for the collections of the Museum, and planned a complete reorganization of the staff of curators and assistants. He devised an entirely new series of cases and other fixtures, for the installation of both the collections exhibited to the public and those reserved for the use of investigators, adopting the best features then developed in European museums, and adding many of his own invention.

This regeneration of the National Museum soon made itself felt in similar organizations throughout the United States and in other parts of the world, and the methods of installation and labeling employed in Washington have been widely copied.

The influence of the National Museum has not, however, stopped here. Already at the Berlin Fisheries Exhibition of 1880, with the experience gained during the Centennial Exhibition, Dr. Goode was

¹ The History of the Smithsonian Institution, from which this article is extracted, was edited by Dr. Goode.

able to secure for the United States Fish Commission and the National Museum the Emperor's prize for the highest excellence of display. Not satisfied with this recognition, and always aiming to advance, he endeavored to install the exhibits of the Institution and Museum at later foreign and domestic exhibitions, in accordance with the best museum methods. As a result the exhibits of the Institution always won high praise, and it is not too much to say that the work of the National Museum in this direction has had a powerful influence in revolutionizing exhibition methods in America.

Since the Centennial Exhibition of 1876 few years have passed in which the Museum has not been engaged in preparing for public exposition of greater or less magnitude. It made displays at London in 1883, at Louisville in 1884, at Minneapolis in 1887, Cincinnati and Marietta in 1888, at Madrid in 1892, at Chicago in 1893, and at Atlanta in 1895. As might naturally be expected, the necessity of carrying on exhibition work outside of Washington has affected the National Museum in many ways.

Probably no other great permanent museum in the world has had constantly before it the problem of guarding its treasures from deterioration and at the same time transporting no inconsiderable portion of them thousands of miles and displaying them under the ordinarily unfavorable surroundings of temporary exhibitions. The advantages lie in the direction of making the work of the Museum known to the people of the Republic and the world at large and securing new objects with which to fill out the deficiencies in its various collections. The disadvantages are found in damage done to objects in the collections, by breakage or otherwise, the interruption of the regular Museum work, and the dissipation of the energies of the scientific officers; for a museum, like any other permanent institution, requires abundant time and uninterrupted activity for its best development, and does not flourish in the midst of commotion and excitement.

Thus far I have considered the National Museum in its historical aspects. It remains to explain briefly its function and aims and to mention the most notable objects in its collections.

It will be perceived, from the statements already made, that the Museum is essentially a natural development springing from the activities of the Government, growing with their growth and expanding with their expansion. It had its origin in the great naval exploring expedition which the Government organized in the early part of the century, and found an important expansion in the long series of topographical surveys of the public domain and geological surveys of later years. The scientific investigation of the primary industries—agriculture, fisheries, and mining—by the Government have also resulted in large additions to the Museum. Finally, the desire on the part of the Government that the people should gain a better understanding of its practical workings, through representative displays of processes and objects in

the great public exhibitions, have broadened the activities and increased the wealth of the Museum, both directly and indirectly: directly, because the Museum has need to bestir itself to bring together and arrange exhibits which will be acceptable to the public; indirectly, because the participation of the Government of the United States often leads other governments to participate, and the exhibits of these, in greater or less proportion, are ultimately presented to the United States for its National Museum.

The field of activities of the Government has had a strong influence on the character of collections of its National Museum. While European governments have been engaged in exploring new regions and founding colonies in distant sections of the globe, that of the United States has confined its attention almost exclusively to North America. The collections of the National Museum, therefore, are predominantly North American. Leaving out of consideration the important foreign collections of a few early expeditions, and those resulting from the deep-sea investigations of the United States Fish Commission, the additions in this direction have chiefly come from the activities of private explorers, by gift of foreign governments at expositions, by exchange of specimens, and only in a few instances by purchase.

In the organic law of the Smithsonian Institution it is provided that—

in proportion as suitable arrangements can be made for their reception, all objects of art and of foreign and curious research, and all objects of natural history, plants, and geological and mineralogical specimens belonging or hereafter to belong to the United States, which may be in the city of Washington, in whosoever custody the same may be, shall be delivered to such persons as may be authorized by the Board of Regents to receive them, and shall be arranged in such order and so classed as best to facilitate the examination and study of them.

In the act of June 30, 1880, making appropriations for the sundry civil expenses of the Government, it is enacted that "all collections of rocks, minerals, soils, fossils, and objects of natural history, archaeology, and ethnology, made by the Coast and Interior Survey, the Geological Survey, or by any other parties for the Government of the United States, when no longer needed for investigations in progress, shall be deposited in the National Museum."¹

In the same year, as we have said, Congress appropriated money "for a fireproof building for the use of the National Museum."

As may be seen from the statutes cited, the National Museum is the recognized depository for all objects of scientific and artistic interest and value which come into the possession of the Government. Its function is to preserve these treasures perpetually, and to administer the collections in such a manner as to render them of the highest service to research and education. In pursuance of these ends it exhibits a portion of the collections for public inspection and instruction; another portion it assembles in laboratories for the use of investi-

¹Statutes United States, Forty-fifth Congress, third session, chapter 182, page 394.

gators. Out of the surplus accumulations it selects series of specimens for distribution to educational institutions, and it encourages publications which will make its treasures known to the world. Of these latter activities it will be necessary to speak somewhat more in detail before closing, and I will return to them presently. It is desirable to point out here the fact, which will become evident to any one upon reflection, that an institution such as the National Museum, with its facilities for investigation and its corps of trained specialists, soon becomes a center of intellectual activity, attracting to itself students and savants, and being called upon to impart technical information and advice. In these lines lies no inconsiderable part of its labor and usefulness.

It is to be said further that the Museum of to-day, owing in part to a natural development and in part to the labors of a few advanced leaders, among whom none have rendered more important service than the late Dr. Goode, is no longer content with a passive existence, but strives by the arrangement of its collections, by its labels, its handbooks and other publications, and its lectures, to impart instruction of a definite character and in definite lines. It assembles great collections of natural objects and treasures of art, not merely to satisfy idle curiosity but to diffuse knowledge among men. Thus it allies itself to the university and the library, and must be counted among the chief agencies for the spread of culture.

To describe in detail all the more important objects in the National Museum would require more space than can be devoted to such an enumeration in this place, but it will be of interest to point out the chief excellencies of the collections and to mention some of the treasures.

The collections are at present divided among the following departments and sections:

Zoological departments: Mammals, Birds (with a section of Birds' Eggs), Reptiles and Batrachians, Fishes, Mollusks, Insects, Marine Invertebrates (with a section of Parasitic Worms), Comparative Anatomy.

A Botanical Department.

Geological departments: Geology, Mineralogy, and Paleontology.

Anthropological departments: Prehistoric Anthropology, Ethnology (with a section of American Pueblo Collections), Oriental Antiquities.

A Department of "Arts and Industries," with the following sections at present: Historical Relics, Transportation and Engineering, Naval Architecture, Physical Apparatus, Electrical Collections, Technological Collections, Materia Medica, Forestry, and Graphic Arts.

The Department of Mammals comprises the collection of the Wilkes Exploring Expedition and of the numerous geographical and geological surveys of the public domain, including the type specimens of species described by Baird in his great work on North American Mammals, and numerous types of J. A. Allen, Elliott Coues, Harrison Allen, and

other American naturalists. The collections from the Mexican boundary recently made by Dr. E. A. Mearns, U. S. A., are large and of high scientific value.¹

A series of casts of porpoises and other cetaceans, including a young humpback whale, forms a unique feature of the department.

The representation of foreign mammals, though deficient in many directions, includes a considerable number of type specimens and some important local collections, chief among which are those from German East Africa and from Kashmir and Eastern Turkestan, made and presented by Dr. William L. Abbott.

The collection of skulls of North American mammals is probably unrivaled elsewhere in extent, and the department also contains a large alcoholic series.

Of the Department of Birds the curator, Mr. Robert Ridgway, writes:

Among the most important collections and single objects contained in the Department of Birds are the following:

1. The collections made by the Wilkes Exploring Expedition, the various Pacific Railroad surveys, the Mexican Boundary Survey, the Geological Exploration of the Fortieth Parallel, the Geological Survey of the Territories, Geographical Surveys West of the One Hundredth Meridian, the United States Astronomical Expedition (Gilliss), and various other Government expeditions.²

2. The collection made by Col. A. J. Grayson in Western Mexico, including the Tres Marias and Revilla-Gigedo islands; collections made by Prof. F. Sumichrast on the Isthmus of Tehuantepec, and by Prof. C. Sartorius in the State of Vera Cruz, Mexico; collections made by F. A. Ober in the various islands of the Lesser Antilles.

3. The collections made by the United States Fish Commission during a cruise of the steamer *Albatross* around Cape Horn and in the Bahamas.

4. Specimens from Audubon's collection, among them a considerable number of types of his new species—that is, specimens from which the descriptions and colored plates in his great work were taken. These formed part of Professor Baird's private collection, and were given by Mr. Audubon to Professor Baird.

5. The private collection of Professor Baird, numbering nearly four thousand specimens, which formed the nucleus or beginning of the present national collection.

6. Other private collections donated to the National Museum.

7. The collections made by Dr. William L. Abbott in Eastern Africa, Madagascar, etc., generously presented to the National Museum and embracing a very large number of species entirely new to the Museum collection, many of them being new to science. These collections of Dr. Abbott, moreover, represent practically all that the Museum possesses from the countries named.

8. The collection of several thousand specimens from various parts of the world, presented by Mr. A. Boucard, of Spring Vale, Isle of Wight, England.

9. Extinct Birds: Great Auk (one specimen), Labrador Duck (several), Guadelupe Caracara (good series, old and young), and Philip Island Parrot, the latter purchased for the Museum by Dr. William L. Ralph, of Utica, N. Y.

¹ The very extensive series of North American mammals made by the United States Department of Agriculture under Dr. C. Hart Merriam, the finest ever assembled, is deposited in the Museum building and catalogued in its registers.

² The valuable collections of birds made by the United States Department of Agriculture under direction of Dr. C. Hart Merriam in the United States and Mexico are deposited in the Museum building, as in the case of the mammals.

10. Very rare species, or those nearly extinct, as the Carolina Paroquet, Ivory-billed Woodpecker, Black-capped and Jamaican Petrels, Hawaiian Coot, Cuban Macaw, Peale's Sandpiper (several specimens, the only ones known to exist in collections), and numerous other species.

11. Unique types, such as Fisher's Petrel, Townsend's Bunting, Cooper's Sandpiper, Cooper's Hen-Hawk, Riker's Woodhewer.

The National Museum collection of North American birds is by far the most complete in existence, and is the basis of every important work on North American birds since Audubon's time. That of the birds of the West Indies is also the most important, although exceeded greatly in number by that of Mr. C. B. Cory, now the property of the Field Columbian Museum in Chicago, Ill. That of Central American and South American birds is exceeded in extent and value only by the British Museum's series of birds from the same region, and has been freely used by Messrs. Selater, Salvin, Godman, Count von Berlepsch, and others in their various publications on neotropical birds, and is also largely the basis of Professor Baird's "Review of American Birds."

Museums throughout the world have been supplied with American birds by the United States National Museum, and the existing specimens of several species, such as the Roseate Gull, Greenland Redpoll, and several Alaskan species, have mainly—in some cases exclusively—been distributed by the National Museum.

It can safely be said that no collection of birds in the world compares with that of the United States National Museum in value or importance as a basis for scientific investigation already accomplished or yet to be done, since as many species as possible, with the facilities at command, are represented by large series of specimens from all parts of their geographical range and of all known variations dependent on climate, sex, age, or other circumstances.

The unparalleled collection of North American birds' eggs in the United States National Museum is the result of many years' growth. In the early years of the Institution Professor Bird interested the naturalists of the various Government surveys and members of the Hudson Bay Fur Company in the subject, and from them (and especially the latter) thousands of eggs were received. Mr. R. McFarlane¹ was particularly active, and with him were associated B. R. Ross, James Lockhart, John Reid, M. McLeod, A. McKenzie, and others, who sent not only eggs, but large collections of other kinds. The Institution sent Robert Kennicott to Arctic America in 1859, where he remained three years, collecting the natural productions of the region, and with them many eggs of Arctic birds.

Naturalists visiting Alaska and Labrador also made large contributions to the oölogical collections. The eggs of the rare northern water birds and waders so difficult to obtain for private collections were thus sent (often in large series) to the Institution.

In 1884 Major Bendire added to the already large collection his unrivaled series of eggs of western birds, obtained during twenty-five years of duty in the Territories. This collection numbered eight thousand or more beautifully prepared specimens. From that time till his death Major Bendire was untiring in his efforts to obtain the desiderata of the collection. More recently Dr. William L. Ralph, of Utica, N. Y., has presented his magnificent collection of eggs to the Institution, and is now actively engaged in filling gaps in the series.

To mention specifically all the rarities in the North American series of the oölogical department would be an almost endless task. A few of the more important ones are the following: Great Auk, one egg; Heermann's Gull, two eggs; Craver's Murrelet, two eggs; Jabiru, one egg; Purple, Aleutian, Cones's, Baird's, Pectoral, White-rumped, and Curlew Sandpipers; Sanderling, two specimens (McFarlane); Heath Hen, one specimen; Passenger Pigeon, about thirty eggs; California Vulture, one

¹ See his report in Proceedings of the United States National Museum, Vol. XIV, pages 413-446.

egg; Harlan's, Krider's, and Short-tailed Hawks; Peale's, Richardson's, and Aplomado; Elf, Flammulated, and Californian Pigmy Owls; Carolina Paroquet; Ivory-billed Woodpecker; White-throated and Vaux's Swifts; Clarke's Nut-cracker, several eggs; Western Evening Grosbeak; American and Mexican Crossbills; Pribilof Snowflake, several. Among the rare warblers may be mentioned: Brewster's, Virginia's, Lucy's, Cape May, Olive, Sennett's, Grace's, Townsend's, Hermit, Golden-checked, Gray, and Connecticut Warblers; Rio Grande and Belding's Yellow-throats; Red-faced Warblers.

Of foreign eggs may be mentioned Kamtschatkan Sea Eagle, Quesal, etc. Also various series of eggs, like those collected by Dr. Jerome H. Kidder on Kerguelen Island, Dr. William L. Abbott in Africa, Seychelles Islands, Asia, etc. On some of these reports have been made.¹

Of the Department of Reptiles and Batrachians, the curator, Dr. Leonhard Stejneger, remarks:

The distinctive characteristic of the reptile collection in the Museum is in the completeness with which it illustrates the geographical distribution and morphology of the species inhabiting North America. In this respect it stands unrivaled. As the depository of the types of the species described by Baird, Girard, Kennicott, Cope, and other distinguished American herpetologists it also takes first rank.

The importance of the individual collections must therefore be judged with reference to their richness in such types and the advance in our knowledge of the reptiles and batrachians of this continent that has ensued. The collections which have undoubtedly contributed most in these respects are those of the Pacific Railroad surveys, the first Mexican-United States Boundary Survey, and the Wilkes Exploring Expedition.

The collection of fishes are almost exclusively North American, with one notable exception in the case of the deep-sea fishes dredged by the United States Fish Commission steamer *Albatross* in the North Atlantic and North Pacific. The latter collection is of equal importance with that of the *Challenger* expedition, if it does not surpass the same, and formed the basis of the recent work of Dr. Goode and Dr. Bean on "Oceanic Ichthyology."

The department contains the most extensive collections of fresh-water and littoral fishes of the United States anywhere assembled, consisting chiefly of the great series formed by the United States Fish Commission, supplemented by the collections of many American naturalists. The collection of Alaskan fishes is very large and is not extensively duplicated elsewhere.

The series of fishes collected in connection with the Pacific Railroad surveys and the first Mexican Boundary Survey are of special importance as containing the types of a large proportion of the species of the middle and western United States. They have been supplemented in recent years by important series collected under the auspices of the Fish Commission and by private collectors.

¹ Contributions to the Natural History of Kerguelen Island, made in connection with the American Transit-of-Venus Expedition, 1874-75, being Bulletin No. 3, United States National Museum. Also "Description of Nests and Eggs of some New Birds, collected on the Island of Aldabra, Northwest of Madagascar, by Dr. W. L. Abbott." Proceedings of the United States National Museum, Vol. XVII, 1894, pages 39-41.

The department contains also many single specimens of great value, which have been made the basis of new families and genera.

Regarding the Department of Mollusks, Mr. William H. Dall, the honorary curator, writes as follows:

The collection of mollusks was founded primarily upon the specimens gathered by the United States Exploring Expedition under Wilkes during 1838-1842, which formed the types of the folio volume on the mollusks and shells by Dr. A. A. Gould, included in the series of United States Exploring Expedition reports published by Congress. To these were added the types of the mollusks of the North Pacific Exploring Expedition under Ringgold and Rodgers, collected by Dr. William Stimpson, and described by Gould. The collections were very rich and valuable, for the time, but underwent serious vicissitudes before and after being received by the Smithsonian Institution previous to the organization of the Museum, so that the series as it now exists is by no means complete. Nevertheless these shells form an interesting and important portion of the collection.

Next in point of number and value comes the collection, especially of Unionidæ, given by Dr. Isaac Lea, and subsequently enriched by his son-in-law and daughter, the Rev. and Mrs. J. T. Chamberlain. This collection is, in its specialties, the fresh-water mussels of the world, unrivaled for extent and value, comprising an enormous number of types and having full data in relation to the habitat, etc., in nearly every case.

Almost as important for the mollusks of Great Britain, Northern Europe, the Mediterranean, and especially for the various deep-sea dredging expeditions sent out under British auspices before the *Challenger* expedition, is the Jeffreys collection, purchased from Dr. J. Gwyn Jeffreys, and comprising the results of nearly half a century of active collecting, exchanging, and purchase—in all some 25,000 lots of specimens, by far the most important and complete series of British shells in existence, and forming the basis of some hundred publications.

The fauna of West America, both littoral and deep-sea mollusks, is represented by the combined collections of Robert E. C. Stearns, William H. Dall, the United States steamer *Albatross* of the Fish Commission, the Arctic cruisers of the United States revenue marine, and many private donations, in all comprising the most complete existing representation of the fauna, with full data in nearly every case.

The fauna of the east coast of North America is represented by the unrivaled collections of the United States Fish Commission, augmented by a series of those of the *Blake* and many private collectors in the West Indies and on our Southern coast.

The land and fresh-water shells of North America, apart from the fresh-water mussels, are represented by the best existing collection derived from many sources, including types of Binney and Bland, Lea, Lewis, Dall, Stimpson, and many others.

To sum up, the collection of mollusks has the best series in the world, supplied with the fullest data, in the modern sense, of the land, fresh-water, shore, and deep-sea mollusks of North America, the Arctic regions, the North Atlantic and Pacific, and the British Islands. In the total number of specimens, the collection is the largest in the world, including over six hundred thousand specimens of dry shells and five thousand jars of alcoholic molluscan material. The collection of Cenozoic fossil shells comprises the largest existing series of the Tertiary fauna of the United States, and probably the largest series of Antillean Tertiary shells in any museum, though much remains to be done in naming and classifying the fossil material.

It may be said without fear of contradiction that for the regions mentioned the Department of Mollusks is unrivaled, not only in the amount and variety of material it contains, but especially in the full and correct data recorded in respect to the specimens, and which give to them a really scientific value, which is wanting in most of the great collections of the world, which were mostly made at a period when the importance of such data was not fully recognized. No other collection contains

nearly as many American and British type specimens; and only the British Museum rivals ours in the number of species represented from the whole world. No other collection has so large a representation of deep-sea mollusks and brachiopods, for the study of which the national collection is indispensable.

Of the Department of Insects, Dr. L. O. Howard, the honorary curator, writes:

Taking the collection as a whole, and aside from the consideration of the individual collections of which it is composed, I should say that its most important features are, first, the rapidly accumulating number of types in all orders, amounting already to more than 3,500 species; and, second, the biologic features of the collection, due largely to the fact that the original deposit by Dr. Riley was mainly biologic in its character, and to the further fact that the biologic accumulations of the United States Department of Agriculture for seventeen years, which have been very great, are now in the possession of the Museum.

The subjoined statement refers to the source of the different collections now brought together. Looking at the collection as a whole, however, the departments which stand out conspicuously are (*a*) the collection of North American Noctuidæ (probably the most complete in existence), (*b*) the collection of parasitic Hymenoptera (undoubtedly the largest collection of bred specimens in the world), (*c*) the orthopteran family, Acridiidae, (*d*) the homopterous families Coccidae, Aphidiidae, and Psyllidae (without doubt the largest accumulation of North American species), (*e*) the dipterous families Syrphidae and Empidæ, (*f*) the collection of Myriopoda.

The department is at present in excellent working condition. It contains a very great amount of material in all orders, and in many unusual directions surpasses any collection in the country. Among others the following are of special interest:

1. The large collection, in all orders, of Dr. C. V. Riley.
2. All of the material gathered during the past eighteen years by correspondents, field agents, and the office staff of the Division of Entomology, United States Department of Agriculture.
3. The greater part of the collection of Asa Fitch.
4. The large collection, in all orders, of G. W. Beltrage.
5. The collections in Lepidoptera and Coleoptera made by Dr. John B. Smith down to 1889, together with the types of the Noctuidæ since described by Dr. Smith.
6. The collection of Lepidoptera of O. Meske.
7. The collection of Lepidoptera of G. Beyer.
8. The collection of Coleoptera of M. L. Linell.
9. The bulk of the collection, in all orders, of H. K. Morrison.
10. The collection of Diptera of Edward Burgess.
11. The type collection of Syrphidae made by Dr. S. W. Williston.
12. The collection of Ixodidae of Dr. George Marx.
13. The collection of Myriopoda of C. H. Bollman.
14. Sects of the neo-tropical collections of Herbert H. Smith.
15. The collection of Hymenoptera of William J. Fox.
16. The collection of Tineina of William Beutenmüller.
17. The large Japanese collection, in all orders, of Dr. K. Mitsukuri.
18. The African collections, in all orders, of Dr. W. L. Abbott, William Astor Chauler, J. F. Brady, the Eclipse expedition of 1889-90 to West Africa, and of several missionaries.
19. The large collection from south California of D. W. Coquillett, in Coleoptera, Hymenoptera, Lepidoptera, and Orthoptera.
20. The Townsend Glover manuscripts and plates.

In addition to this material, there are minor collections which have been the result of the work of Government expeditions, or are gifts from United States consuls and many private individuals.

The most beautiful, and in many respects the most important, of the numerous series in the Department of Marine Invertebrates is the collection of corals made by the United States Exploring Expedition, and described by Dana. It includes many types of new forms. The great deep-sea collections from the North Atlantic and North Pacific, made by the United States Fish Commission, deserve notice; as do also the exhaustive collections from the New England Coast and the Fishing Banks, and from the west coast of Alaska, received from the same source. All the collections are very rich in the types of new species and higher groups.

Among the notable specimens in the Department of Comparative Anatomy should be mentioned the skulls and partial skeletons of the great extinct Arctic Seacow (*Rytina*); several skeletons of huge Galapagos Tortoises; and an unrivaled series of bones of the Great Auk. The collection is rich in skulls and skeletons of the various species of porpoises.

In the Department of Geology the following series and separate objects are pointed out by Dr. George P. Merrill as deserving special mention:

1. The Leadville, Colo., collections of rocks and ores, comprising some 380 specimens, illustrating the work of S. F. Emmons and Whitman Cross.¹

2. The Washoe collections, comprising 198 specimens, as selected and studied by George F. Becker.²

3. The collections of the Fortieth Parallel Survey. These comprise some 3,000 specimens of eruptive and sedimentary rocks collected by members of the Fortieth Parallel Survey, under the direction of Clarence King, in 1867-1873. The eruptive rocks of the series were described by Prof. Ferdinand Zirkel.³

4. The Hawes collections. These comprise some 350 specimens of eruptive altered rocks, representing in part the work done by Dr. Hawes in connection with the New Hampshire surveys.⁴ It also includes the small fragments described in his paper⁵ on the Albany granites and their contact phenomena.

5. The Pacific Slope quicksilver collections. These comprise several hundred small specimens (mostly 4 by 6 cm.) of rocks and ores from the quicksilver regions of the locality above noted, as collected and described by G. F. Becker⁶ and colleagues in "Geology of the Quicksilver Deposits of the Pacific Slope."

6. Pigeon Point collections. These comprise 400 specimens illustrating various contact phenomena, as occurring at Pigeon Point, on the north shore of Lake Superior, and as described by Prof. W. S. Bailey in a bulletin⁷ of the United States Geological Survey.

¹ Emmons, Samuel Franklin. "Geology and Mining Industry of Leadville, Colo., with atlas." Monograph XII of the United States Geological Survey, 1886.

² "Geology of the Comstock Lode and the Washoe District, with atlas." Monograph III of the United States Geological Survey, 1882.

³ "Microscopic Petrography," United States Geological Explorations of the Fortieth Parallel, Vol. VI, 1876.

⁴ "The Geology of New Hampshire," Concord, 1878, Vol. III, part IV.

⁵ American Journal of Science, 1881, Vol. XXI, pages 21-32.

⁶ Monograph XIII of the United States Geological Survey, 1886.

⁷ "The Empire and Sedimentary Rocks on Pigeon Point, Minnesota, and their Contact Phenomena," 1893. Bulletin No. 109.

7. Menominee Valley and Marquette River collections. These comprise 254 specimens illustrative of the dynamic metamorphism of eruptive rocks as described by Prof. George H. Williams.¹

8. The Eureka (Nevada) collection, comprising some 506 specimens, rocks and ores, as studied and described by Arnold Hague,² Whitman Cross, and J. S. Curtis.³

9. The Cripple Creek (Colorado) collections. These comprise some 800 specimens of rocks and ores. The material studied by Whitman Cross and R. A. F. Penrose and described in their report on the "Geology and Mining Industry of the Cripple Creek District."⁴

10. The Silver Cliff collections, comprising 300 specimens of rocks and ores. The collection upon which is based the report by Whitman Cross and R. A. F. Penrose.

11. The Tenth Census collection of building and ornamental stone comprises some 3,000 specimens, mainly in the form of 4-inch cubes, and 2,000 thin sections.⁵ These formed the basis of the results given in "The Collection of Building and Ornamental Stones; a Handbook and Catalogue."⁶

12. The Tenth Census collection of iron ores, comprising some 2,200 hand specimens and 506 thin sections. This formed the basis of Prof. Raphael Pumpelly's report.⁷

13. The collection illustrating Kirkaldy's experimental inquiry into the mechanical properties of Fagersta steel.

14. Collections from the Archaean division of the United States Geological Survey made in Vermont and Massachusetts, and forming the basis of the petrographic work to be published in a forthcoming monograph.⁸

Among the materials of greatest historical importance may be mentioned:

(a) A mass of iron smelted by members of the Frobisher expedition during their stay at Frobisher Bay in 1578.

(b) A piece of metallic tin smelted by Dr. T. C. Jackson in 1840 from ore found at Jackson, Carroll County, N. H., and believed to have been the first tin smelted in America.

(c) The first steel car axle made in America and bent cold

(d) Copper medal. Struck from the first copper produced in Colorado in 1866.

(e) Placer gold. First gold discovered in California, from tail race 200 yards below the mill, panned by J. W. Marshall on the evenings of the 19th and 20th of January, 1848. Marshall's Claim, Sutter's Mill, Coloma, El Dorado County, Cal.

(f) Sample of petroleum from the first flowing well in the United States. Drilled in 1829 near Burkesville, Ky.

Among the more striking collections of the exhibition series may be mentioned the one illustrating limestone caverns and associated phenomena. This includes not only a large and variegated series of stalagmitic and stalactitic minerals, but also representative forms of animal life such as inhabit caverns. The collection as a

¹"The Greenstone Schist Areas of the Menominee and Marquette Regions of Michigan." 1890. Bulletin No. 62 of the United States Geological Survey.

²Hague, Arnold. "Geology of the Eureka District, Nevada, with Atlas," 1892. Monograph xx of the United States Geological Survey.

³Curtis, Joseph Story. "Silver-lead Deposits of Eureka, Nevada, 1884." Monograph VII of the United States Geological Survey.

⁴Sixteenth Annual Report of the United States Geological Survey, part II, 1894-95.

⁵Merrill, George P. "Special reports on Petroleum, Coke, and Building Stones, Tenth Census of the United States," 1880, Vol. X.

⁶Report United States National Museum, 1886, page 277.

⁷Report on the Mining Industries of the United States, with special investigations into the iron resources of the Republic, and into the Cretaceous coals of the Northwest. Vol. XV.

⁸See also Thirteenth and Fourteenth Annual Reports of the United States Geological Survey.

whole is doubtless the most complete and systematic of its kind in any museum in the world.

In the economic section are very full and systematic collections illustrating the mineral resources of the United States, arranged geographically, and also a systematic series in which minerals of the same nature and from world-wide sources are arranged by kinds. This collection comprises probably not fewer than 10,000 specimens.

Mr. F. V. Coville, honorary curator of the Department of Botany, furnishes the following brief account of the collection of plants:

With reference to the collections in the Department of Botany, it may be said that they constitute what is commonly known as the National Herbarium. The nucleus of the herbarium consisted of the plants collected by the Wilkes exploring expedition during the years 1838 to 1842. To these were added later the material from the North Pacific exploring expedition of Ringgold and Rodgers, followed by those of Frémont, the Mexican Boundary Commission, the Pacific Railroad surveys, and all the later explorations and expeditions of the Government.

In recent years the largest amount of material received has come from the Division of Botany in the Department of Agriculture, material brought together in the pursuit of the investigations of that establishment. Especially noteworthy among these is the collection of grasses which Dr. George Vasey gathered during his studies of the forage plants of the United States during a period of about twenty years.

To the collections of the exploring expeditions and those of the Department of Agriculture has been added a large amount of material donated by American botanists or purchased from collectors, besides large consignments of plants received from various foreign institutions or individuals principally as gifts or in exchange.

The collections of the exploring expeditions and the collection of grasses are especially rich in type specimens.

Mention should be made of the collections of George Joad, comprising about 10,000 species of representative plants of the globe, more especially those of Europe; and the collection of Prof. Lester F. Ward, comprising the specimens on which his "Flora of Washington and vicinity" is based, in addition to important collections made by Professor Ward and his correspondents in other parts of the United States. Both the Ward and the Joad collections were acquired by the Museum in 1885.

The important collections of the Department of Minerals are summarized by Mr. Wirt Tassin, assistant curator, as follows:

At the request of Prof. F. W. Clarke, the honorary curator, I have prepared, and transmit herewith, a list of some of the most important collections and single objects in the Mineral Department. They are:

The Isaac Lea collections, including a collection of minerals, a collection of micas and quartzes, and a collection of gems and ornamental stones, among which may be noted as of especial interest a fine green tourmaline of 57 carats, a red specimen of 18 carats, and a hair-brown one of 16 carats, from Mount Mica, Paris, Me; a doubly terminated emerald crystal from Stony Point, Alexander County, N. C., one of the largest ever found, measuring 3.1 by 2 inches and weighing 8 ounces and 3 pennyweights; a crystal ball cut from North Carolina quartz; a silver nugget weighing 448 ounces, from near Globe, Ariz; one of the largest known cut Ceylon essonites; four large Ceylon asteria; a fine suite of opals in argillaceous limonite, Baracoo River, Queensland.

The Leidy collection of minerals, received from the United States Geological Survey.

A series illustrating the occurrence and associations of the zinc and lead minerals of southwest Missouri, collected by W. P. Jenney.

A series illustrating the mineralogy of the Pikes Peak region, collected by Whitman Cross, of the United States Geological Survey.

A series of original and type zeolites from Table Mountain, Gunnison County, Colo., collected by Whitman Cross, of the United States Geological Survey.

A series of uranium minerals used in the work leading to the discovery of nitrogen in uraninite and later of argon, given by Dr. W. F. Hillebrand.

A series of copper carbonates from Copper Queen mine, Arizona, a gift of the Copper Queen Consolidated Mining Company, through James Douglas, president.

A series of azurite crystals and associated minerals from the copper regions of Arizona, together with a series of vanadium minerals from New Mexico, collected by Dr. W. F. Hillebrand.

A series illustrating the occurrence and association of the zinc minerals of New Jersey, collected by Wirt Tassin.

The type specimens of warrenite.

A slab of sodalite, size 2 by 2 inches; a polished slab of labradorite, 2 by 2 inches; a slab of calcite crystals, 4 by 4 inches; two large sections of agatized wood from Arizona, deposited by the Drake Company; the Ontonagon copper boulder; a series of Sicilian sulphur crystals; the Shepard collections of meteorites; the Ring or Irwin meteorite; a suite of meteoric irons from Canyon Diablo, Arizona, varying in weight from 964 pounds to a few ounces.

To the list may be added the Stroud collection, the Hawes collection, the Abert collection, the various accessions received at different times from the United States Geological Survey, and other smaller collections containing valuable material of scientific and other importance.

Of the Department of Paleontology, Mr. Charles Schuchert, assistant curator, writes:

The feature of greatest importance is that much of our material has served in Government reports and is the basis for the geological and paleontological work treating of the western part of our country. This fact is well exemplified in the great number of species which have served in description and illustration, many of which are the original type specimens. There are of such species 5,741. These are distributed in the sections of this department as follows:

Paleozoic invertebrate species.....	1,155
Mesozoic invertebrate species.....	1,024
Cenozoic invertebrate species.....	1,304
Vertebrate species	161
Paleozoic plant species (Lacoe collection).....	504
Mesozoic and Cenozoic plant species.....	1,531
Insect species.....	62

The most complete series is the Lacoe collection of American Paleozoic plants, the labeled specimens of which alone number upward of 18,000, and of these more than 500 species have been described or illustrated by Lesquereux and White. This magnificent collection is the result of many years' accumulation, and cost upward of \$50,000. It was donated to this Museum in 1891 by Mr. R. D. Lacoe, of Pittston, Pa.

The collection of Cambrian fossils is very large, and when Mr. Walcott shall have completed his studies upon this material it will be the most complete and valuable series of fossils of this system extant.

The Cretaceous collection is also quite extensive and represents much work by F. B. Meek, C. A. White, and T. W. Stanton.

The Tertiary collection of Mollusca is one of the conspicuous features of this department. This collection was accumulated chiefly by William H. Dall.

Among single objects the following deserve mention:

A composite slab of Lower Carboniferous fossils measuring 4 by 6 feet, and showing in high relief 106 crinoids (16 species) and other fossils.

A *Lepinodendron* trunk 3 feet wide and 30 feet long (Lacoe collection).

A series of 6 cycad trunks from the Lower Cretaceous of South Dakota.

Bones representing a nearly complete *Zeuglodon cetoides* from the Eocene of Alabama, and of which a life-sized restoration is exhibited.

Skulls and limb bones of the huge Cretaceous dinosaur, *Triceratops*, from Wyoming.

An excellent skeleton of the Irish elk, *Megaceros hibernicus* Owen.

The collections of the Department of Prehistoric Anthropology are thus described by the curator, Dr. Thomas Wilson:

There are three great stages of culture, or civilization, represented in this department, which are separated and installed according to locality.

The first, and probably the earliest, is that of western Europe, of which the Museum possesses an extensive collection, the largest in the United States, showing the culture of prehistoric man, from the earliest times down to the Bronze Age and the Etruscans, where it joins history.

The second great division represents the territory of the United States and British Columbia. This constitutes the bulk of the collection, and comprises the hatchets, axes, implements, and other objects of stone. The mounds of the Ohio and Mississippi valleys have yielded large representations of pottery.

The third stage of culture is that belonging to Mexico and Central America, variously called Aztec and similar local names. While it comprises many stone implements, it extends further and wider than either of the foregoing, having jade, obsidian, and gold objects and ornaments. Its pottery is fine and beautifully made and decorated, while some of the ruder pieces, representing gods, especially from Mexico, are made with a wealth of detail that has increased the difficulty of manufacture almost beyond the belief of possibility in savage life.

The display from South America is important, resembling the culture of Central America more than that of North America.

The department has one of the richest displays of prehistoric objects in the United States. It contains more than 250,000 objects, which it is impossible to name. They, however, are divided both technologically and geographically, and by comparison in these two regards the endeavor is made to determine the stage of culture and obtain some insight into the history of prehistoric man.

Regarding the Department of Ethnology, the curator, Prof. Otis T. Mason, writes:

The ethnological collection of the Museum relates chiefly to the North American Indians, but it includes also valuable series of objects from Polynesia, obtained by the United States Exploring Expedition, such as the old Tapa cloths and weapons, which are no longer obtainable.

The Eskimo collection is unrivaled. The collections of the Bureau of Ethnology and other Government surveys on the west coast of the Pacific Ocean in North America and in the Pueblo region of the southwestern United States are the most extensive and valuable ever assembled. Among single objects of high value and rarity may be mentioned a large jade knife from Alaska, obtained by E. W. Nelson; a fine series of boats and totem posts from the west Pacific Coast of America, by J. G. Swan. In the Powell collection there are rare old pieces of pottery from the ruined pueblos. A Hawaiian feather cloak, of large size and well preserved, also deserves mention.

I present the following list of the most conspicuous and useful collections in alphabetical order, by collectors:

A collection of great value from eastern Africa, Kashmir, and southeastern Asia, by Dr. William L. Abbott, of Philadelphia; a collection illustrative of the ethnography of Korea, by Lient. J. B. Bernadou, U. S. N.; a collection from the department of education in Japan to illustrate the practical industries of this country, in com-

parison with the tools and appliances brought home by Commodore Perry; the collection of Dr. Franz Boas, illustrative of the ceremonial usages of British Columbia and the Northwest Coast; of Capt. John G. Bourke, U. S. A., gathered from Indian tribes in the United States during his long engagements on the frontier; of Dr. J. F. Bransford, U. S. N., pottery and other materials from the graves of Nicaragua; enormous collections from the great Interior Basin and Pueblo region to illustrate the costume and arts of the Shoshonean and Pueblo tribes, also materials gathered by James Mooney and others of the Bureau of Ethnology from the tribes in the Indian Territory; collection of Heli Chatelain, from Angola; large collection from the Chinese Imperial Commission in the Centennial Exposition in Philadelphia; a rare old collection from Liberia and vicinity, made by the Colonization Society of Washington; collection illustrative of the games of the world, by Stewart Culin, of Philadelphia; collections especially from South America made by the Government agents for the World's Columbian Exposition in Chicago; collections of William H. Dall, associated with Dr. Tarleton H. Bean and Marcus Baker, in various parts of Alaska; collections, well labeled, from the Tlingit Indians, by Lieut. George T. Emmons, U. S. N.; a small but extremely valuable collection from west Greenland, by Governor Fenckner; a precious collection of pottery and other objects from old ruined pueblos in New Mexico and Arizona, by Dr. J. Walter Fewkes; collection of William J. Fisher from the Eskimo and Aleuts on the Alaskan Peninsula, the Island of Kadiak and vicinity; collection of William M. Gabb from Central America; old and precious collections from Oregon and British Columbia, by George Gibbs; a small and rare collection from the west coast of South America, by Lieut. J. M. Gilliss, U. S. N.; a small and extremely rare collection from Fury and Hecla Straits, by Capt. Charles F. Hall; collections of the Geographical and Geological Survey of the Territories, by Dr. F. V. Hayden; small collection from north Greenland and Grinnell Land, by Dr. I. I. Hayes; collection from the Amazon River, by Lieutenant Herndon, U. S. N.; collection from the Ainos and northern Japanese, by Romyn Hitchcock; collections from the Indians of the western Great Lakes, by Dr. W. J. Hoffman; collections from the Swiss lake dwellings, by Prof. Joseph Jilsson; collections from southeastern Japan, by P. L. Jony; collections from the Mackenzie River district, by Mr. Robert Kennicott; royal gift from the King of Siam, through Gen. J. A. Halderman; collection from Cumberland Gulf, by Ludwig Kunlien; a priceless collection of antiquities from Puerto Rico, by George Latimer; collection from Bristol Bay, by Charles L. McKay; extremely valuable collection from Mackenzie River district, by Robert MacFarlane, of the Hudson Bay Company; collection from the Kongo region, by Dorsey Mohun; collection from the Sioux tribes of Dakota, by Dr. Washington Matthews, U. S. A.; an immense collection, covering many thousand numbers, from Alaska, by E. W. Nelson; collections from the Southwest and Mexico, by Dr. Edward Palmer; collections from Japan, by Commodore Perry, U. S. N.; collections from the tribes of Utah, by Maj. J. W. Powell, of the United States Geological Survey; collections from northern and central California, by Stephen Powers; collections from Kotzebue Sound and of the Ilupa Indians from northern California, by Capt. P. H. Ray, U. S. A.; collection from Tibet, by W. W. Rockhill; collection from the Chukche country and Alaska, by Commodore John Rodgers, U. S. N.; collection from the Mackenzie River district, by B. R. Ross, of the Hudson Bay Company; collection from South America, especially Peru, by Lieut. W. E. Safford, U. S. N.; collection by Rev. George W. Samson, from the Holy Land; collection by Paul Shoemaker on the shell heaps of the West Coast, especially Santa Barbara Island; collection of Lieut. G. M. Stoney, U. S. N., from Kotzebue Sound; collection by James G. Swan, from the North Pacific Coast of America; collection by Talcott Williams, from North Africa; collection by Lieut. E. H. Taunt, U. S. N., from the Kongo region; collection of Dr. William M. Thomson, U. S. N., from Easter Island; collection of Hon. W. P. Tisdell, from the Kongo region; collection of Lucien M. Turner, from Labrador and North Sound; collection of Capt. G. M. Wheeler, U.

S. A., from southern California; collection of Capt. A. W. Whipple, U. S. A., from Southwest; collection of Rouncevelle Wildman, from eastern China; collection of the Wilkes Exploring Expedition from Polynesia to the West Coast of America.

In addition to those already named should be mentioned the various branches of the United States executive service, the Department of State, the War Department, the Navy Department, and the Department of the Interior.

Of the Section of Oriental Antiquities and Religious Ceremonials, Dr. Cyrus Adler writes:

This section comprises a small collection, interesting not so much because of the intrinsic value of the objects as because of the relation in which they are shown. It may be divided, according to religions and nations, into nine sections: (1) Biblico-Judaic, (2) Christian, (3) Mohammedan, (4) Egyptian, (5) Assyro-Babylonian, (6) Hittite, (7) Græco-Roman, (8) Brahman, (9) Buddhist.

Of the Biblico-Judaic section, the collection of manuscripts and editions of the Bible and its versions (forty-one in number) may be considered as the most important, having both a literary and paleographic interest. Next to this may be mentioned the collection of objects of Jewish ceremonials, which, besides being a complete set of the objects used by the Jews in their religious observances, is of much artistic and historical value.

In the Egyptian section the mummy with its cases and the facsimile of the "Book of the Dead" ranks foremost. In the Assyro-Babylonian section the most imposing objects are the two colossal composite figures and the model of a temple tower of Babel, the latter being unique. For purposes of the study of the mythology and culture of Mesopotamia, the collection of seals (upwards of 300 in number) is important.

The whole collection of Hittite casts (thirty-eight) is unique in America, and affords a basis for the study of the history and civilization of this people, who played such an important part in the ancient history of the Orient.

In the Græco-Roman division rank foremost the Serpent Column of Delphi and the reliefs of the pedestal of the Obelisk, both from the Hippodrome in Constantinople. These casts are unique.

In the Buddhist section there are some fine images of Buddha of carved wood and bronze, models of pagodas from Japan, and a rare collection of musical instruments as well as other religious implements from China.

A rare piece of mosaic, representing a lion attacking a horse, from an ancient temple in Carthage, also deserves especial mention.

The varied collections grouped together in the Department of Arts and Industries are not readily summarized, but the following statements of those having the most important series in charge will be of interest:

In the section of historical collections [writes Mr. A. Howard Clark, honorary curator] are exhibited personal relics of representative men and memorials of events and places of historic importance. The nucleus of the collection was the Washington relics transferred from the Patent Office in 1883, and these still comprise the choicest of the historical treasures, including, as they do, so many objects intimately associated with General Washington during his home life, as well as military campaigns. Furniture, porcelain, glassware, and ornamental articles from Mount Vernon, Royal Worcester vases presented to him by Samuel Vaughan, the Martha Washington china, presented by Van Braam, a beautiful Niederweiler bowl, personally presented in 1792 by the Comte de Custine, and a nearly complete dinner service of Chinese ware decorated with the insignia of the Society of the Cincinnati; and besides these, the tents, camp chest, field glass, and writing case used by Wash-

ington during the War of the Revolution, as also miniature portraits of the General and Martha Washington painted on wood by the artist Trumbull.

Next in importance to the Washington relics are the almost priceless memorials of General Grant—the saddle, sword, field glasses, and other objects used by him during his military career; all his commissions in the Army, from lieutenant by brevet during the Mexican war up through the several grades to general, and his certificate as President of the United States; handsomely mounted swords; and the great gold medal with which he was honored by Congress for his military services; many elegant gifts received during his tour of the world, including the beautiful jade vase and ornamented bell standard given him by Prince Kung, of China.

By the side of these treasures are valuable gifts to Presidents of the United States and to statesmen, soldiers, and other representative Americans; some Moorish guns, highly decorated with gold and coral, and a gold-mounted sword, gifts to Thomas Jefferson from the Emperor of Morocco; jeweled and gold-scabbard swords presented by citizens of States and cities for military bravery to General Ripley, Commodores Elliott and Biddle, Admiral Trenchard, Generals Hancock, Paul, and others.

Here, too, are exhibited the great gold medal presented by Congress to Joseph Francis for his service to the world as inventor of life-saving appliances; the beautiful vase presented to Professor Baird by the Emperor of Germany as the grand prize of the Berlin International Fishery Exhibition; the silver urn from the citizens of Baltimore to Commodore John Rodgers for his services in defense of that city during the war of 1812; the garrison flag of Fort Moultrie in December, 1860, when that fort was evacuated by Anderson; the war saddle of Baron De Kalb, who gave his life for American independence; the uniform worn by General Jackson at the battle of New Orleans, and many other individual objects of great historic value.

A most instructive historic treasure is the Copp collection of household objects and wearing apparel, illustrating the home life of the New England colonists from 1635 to the period of the war of the Revolution, the gift of Mr. John Brenton Copp.

As a precious treasure in memory of the immortal Lincoln, there is the original plaster life-mask. Equally interesting are the molds of the hands made by the sculptor Volk, in 1860, just prior to the nomination of Lincoln for President of the United States.

As a most conspicuous object, and a treasure as well, may be mentioned the original full-sized plaster model of Liberty by Crawford, from which was cast the bronze statue surmounting the United States Capitol.

Of the sections of Transportation, Engineering, and Naval Architecture and Physical Apparatus, Mr. J. E. Watkins, curator, writes as follows:

The collections in transportation, engineering, and naval architecture, although not great in extent, are particularly valuable on account of the historical interest of almost every object which has been collected and is now on exhibition. Notable among the objects is the cylinder of the first steam engine erected on the Western Continent, by Josiah Hornblower, in 1753, sixteen years before James Watt began his investigations of the properties of steam. The Museum has also been fortunate in obtaining the original machinery of the Stevens twin-screw propeller steamboat, constructed and operated in the year 1804, three years before Robert Fulton operated the *Clermont* on the Hudson River. The original multitubular boiler of the Stevens locomotive of 1825, which ran in Hoboken, N. J., four years before Stephenson's *Rocket*, also forms a part of this collection. A cylinder and other portions of the locomotive "Stourbridge Lion," the first locomotive built for traffic on the Western Continent, was obtained several years ago through the cooperation of Horatio Allen, who, in August, 1829, first ran this locomotive near Honesdale, Pa. The series showing the development of permanent way in America is unique, as is the

two collections of models showing the development of wheel vehicles and machinery of the steamboats invented by Rumsey, Fitch, Fulton, and Ericsson.

The Ramsden dividing engine, used in the last century to divide equally the circles of quadrants and other mathematical instruments, which is the earliest machine of this kind extant, also forms a part of the collection of apparatus. A very important and valuable recent addition to this section is the seismological apparatus, displayed at the World's Columbian Exposition in the Japanese exhibit, and since presented to the Museum by that Government.

The electrical collections contain objects of extreme importance and value. Among these may be mentioned one of the first three large horseshoe electric magnets, wound and experimented with by Henry, together with the battery, first motor, and other similar appliances constructed by Henry while in Princeton; and the original telegraph apparatus invented by Professor Morse. The original telegraph instrument from which was received the historic message, "What hath God wrought," in Baltimore, 1844, also forms part of this collection, together with objects illustrating the beginnings and development of the storage battery and electric incandescent and arc lamps, and other electrical apparatus.

The telephone which Johann Philipp Reis, of Frankfort, invented in 1860 is another object of much interest and value.

The collection of *materia medica* is probably the most complete and most carefully labeled collection of its kind exhibited in any museum. It is very full in many directions, and is especially rich in specimens of cinchona. Of the latter series Dr. J. M. Flint, U. S. N., the honorary curator, writes:

I regard the collection of cinchona products as the most important in the *Materia Medica* Section. This collection embraces specimens of nearly all the natural cinchona barks of South America, every variety of the cultivated product from the Government plantations in India, together with most of the cultivated sorts from Java, Ceylon, Jamaica, and Mexico. The India and Jamaica collections comprise also herbarium specimens of the leaf and flower, and in many cases the fruit of each variety of cinchona tree from which the bark is taken.

Of the section of Graphic Arts, Mr. S. R. Koehler writes:

This section was definitely organized in January, 1887, although its beginning goes back to at least the year 1884. From a very few specimens then on hand the collections in this section have increased to the number of 5,620 specimens at the present writing, but as many of the entries on the catalogue cover more than one specimen, it will be safe to say that the total number is about 6,000.

The aim of the section is to illustrate the various processes of making pictures by lines and masses, either black or in colors, by hand, or with the aid of machinery, and the application of these processes in the industrial arts. To reach this aim, all the methods of making pictures that have ever been essayed are eventually to be illustrated—and many of them are already illustrated—by the tools and materials used, by the product in the various stages of progress, and by historical examples showing the development of each process, from the invention to the present time.

In addition to the collections already noticed, the Museum possesses a good series of musical instruments, assembled under the immediate direction of Dr. Goode; a collection of porcelains, bronzes, and ivory carvings; a large and varied collection illustrating fisheries, which was brought together chiefly in connection with the Fisheries Exhibition of Berlin and London; a small forestry collection; a collection of foods; a collection representing the utilization of industrial products

derived from animals; a collection of fibers and textiles; and a series of objects illustrating the chemical composition of the human body.

I have already alluded to the work done by the Museum in the direction of supplying from its surplus the needs of other scientific and educational establishments.

This undertaking was inaugurated at an early date, as I have stated on a preceding page (p. 297), and already in 1866, at the end of the second decade of the Institution, 110,000 specimens from the collections had been distributed. At the close of the fifth decade, in 1896, the number had risen to 521,000 specimens. These included animals of every class and many geological and mineralogical specimens and plants.

Every State and Territory in the Union has received a share of these collections, and numerous institutions outside the United States have also been beneficiaries in the distribution.

The majority of these specimens were distributed without demand for or expectation of a return; but the National Museum has received from other institutions in exchange for the collections sent out a body of specimens amounting in all to perhaps one-third the number distributed. Important additions have been made to the Museum in this way, and, indeed, its surplus collections, owing to the comparatively small amounts available for purchases, have constituted its chief capital. The system of exchanges, however, has its limitations, which are soon felt. Few institutions carry large quantities of surplus material, and none, of course, dispose of their most precious possessions. Exchange, therefore, takes the place of purchase only to a limited extent.

The Smithsonian Institution has carried on the distribution of surplus specimens from its own collections as a part of its regular activities having for their object the diffusion of knowledge. The Government has shown its acquiescence in this policy, so far as the national collections are concerned, by several enactments making appropriations for the work and in other ways.

In 1878 the Museum began the publication of a scientific journal, which has become well known to the world of science under the name of "Proceedings of the United States National Museum." The object of this journal, as indicated in the "advertisement" inserted in the volumes, is "the prompt publication of freshly acquired facts relating to biology, anthropology, and geology; descriptions of restricted groups of animals and plants; the settlement of particular questions relative to the synonymy of species, and the diaries of minor expeditions." Eighteen volumes had been published to the close of 1895, containing in all no fewer than 1,100 papers, comprising 12,056 printed pages. All the papers relate directly or indirectly to the collections of the Museum and serve to make them known to specialists. The volumes include¹ a large

¹With the "Bulletins" to be mentioned presently.

share of the scientific publications of the curators of the Museum, whose investigations have very naturally been based for the most part on the collections under their care. The "Proceedings" is a great storehouse of facts relating to natural history, and especially in the field of systematic zoology, but the work of every department of the Museum is reflected in its pages.

A few years before the establishment of the "Proceedings," in 1875, the Museum began the publication of a series of monographic works, under the general title of the "Bulletin of the United States National Museum," which in 1895 had reached 49 numbers. This series does not differ essentially in character from the "Proceedings," but comprises for the most part works too large to be conveniently included in the latter journal and generally of a more comprehensive scope.

The regular series of both "Proceedings" and "Bulletin" are in octavo, but the Museum has also published three numbers of the latter series, as "Special Bulletins," in quarto. Two of these contain "Life Histories of North American Birds, with special reference to their breeding habits and eggs," by Major Bendire, and the third, a treatise on "Oceanic Ichthyology," by Dr. Goode and Dr. Tarleton H. Bean.

The report of the Board of Regents of the Smithsonian Institution until 1884 consisted each year of a single volume in which was included a statement of the operations of the National Museum. The report of 1884, however, and those of subsequent years have been published in two volumes, of which one is devoted exclusively to a statement of the work of the Museum. In connection with the administrative reports contained in these volumes has been published a series of illustrated papers of a nontechnical character descriptive of various collections in the Museum. These papers have the same interest for nonprofessional readers that the technical papers in the "Proceedings" have for investigators, and the demand for them reveals a widespread interest in zoology, botany, anthropology, and those other subjects with which the work of the Museum has been most closely connected.