

A National Science and a National Museum

Pamela M. Henson

*Institutional History Division, Smithsonian Institution Archives,
Washington, D.C. 20013-7012; Email: hensonp@si.edu.*

In 1881, the United States National Museum building opened in Washington, D.C., to display the flora, fauna, minerals, ethnology, history and arts of the United States to all the citizens of a democracy. It also served as a scientific and economic resource for studying the natural world and advancing the American economy. It had taken over a century after the Revolution for the young nation to build a national museum on par with those of European capitals, and that also met the demands of a rapidly growing and industrializing democratic society. This essay will trace some of the roots, forces, and stresses that shaped American science and the first distinctly American National Museum.

The Colonial Era

Interest in systematically collecting and describing the flora, fauna, and minerals of North America began with discovery and exploration of the continent by Europeans. Tales of the many curious animals and plants, from corn to tobacco, opossums to bison, fascinated Continental scientists. Colonists brought European, and especially English, scientific traditions with them and soon began collecting specimens for scientific study. Initially colonial naturalists sent their specimens, notes, and drawings back to England to be compared with the large collections there and to be described by leading scientists in British scientific journals.¹ Sir Hans Sloane (1660–1753), president of the Royal College of Physicians and the Royal Society of London, actively encouraged science in the colonies of North America. He sought specimens from correspondents for his growing natural history collection that formed the core of the British Museum in 1853. His correspondents included Cadwallader Colden (1689–1776), the lieutenant governor of New York who was also a fine naturalist, interested particularly in botany. Colden maintained a correspondence with Carl von Linné (1707–1778) and shipped many specimens to him and to British naturalists for study. He also published in England an interesting study of Native Americans, titled *The History of the Five Indian Nations Depending on the Province of New York in 1727*.²

Sloane's collections were augmented by quite a few colonists. Further south, William Byrd II (1674–1744) of Virginia in 1697 presented to the Royal Society of London a live rattlesnake and a live opossum, the latter creature causing a great debate about its proper classification. Like Colden, Byrd maintained a correspondence with British savants and provided them with exciting new materials to study. He also patronized young American scientists, such as Mark Catesby, and maintained an extensive garden, but did not pursue the serious study that characterized some of the colonial naturalists.³

In Massachusetts, Cotton Mather (1663–1728) initiated a correspondence with the Royal Society in 1712, known as his *Curiosa Americana*, a series of some 82 letters spanning twelve years in which he described the natural history of his region, accompanied by specimens for the

Society's collections. Occasionally these letters were published in the *Philosophical Transactions* of the Society, and the topics spanned botany, entomology, ornithology, zoology, anthropology, astronomy, geology, and meteorology, as well as philosophy, psychology, mathematics, and medicine. Included among Mather's accomplishments is the first account of hybridization of Indian corn and squash. But Mather's contributions, like his fellow colonials, were received diffidently by the Royal Society members in London, who appreciated descriptions and drawings, but wanted the theorizing left to the real scholars in London.⁴

Colden, Byrd, Mather, and their colleagues were well-educated men of means, and they were usually named corresponding members of the Royal Society of London. Their letters were read and occasionally published; however, they lacked the training and stature of London's scientific elite. They did not have access to great libraries or the specimen collections they needed to study to compare their new specimens. Thus most of these colonial naturalists were relegated to the status of collector, rather than published scientist. Nevertheless, through their collections and observations, they made substantial contributions to the natural history of North America and to the great natural history cabinets at the Royal Society, Jardin des Plantes and other European collections.⁵

In the following decades, several noted collectors traveled through the colonies, preparing notes and drawings of the exciting new plants and animals. Well-known among these are Mark Catesby (1683–1749), and John (1699–1777) and William (1739–1823) Bartram. Catesby immigrated to Virginia from Essex, England, in 1712 and soon became interested in natural history. Initially focusing on botany, he collected plants for English correspondents. He spent three years traveling around the Carolinas, collecting specimens, compiling notes, and preparing drawings and watercolors. He returned to London in 1726 where he struggled to produce his magisterial work, *Natural History of Carolina, Florida, and the Bahama Islands*, that was completed in 1743. This publication was the first major illustrated study of American natural history. Catesby bridged the gap between London and the colonies, but ultimately his collections and notes were deposited in London, maintaining the center of science there.⁶

John Bartram, a Pennsylvania Quaker farmer, was known for the botanical specimens he collected for the merchant-naturalist Peter Collinson (1694–1768) and Hans Sloane in London in the 1730s. Bartram soon developed a career as a collector of fossils, insects, animals, and minerals as well, filling out the collections of British scientists. His son William's journals of his travels through the colonies are among our best descriptions of colonial natural history. John Bartram also established a botanic garden at his farm that was maintained by his sons after his death in 1777.⁷

As productive as these networks were, there were stresses in these scientific relationships. Colonists struggled to have their intellectual contributions taken seriously across the Atlantic. Indeed, they had to prove that their native plants and animals were worth serious scientific study. Continental scientists, such as George Louis Leclerc, comte de Buffon (1707–1778) of the Jardin des Plantes in Paris, claimed that the flora and fauna of the New World were biologically inferior to European species. They argued that American plants and animals were smaller and not as vigorous because of the more recent origin of the New World, giving it an inferior climate, soil and topography. American species were viewed as migrants from the Old World that had degenerated in the substandard or lesser environment. The claim drew an immediate and sharp refutation.⁸

In the fractious decades before the revolution, as ties to England weakened and murmurings of political independence were heard, American naturalists began to think more in terms of scientific independence as well. Colonial savants began to form their own organizations to support their interest in science. Benjamin Franklin (1706–1790) (Fig. 1) first founded a philosophical society in Philadelphia in 1743, and it became the American Philosophical Society in 1769. This society was broad in scope, spanning natural history, astronomy, mathematics, chemistry, agriculture, and

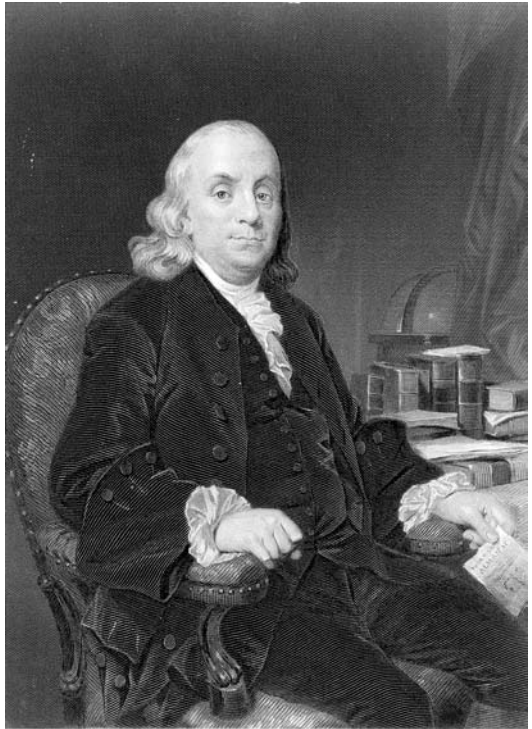
the useful arts. The Philosophical Society stimulated much activity in American science, presenting original papers and publishing American works. It also amassed a fine library and a museum collection for use by its members.⁹

This level of activity in Philadelphia spurred the New Englanders to action and, in 1779, John Adams (1735–1826) founded the American Academy of Arts and Sciences to assert the preeminence of Boston in the intellectual life of the nation. Most of its members were on the Harvard College faculty, giving it a strong and stable core. The Academy sponsored lectures and formed a library. The American Academy never, however, created a museum collection, and it would be some years before that gap would be filled in the Massachusetts Bay Colony.¹⁰

The Early Republic

In the early years of the new republic, more voices could be heard calling for a national science and less dependence on Europe. After the Revolution, Philadelphia continued to serve as a center for naturalists. In 1802, Alexander Wilson (1766–1813) moved to a property near the Bartram gardens and was given access to the Bartrams' excellent natural history library. Inspired by these works, Wilson determined to prepare his own *American Ornithology*. Encouraged by William Bartram, he traveled on foot through the colonies compiling notes, drawings, and specimens. When his work was published by the Philadelphia printer Samuel Bradford, Wilson wrote in his preface that he compiled the *American Ornithology* to free the colonies from "that transatlantic and humiliating reproach of being obliged to apply to Europe for an account and description of the production of our own country." Self-taught and self-financed, Wilson produced the first comprehensive lists, drawings and scientific descriptions of North American birds. And it was the first American bird book with the color plates actually prepared in the United States. By the opening of the nineteenth century, then, naturalists were taking concrete steps to free themselves from dependence on both Britain and the Continent.¹¹

This independence was encouraged by and epitomized by their president, Thomas Jefferson (1743–1826). Interested in science himself, Jefferson had dabbled in natural history for many years. He was among the American naturalists who responded to Buffon's claim of inferiority of American species, producing "A Comparative View of the Quadrupeds," in his *Notes on the State of Virginia*, and delivering it personally to Buffon with specimens of moose and panthers. Two hundred years ago, Jefferson commissioned the Corps of Discovery, the transcontinental expedition of Lewis and Clark, that searched for an easy route to the Pacific from 1803 to 1806.¹²



Benjamin Franklin

FIGURE 1. Benjamin Franklin, founder of the American Philosophical Society. Smithsonian Institution Archives.

Meriwether Lewis (1774–1809) and William Clark (1770–1838) shipped many live and dead specimens back to the East Coast as they traveled, and they greatly increased the knowledge of North American geology, topography, flora and fauna. However, their collections were, for the most part, dispersed. There was no organization like the Royal Society or French Academy to take responsibility for the description and preservation of these collections, which included numerous type specimens because the species were unknown to western science. Lewis and Clark sent many of the specimens to Jefferson in Monticello, where Jefferson created a small museum in the foyer of his home. All that survives today is a set of elk antlers. Other specimens were sent to interested naturalists for identification, and the collection was thus scattered.¹³

Fortunately, a significant portion of the plant specimens was deposited in the herbarium at a new Academy of Natural Sciences in Philadelphia. Other specimens and fossils were donated to the American Philosophical Society, eventually joining the plants at the Academy. Descriptions of the plants, animals, and fossils appeared in Wilson's *American Ornithology* and other works on American natural history of the period. Many other live animals and specimens from the Lewis and Clark expedition went to a new public museum in Philadelphia. But the bulk of the materials were lost to science.¹⁴

The new public museum was the handiwork of Charles Willson Peale (1742–1827), an eighteenth century polymath interested in the arts and sciences, and strong supporter of the American Revolution. A noted portrait painter, Peale initially created an art gallery. He then began to amass a fine collection of natural history specimens in the second half of the 1700s. In 1786, he placed his collection on view for the public in his home in Philadelphia, and it generated a great deal of public interest. Indeed, the following year, George Washington (1732–1799) donated a pair of Chinese pheasants to the growing collection (Fig. 2). Peale believed that a museum could provide “rational amusement” and education to the general public. Such a museum created a world in miniature that would educate the citizens of a democracy and develop their virtue. Wealthy Philadelphians could purchase annual subscriptions to the museum and donate artifacts to its collections, establishing their role in the city's intellectual elite. Peale was one of the first American naturalists to envision a national museum, and so in 1792 he created a Society of Inspectors for his



FIGURE 2. Golden pheasants mounted by Charles Willson Peale for his Philadelphia Museum. The Marquis de Lafayette gave the birds to George Washington. Smithsonian Institution Archives.

museum that included such political luminaries as Thomas Jefferson and Edmund Randolph (1753–1813). He counted among his friends such figures as Jefferson, Benjamin Franklin and David Rittenhouse (1732–1796). Through the society, Peale hoped to attract both private support and government funding; however, this support never materialized. In 1794, he obtained a ten-year lease to lodge his collections at the American Philosophical Society building on State House Square.¹⁵

The Peale Museum was perhaps best known for the giant mastodon skeleton that Peale placed on display on Christmas Eve in 1801. Found on a farm in the Hudson Valley of New York, Peale had overseen the massive excavation project of this spectacular specimen, the first complete fossil specimen placed on display in the United States. Peale paid the farmer, John Masten, \$300 and a fine shotgun for the bones that he had discovered three years earlier. Peale had to devise machinery to drain the bog and scaffolds to lift the massive bones out, but by the end of the summer, he had a largely complete skeleton. Peale, his sons, and servant Moses Williams labored for three months to reconstruct the creature from its many parts, attaching vertebrae to an iron rod and filling in missing parts of the skull with papier-mâché. Only one fossil skeleton, of a megatherium, had been reconstructed earlier, that one in Spain. This was indeed a spectacular sight. Through the long winter of 1802, Philadelphians lined up until 10 pm every day and paid fifty cents apiece to view this monster of times long past, as fossil frenzy gripped the country, long before *Jurassic Park*. The Peale Museum was soon a mandatory stop for visitors to the City of Brotherly Love. In 1802, the Pennsylvania legislature authorized the museum to occupy quarters in the State House itself, although the mastodon stayed for many years at the Philosophical Society. Peale's son, Rembrandt, took a second mastodon skeleton on a tour of Europe.¹⁶

Peale's Museum became perhaps too popular and soon he was subject to criticism for the way he and his sons promoted his displays to attract large audiences. Thus, the tension between commercial popularization and serious education and research in museums was established in the early days of the Republic.¹⁷

His sons, Rembrandt (1778–1860) in Baltimore and Linnaeus (1794–1832) and Rubens (1784–1865) in New York, attempted spin-off museums but these failed. In 1821, the Philadelphia Museum Company was incorporated to provide a structure for Peale's collection. After his death in 1827, his sons, especially Rubens and Franklin (1795–1870), continued to run the museum in the Philadelphia Arcade. In 1836, they built a new building for the museum, but the museum gradually declined as it failed to chart a course between an emerging scientific professionalism and the circus showmanship of P.T. Barnum. The museum was disbanded in the 1840s and its collections were sold. Ironically, many of the specimens were purchased by none other than Phineas T. Barnum (1810–1891), a showman who lacked Peale's commitment to science and public education. The collections were burned in a warehouse fire the following year, although the mastodon skeleton survived at a German museum.¹⁸

As Peale's Museum fueled a popular interest in natural history, another naturalist's books fed the flames. In his travels in search of birds, Alexander Wilson had gone as far West as Louisville, Kentucky, where he visited another ardent naturalist in his general store. John James Audubon (1785–1851) (Fig. 3) would take up where Wilson left off, producing a magnificent view of the flora and fauna of the New World. A remarkably poor businessman, Audubon was entranced by natural history for his entire life. The dashing Frenchman styled himself as an American woodsman, selling his image as well as his magnificent drawings. Audubon could not find a publisher in the United States, thus, he turned to British publishers and engravers to produce *The Birds of America*, which first appeared in 1838 and became the standard against which all other publications would be judged. Audubon's stunning images stimulated public interest in natural history and

created a new visual iconography for the New World.¹⁹

The Early Nineteenth Century

In the United States, the nineteenth century was the era of the self-culture movement. Citizens of the democracy banded together in voluntary associations to advance their knowledge and moral fibre, in lyceums, academies and local societies. Many of these local academies attempted to develop libraries and natural history cabinets for the use of their members. They modeled these on the British and Continental organizations with which they had ties. Leaders in the lyceum movement urged that natural history collections be created to spur the economic development of the nation. One argued that if placed “before legislators and others, specimens of their own productions and a knowledge of their own resources in the mineral kingdom, by which industry would be encouraged and individual and public wealth and prosperity increased, they would support the creation of museums.” Knowledge of North American natural resources was seen as key to national development.²⁰

In the early nineteenth century, Boston’s elite American Academy of Arts and Sciences, founded by John Adams, was challenged by several energetic new natural history societies. In 1814, the New England Society for Natural History was established to encourage naturalists in the region. The following year, the group changed its name to the Linnaean Society of New England, reflecting its focus on modern classification. It received mixed reviews for its 1817 report on a sea serpent seen near Cape Anne, with plates showing dissection of its young. The group began to develop a natural history cabinet but did not thrive and in 1822 the society dissolved. However, a new organization, formed a few years later, took in the natural history collection. The Boston Society of Natural History was created in 1830 by a group of gentlemen of scientific attainments for the promotion of natural history. This remarkably successful organization soon established an impressive library and museum, and began publication of its *Boston Journal of Natural History*. Members of the society participated in the first botanical and geological surveys of Massachusetts.²¹

In New York, a dynamic physician interested in a wide range of scientific topics brought together local natural philosophers for discussion and mutual enrichment. The Lyceum of Natural History of New York was formed in 1817 to recall the school founded by Aristotle, and its members were to be peripatetics who explored the natural world around them. This group also amassed an impressive library and natural history collection of botanical, zoological and mineralogical specimens. In 1876, its name was changed to the New York Academy of Sciences. Samuel L. Mitchill (1764–1831), its first president, was professor of chemistry and natural philosophy at Columbia College but had broad interests in geology and natural history.²²

The Academy of Natural Sciences of Philadelphia was created in 1812, and it also challenged and competed with the more elite American Philosophical Society. Its dynamic membership



FIGURE 3. John James Audubon, artist and naturalist. Smithsonian Institution Archives.

included William Maclure (1763–1840), considered the father of American geology, who served as president from 1817 to 1840 and who bankrolled many of its operations. Maclure and several other members of the Academy, including Isaac Lea (1792–1886), a mollusk specialist, and Thomas Say (1787–1834), a conchologist, were founding members of the short-lived Utopian community at New Harmony, in Indiana. The Philadelphia Academy building soon housed a laboratory, library, meeting rooms and a museum.²³

The City of Washington

Although these local academies and societies accomplished a great deal, their collections were, for the most part, private resources for their members. When societies fell on hard times, so did their collections; many promising collections found their ultimate homes decaying in members' attics. Most collections were not displayed for public view and education. Some citizens felt that a national organization was needed to collect the natural resources, art and history of the young nation for the edification of its citizens. Issues of nationalism and Yankee utilitarianism were on the minds of a group of earnest citizens of the City of Washington in 1816 when they formed a group called the Metropolitan Society. This association was organized to reduce the United States' dependence on purely European cultural and scientific heritage. It listed as its goals to 1) develop a botanic collection and garden that could be used to further agriculture; 2) amass a mineral collection for study and economic use; 3) compile information on the mineral waters of the U.S.; 4) publish papers on agricultural topics; 5) conduct surveys of the various districts of the U.S.; and 6) publish research of value to the nation. Thomas Law (1756–1834), a leading figure in the young city, helped guide it into existence. Law, who had married into the influential Custis family and invested heavily in Washington, D.C., real estate, had been a member of philosophical societies earlier in England and India.²⁴

On April 20, 1818, the Congress gave the Metropolitan Society a twenty-year charter and renamed it the Columbian Institute for the Promotion of Arts and Sciences; its charter included provisions for a museum and a botanic garden. The President of the United States was to become an honorary member and its patron. The Columbian Institute established programs for correspondence between members and other scientists, publication, and specimen exchange. Led by the naval surgeon Edward Cutbush (1772–1843), the Institute established a 200-acre botanical garden on the Mall in Washington and formed a small library and a natural history cabinet. The small natural history museum contained some 60 separate accessions containing primarily minerals, but also plants and animals. The museum was not open to the public, since an attendant was only present during meetings.²⁵

In 1819, Dr. William Darlington (1782–1863), a member of the Institute as well as a member of Congress, put forth a plan to create a National Herbarium at the Institute that identified the native and naturalized plants of the United States. He contributed part of the core collection of this national herbarium. A physician, Darlington had become interested in botany as a young man through the influence of the physician and botanist Benjamin Smith Barton (1766–1815). In 1826, he founded the Chester County, Pennsylvania, Cabinet of Natural Sciences, which was one of the most successful of the provincial natural history societies in that era.²⁶

Members of the Columbian Institute also actively sought zoological collections. In 1827, the Institute issued a circular soliciting natural history specimens and providing instructions for collecting, documenting and shipping specimens. The circular was sent to all Congressmen and Senators, U.S. Post Offices, customs houses, diplomatic posts, army posts, and naval ships. With their official positions as head of the Naval Hospital and as a Member of Congress, Cutbush and Darlington were able to call on colleagues to send specimens and artifacts to the new cabinet. Soon

there were ethnographic collections from around the world, and art works including paintings and sculpture. One of its more popular items was “a suit of regimental worn by George Washington as commander in chief during the Revolutionary War”; indeed, it was said to be the suit that Washington wore when he resigned his commission in Annapolis.²⁷

But the group was always on the lookout for additional collections. In 1821, the Columbian Institute attempted to secure Congressional appropriations, organize a lottery, and solicit contributions so that they could purchase the Peale Museum in Philadelphia, which had been offered to the government for \$100,000. These plans, however, never came to fruition. When the United States Exploring Expedition was being planned in the 1830s, however, officials turned to Institute members to establish guidelines for amassing national collections in the course of the expedition.²⁸

In addition to presidential sponsorship, other members included the printer Peter Force (1790–1868), the philologist Peter S. Du Ponceau (1760–1844), mathematician William Elliot (1773?–1837), and Dr. Alexander McWilliams (1774–1850). But its membership was never very active and it struggled to continue operations. Most of its members were amateurs with enthusiasm for science but little commitment to actually carrying out research. Most were politicians or government employees. Indeed, the group could rarely assemble a quorum at its meetings and few members paid their \$5 annual dues. The Columbian Institute limped along in constant financial crisis and failed to ever build a permanent building. In 1838, when its original charter expired, it ceased activity. In 1841, a group called the National Institute formally absorbed it.²⁹

As the Columbian Institute went into decline, the American Historical Society was founded in Washington in 1835 to “discover, procure, and preserve, whatever may relate to the natural, civil, literary, and ecclesiastical history of America in general, and the United States in particular.” The American Historical Society was led by Peter Force, who had also been active with the Columbian Institute. Like many other small societies, it had difficulties maintaining itself in the harsh economic climate after the Panic of 1837. On June 18, 1840, the American Historical Society members considered and approved a proposition to dissolve and become the Department of American History and Antiquities of the National Institution for the Promotion of Science. The Society transferred its membership and collections to the National Institute that same year. As part of the transfer, the new Department of American History and Antiquities dropped the natural history component from their areas of interest, continuing to study and collect American history; biographies; lives and cultures of Indian tribes; Indian place names; statistics of agriculture, commerce, and population; topography of the country; roads and canals; religious and literary institutions; as well as laws and records.³⁰

Washington was the home to several other small museums in the early nineteenth century. A Mr. Caleb Boyle (1750–1850), a Baltimore painter, had assembled a small natural history museum in his Washington studio. The Secretary of War installed a gallery of Native American portraits, many by Charles Bird King (1785–1862), as well as Native American clothing and household artifacts. Georgetown University, founded in 1778, also housed a small natural history museum for its students. Best known was the Washington Museum, which housed the collections of John Varden (?–1864). Begun in 1829, it opened to the public in 1836 with displays of natural history specimens, curiosities, and art works. Eventually Varden’s museum was also absorbed by the National Institute, the same group that absorbed the Columbian Institute and American Historical Society.³¹

The National Institute

On May 15, 1840, the National Institution for the Promotion of Science was organized “to promote science and the useful arts, and to establish a national museum of natural history.” Joel

Roberts Poinsett (1779–1851) (Fig. 4) was a pivotal figure in this effort. A politician with an avocational interest in science, Poinsett was involved in many of the amateur scientific activities in the capital and is known for having the poinsettia named for him. A Jacksonian, he was a member of Congress and minister to Mexico. As Secretary of War under President Martin van Buren (1822–1862), Poinsett oversaw numerous exploring expeditions, including the Nicollet expedition of 1838 and Fremont expedition of 1842, as well as the United States Exploring Expedition as it circumnavigated the globe from 1838 to 1842. Poinsett feared that the fabulous collections being sent back to Washington would suffer a fate similar to that of the Lewis and Clark Expedition. He was determined to create a national museum in Washington that would place the capital city of the United States on par as a cultural center with the great capitals of Europe. When the bequest of Englishman James Smithson (c.1765–1829) to the United States was announced, Poinsett saw a way to finance such an ambitious program. He hoped that his National Institute would gain control of the Smithson bequest and become the national museum of the United States. He worked quickly to amass a natural history cabinet. With intervention from Daniel Webster (1782–1852), he was able to secure space for the Institute’s collections in the Patent Office Building, first in its damp basement and later in its exhibit gallery. But he also earned the resentment of the various Commissioners of Patents, notably Thomas Ewbank (1792–1870) and Henry L. Ellsworth (1791–1858), who then worked to undermine the Institute. But when the Exploring Expedition collections arrived in Washington, they were sent to the Institute’s gallery to be arranged and displayed, and to prepare scientific publications based on them. This control of the USEE collections was greatly resented by Charles Wilkes (1789–1877), who led the expedition and wanted control over the collections and publications himself. He also worked to undermine the Institute in its early years. In 1841, the art collections of the defunct Columbian Institute, as well as John Varden’s collections, were transferred to the National Institute. On July 12, 1841, James Smithson’s personal effects and collections, including a library, mineral collections, and manuscripts, were deposited with the National Institute by the Secretary of the Treasury, who had accepted the Smithson bequest and placed its proceeds in the U.S. Treasury, pending creation of Smithson’s institution.³²

The National Institute published a guide to its collections and exhibits, titled *A Popular Catalogue of the Extraordinary Curiosities in the National Institute, Arranged in the Building Belonging to the Patent Office. Curiosities Collected from All Parts of the World, by the Officers*



Drawn from life and Engraved by H. Langdon.

JOEL R. POINSETT.

FIGURE 4. Joel Roberts Poinsett, founder of the National Institute. Smithsonian Institution Archives.

of the Army and Navy of the United States. *Curious and Strange Articles, Presented by Private Individuals. Revolutionary Relics of Extraordinary Interest. Articles of Immense Value, Presented to the United States Government and Its Officers, Deposited Here According to Law.* As the *Popular Catalog of the Extraordinary Curiosities of the National Institute* reveals, the Institute's collections were an odd mix of the scientific, hoaxes, art and historical displays. Descriptions of displays reveal an almost whimsical juxtaposition of artifacts and specimens, such as the articles near the window opposite Case 38, "Specimens of Fruit; Portrait of William Wheelwright, presented by Com. Aulick; Engraving of the clemency of Napoleon; Relics from the tomb of Mrs. Washington, near Fredericksburg, Va.; and Lines to her grave, transcribed by Miss M. E. Summers." Nearby were a fragment of Plymouth Rock; a piece of the tree under which Penn treated with the Indians for Pennsylvania; Hair of General Bolivar; pieces of the charter oak; a piece from George Washington's coffin; as well as forty boxes of beetles, "all very beautiful specimens, and of natural and vivid colors." Members were not above adding statues and paintings of themselves for the public to contemplate.³³

In 1842, the United States Congress formally chartered the group as the National Institute for the Promotion of Sciences, lending it a great deal of credibility. By 1842, the Institute had 287 resident members, 20 honorary members, 32 paying corresponding members, and 754 corresponding members; it also maintained correspondence with 17 American societies and 141 foreign ones. Poinsett and his National Institute seemed on the way to securing control of the Smithsonian bequest and creating the national museum of the United States. His colleague, the lawyer John Carroll Brent (1814–1876), prepared a series of letters for the *National Intelligencer* in which he presented plans for absorbing the Smithsonian estate. Brent called for building a "National Temple" on the Mall that would house works of art, natural history, and history. Brent also argued for the inclusion of an agricultural school to teach practical agriculture.³⁴

As Kohlstedt has demonstrated, by mid-century American colleges were also developing natural history museums that both spurred and reflected a new emphasis on learning from natural objects, rather than ancient texts. At Harvard, Yale, and other colleges, natural history cabinets became essential teaching tools. Colleges provided good employment opportunities for dedicated naturalists, allowing them to establish natural history cabinets and publish their descriptions and classifications. Natural history societies on campuses organized field-collecting parties and stimulated interest in natural history. However, these cabinets were often the personal property of faculty and could move or fall on hard times when the natural history professor left or died.³⁵

Despite these efforts of scientific enthusiasts, local academies and societies, and a growing core of natural history faculty at colleges, Americans retained a nagging sense of inferiority about their scientific contributions. They had rejected the European notion that New World species were inferior and less vigorous. They had formed societies, colleges, and museums that copied the professional standards in Europe. And they even published their research in the United States and, occasionally, abroad. But their work was rarely cited or taken seriously. This insecurity was heightened in 1835 by publication of Alexis de Tocqueville's *Democracy in America*. While greatly admiring Yankee energy and ingenuity, de Tocqueville (1805–1859) observed that American scientists were more interested in practical advances than the pure theoretical research of the academy. Although it is debatable whether this is true, the claim hit a raw nerve and galvanized a group of concerned scientists who sought government support for serious scientific research. Calling themselves the Scientific Lazzaroni, after Neapolitan beggars, they self-consciously attempted to secure funding for and control of government scientific positions, and then to create a gap between amateurs and professional researchers, between practical applications and pure research, between research collections and popular displays.³⁶

The United States National Museum at the Smithsonian Institution

Echoes of all of these debates could be heard in the discussions concerning how to utilize the bequest of James Smithson (Fig. 5) to the United States. Smithson was an English scientist who, upon his death in 1829, had left a curious will that would shape the history of museums in America. Smithson left his estate to his young nephew, but noted that if his nephew were to die without heir, illegitimate or legitimate, his estate was to go to the United States of America to found in the City of Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men. Smithson's nephew died without heir in 1835, leaving this vague gift to a nation Smithson had never visited. The illegitimate son of Hugh Smithson, the Duke of Northumberland, (1715–1786), and Elizabeth Hungerford Keate Macie (1732–1800), Smithson had inherited the Hungerford family fortune from his mother and was free to devote his life to science. He spent much of his adult life on the Continent, conducting research in chemistry and mineralogy, and amassed a cabinet of minerals. He left no detailed instructions as to how his bequest was to be carried out.³⁷



FIGURE 5. James Smithson, founding donor of the Smithsonian Institution, portrait by Henri Johns, 1816. Smithsonian Institution Archives.

For a decade, from 1836 to 1846, proposals were put forward and the U.S. Congress debated how to best use Smithson's largess. It was initially assumed that Smithson intended to found an educational institution, so proposals were put forward to create various schools: a college devoted to the classics, a college devoted to science, a graduate school, a teachers' training institute, an agricultural school, a women's seminary, a mechanics institute, among others. John Quincy Adams (1767–1848) proposed an astronomical observatory; Alexander Dallas Bache (1806–1867) argued for a scientific research institute; Congressmen Rufus Choate (1799–1859) and George Perkins Marsh (1801–1882) advocated creating a national library, while Poinsett continued to champion the cause of a national museum. On August 10, 1846, the Smithsonian's enabling act, 9 Stat. 102, was passed by the U.S. Congress, creating a Smithsonian Institution that was a quintessential American political compromise. While the concept of an educational institution was eliminated, the final bill included all of the other suggestions, creating an institution with a broad mandate to carry out a vague will. The new institution would be shaped by its governing board, the Board of Regents, and its chief operating officer, the "Secretary."³⁸

The National Institute failed to gain control of the Smithson bequest, largely because it was viewed as a group of amateurs unable to manage a professional scientific enterprise. The Smithsonian's first Secretary, Joseph Henry (1797–1878) (Fig. 6), was a physicist noted for his

work on electromagnetic induction and professor at the College of New Jersey. He was also a member of the Scientific Lazzaroni who advocated separating amateur from professional science. Henry formulated a “Programme of Organization” that focused on supporting basic research, gaining access to scholarly publications, and providing professional outlets for American scientists to publish their research. He discouraged public lectures in the Castle, worried about the expense of caring for a national library and museum, and deplored the popular exhibit halls that the Board of Regents insisted on. How then was the National Museum established at the Smithsonian? The Board of Regents guiding the new institution had a broader vision than the first Secretary. They insisted on constructing an elaborate building on the National Mall in Washington and encouraged the donation of art works, books, artifacts, and specimens. And the donations poured in. As the National Institute had found, the young nation needed a temple of national identity where citizens could place icons of American history, inspiring art works, artifacts of exotic cultures, and evidence of the natural environment. As the generation of founding fathers passed away, their possessions gained iconic status and were collected and preserved by the next generation. National heroes were captured in portraits by American painters. Believing that the Native American tribes would soon vanish, explorers and settlers collected artifacts of these cultures. Travelers and settlers sent back specimens of curious plants, unusual minerals, and unknown animals. The young nation simply needed a national museum.³⁹

Although the National Institute had failed to gain control of the Smithson bequest, it had significantly influenced the direction of the new Smithsonian Institution, since its efforts led to a provision for a national museum as part of the Smithsonian’s enabling act. The nineteenth century was the era of creation of the great public museum in England and in the United States. In England, upon the death of Sir Hans Sloane, the British government accepted responsibility for the maintenance of his collection, forming the British Museum of Natural History in 1853. Newfound leisure time, higher levels of education and higher standards of living allowed a broad segment of the public to collect and study specimens and artifacts themselves. Museums became a popular public venue for useful, even educational, recreation.⁴⁰

At the urging of scholar, collector, Smithsonian Regent, and Congressman George Perkins Marsh, in 1850 Henry hired as his assistant and curator, Spencer Fullerton Baird (1823–1887) (Fig. 7) of Pennsylvania. Baird was a naturalist and energetic collector who brought two boxcars of specimens with him to Washington. Coming from the Philadelphia intellectual aristocracy, Baird did not feel the need to establish his professional stature that Henry and other self-made men felt. Baird had but one goal in life, he wrote to Marsh, to become the director of a great national museum. But what did a great national museum for a democracy mean? Baird knew he needed to collect a rep-



FIGURE 6. Joseph Henry, first Secretary of the Smithsonian Institution, by Thomas W. Smillie. Smithsonian Institution Archives.



FIGURE 7. Spencer Fullerton Baird, first curator and second Secretary of the Smithsonian Institution, c. 1880s. Smithsonian Institution Archives.

representative natural history cabinet, a national voucher collection that covered the continent, indeed the globe, since specimens needed to be compared, identified, and classified. Baird enthusiastically turned to amateurs, developing a national and even global correspondence and specimen exchange network. He built on the network Henry had created to collect weather observations. Settlers on the western frontier could retain some ties to eastern culture by sending observations on the weather, topography, plants, insects, animals and minerals of their region. Baird's creation of a national network of observers and collectors was a Baconian enterprise — as defined in his *Solomon's House* — a vast team of organized collectors to inventory natural phenomena.⁴¹

Secretary Henry still dreaded the responsibility of the national collections. He believed that the demands of a national library and a national museum would cost more than the Smithson bequest could afford. He would then be obliged to go to the Congress for federal funding to underwrite these projects, and this would subject the Institution to the control of the politicians on Capitol Hill — who, Henry believed, did not understand science or research. He wrote, “it would annually bring the institution before Congress as a supplicant for government patronage, and ultimately subject it to political influence and control” and that the best course was “to ask nothing from Congress. . .to mingle its operations as little as possible with those of the general government. . .”⁴²

Secretary Henry still dreaded the responsibility of the national collections. He believed that the demands of a national library and a national museum would cost more than the Smithson bequest could afford. He would then be obliged to go to the Congress for federal

Even Baird admitted that the collections were growing at such a rapid pace that it made him feel “somewhat like the magicians apprentice who knew the word to cause the broom to bring buckets of water, but could not stop it.” Why, then, did Henry accept the collections? Henry had been subject to severe public criticism and a Congressional investigation as he sought to shape the young institution by divesting it of the responsibility for the national library. He had also been criticized for his focus on a meteorological research program for which he needed financial support to analyze the large quantity of data he had collected. The Commissioner of Patents, Charles Mason (1804–1882), had the funds in his agriculture budget to support reducing the meteorological data, but he wanted something from Henry in return — for the Smithsonian to take the National Institute's collections off his hands, since the collections were still on display in the Patent Office Building. Henry reluctantly agreed. When the first set of collections was transferred in 1858, they also brought with them an annual federal appropriation for their care. Henry hoped that ultimately, with federal funds paying for the national collections now, the Congress would establish a separate national museum. But the foundation of the U.S. National Museum was now firmly laid at the Smithsonian. Indeed, in the appropriation bills passed by the Congress, the Smithsonian's collections were officially designated “the United States National Museum.”⁴³

On July 27, 1862, the charter of the National Institute expired and, in accordance with its act of incorporation, its library and museum were delivered by the Secretary of the Interior to the

Smithsonian Institution. The transfer included the objects from John Varden's museum. The formal relationship of the National Institute to the Smithsonian ended completely on January 10, 1865, when the membership of the Board of Regents was changed to eliminate the requirement that two Regents be members of the National Institute. Over the next two decades, all of its collections were gradually transferred to the Smithsonian and received eagerly by its young curator.⁴⁴

Baird encouraged his amateur and professional collectors and sent them Smithsonian and other publications. Baird knew he could not amass a great natural history museum alone; he needed a small army of enthusiastic collectors to participate in his great enterprise. He established ties with all of the existing scientific academies and societies, building upon that solid base. He exchanged specimens with their museums and the small museums on college campuses. For the amateurs, Baird printed a circular that taught how to collect and ship specimens. He wrote, on average, 3500 to 5000 letters per year, maintaining an enormous correspondence network that carried out his museum collection program. He cajoled the railroads into providing free shipments of artifacts and specimens. He convinced the Army to send naturalists on its topographic surveys of the American West. Artifacts and specimens soon flooded into the Castle, much to Henry's dismay. To mollify Henry, Baird ensured that competent naturalists described the specimens. But he created and maintained a niche for the amateur in his grand enterprise that would last until the late nineteenth century.⁴⁵

During the 1850s, 1860s and 1870s, as the United States gradually expanded westward, the U.S. Army and commercial interests such as railroads sent out successive waves of explorers to survey and map the new lands. Baird's father-in-law, Bvt. Brig. Gen. Sylvester Churchill (1783–1862), was Inspector General of the Army, and through his influence, Baird equipped each expedition with instructions, supplies and equipment for collecting and shipping back representative samples of all the aspects of the natural environment. Indeed, Baird counted among his collectors such military luminaries as Commodore Matthew C. Perry (1794–1858), General George B. McClellan (1826–1885), and Captain David G. Farragut (1801–1870). Explorers such as Ferdinand Vandeveer Hayden (1829–1887) (Fig. 8) and John Wesley Powell (1834–1902), who led many of these expeditions, were interested primarily in the economic potential of the regions they surveyed and their potential for settlement. Baird supported their goals and highlighted the value of museum specimens in economic development.⁴⁶

Thus Baird embraced the practical applications described by de Tocqueville and eschewed by Henry in his own work on electromagnetism. Indeed, the distinction was an artificial one, even in Europe. Many of the great natural history cabinets and botanic gardens of Europe were products of colonial expansion that was largely economic in purpose. The botanic gardens in London and Paris were known for their experimentation with exotic plants that might provide new crops and medicines. Baird insisted on meeting professional standards for scientific research, but he was comfortable with the practical applications of his work. During his career at the Smithsonian, Baird also served as Commissioner of Fish and Fisheries, establishing a government research program in Woods Hole, Massachusetts, and Washington, that addressed the practical problems of declining fish catches in the north Atlantic and western salmon rivers. He argued that it was necessary to study the entire oceanic flora and fauna in order to determine the cause of the fisheries crisis and used this government funding to support basic research on the classification and life histories of a broad range of marine species. Baird was also able to use the knowledge gained from his natural history surveys of the continent to encourage Secretary of State William Henry Seward (1801–1872) to pursue the purchase of Russian America — now Alaska — in the 1860s, since Baird could demonstrate that it contained a wealth of natural resources.⁴⁷

Baird was also intrigued by the potential for popular education in museums (Fig. 9). He

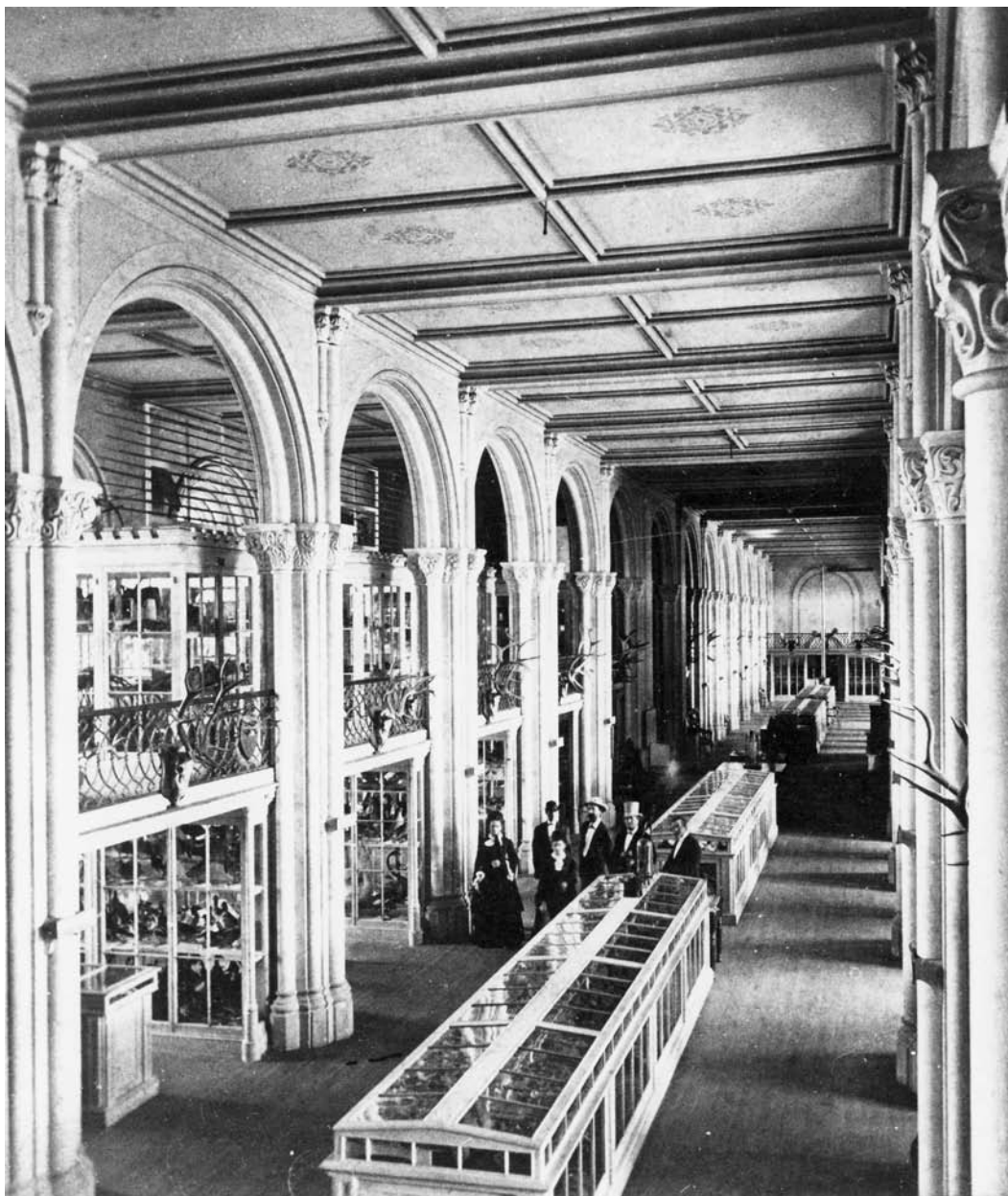


FIGURE 9. Visitors to the museum gallery in the Smithsonian Institution Building, 1867. Smithsonian Institution Archives.



FIGURE 8. United States Geological and Geographical Survey of the Territories, 1872, at Yellowstone, led by Ferdinand Vandeveer Hayden. Smithsonian Institution Archives.

encouraged his young assistant, George Brown Goode (1851–1896) (Fig. 10), to develop a systematic approach to museum exhibits. Goode studied the organization of European museums, applied his own training in biological systematics, and developed an overall schema for the National Museum. He wrote on the role of museums in research and education and became the leading theorist in museum practice in the United States. Goode argued that a museum had two functions, as a museum of research but also as a museum of education. One museum could serve both functions, as long as the goals and resources were clearly delineated.⁴⁸

Baird and Goode's approach reached its apogee at the Centennial Exposition in Philadelphia in 1876 where Baird and Goode produced the government's exhibits (Fig. 11). Their displays were very popular with visitors to the fair and garnered positive reviews for the nascent museum in Washington. Immensely popular with the general public, Baird and Goode had created a formula for public education in a democracy. In the ensuing decades, Baird and Goode produced award-winning exhibitions for a succession of national and international expositions, creating an international audience for their work and setting new standards for museum displays.⁴⁹

Upon Henry's death in 1878, Baird succeeded him as the second Secretary of the Smithsonian. Two years after the Centennial, Baird secured the Congressional appropriation he had sought for so long to build a national museum building in the nation's capital. For the next decade, Baird focused his energies on developing the National Museum at the Smithsonian and shared none of Henry's concerns over accepting federal appropriations for its care. Baird and his assistant, Goode, encouraged the donation of a wide range of artifacts and specimens and experimented with new formats for display. When Baird arrived at the Smithsonian in 1850, the new museum had some 6,000 objects. At the time of his death in 1887, the USNM held over 2.5 million "lots" or sets of artifacts and specimens. The sheer volume of specimens and artifacts necessitated specialization, as well as professionalization. Baird was a naturalist who studied a range of taxonomic groups, including birds, mammals and fish (Fig. 12). The young curators he trained were specialists in such emerging fields as ornithology, ichthyology, conchology, and entomology, indeed, even focusing on smaller groups such as Lepidoptera or Cetacea. By 1887, the National Museum had thirty-one departments (Fig. 13) under the care of twenty-six curators, only seven of whom were paid by Museum funds. Unpaid honorary curators volunteered their time and expertise. In addition, researchers from the U.S. Fish Commission, U.S. Geological Survey, U.S. Army and U.S. Navy curated the collections of economic and medical importance. Baird utilized all available resources in his quest to create a comprehensive national collection.⁵⁰



FIGURE 10. George Brown Goode, Smithsonian curator and leading museum theorist. Smithsonian Institution Archives.



FIGURE 11. Mammal Exhibit at the Centennial Exhibition in Philadelphia, 1876. Smithsonian Institution Archives.



CATALOGUING AND CLASSIFICATION OF SPECIMENS.

FIGURE 12. Ornithologist cataloging and classifying specimens of birds in the Smithsonian Institution Building, 1878. Smithsonian Institution Archives.

CONCLUSION

When the National Museum opened in 1881, it was free of charge and open to all of the nation's citizens. In its first year of operation, 167,455 visitors viewed the national collections in their modern displays.⁵¹ Unlike the academies and societies in Boston, Philadelphia, and New York, it served all the citizens of the nation. Early museums, such as Peale's, had whetted the public's appetite for displays of mastodons and dinosaurs. The National Museum was a product of cultural forces and individual initiatives: a cultural need for a temple of national identity, a desire for scientific independence from Europe, the growth of leisure time and popular education, a new public interest in object collections and museums, and the initiatives of individuals such as philanthropist Smithson, Secretary of War Poinsett, Smithsonian Regent Marsh, curator Goode, and, most importantly, Secretary Baird. Baird formulated a vision for a great national museum that could meet a range of needs and demands. Baird simply did not see the need for the dichotomies between the practical and pure research, between the popular and academic. With collections for scientific study and practical applications, exhibits for popular education and publications for research professionals, Baird synthesized the competing strands of American natural history. The United States National Museum was a distinctly American institution because it married a commitment to basic research with responsibilities to advance the nation's economy, a commitment to professional standards for scholarly research to encouragement of the contributions of amateurs, a commitment to academic publication with exhibits that met American's thirst for public education (Fig. 14). At



FIGURE 13. Mammal Laboratory in the United States National Museum, 1886. Smithsonian Institution Archives.

least for a time, Baird resolved professionalization issues with the need to serve the public in a democracy. In doing so, he created a distinctly American museum that was built on a distinctly American science.

NOTES

¹ G. Brown Goode, "The Beginnings of Natural Science in America," in *Report of the U. S. National Museum, Part II, Annual Report of the Smithsonian Institution for 1897* (Washington, D.C.: Government Printing Office, 1901), pp. 357–406; Raymond P. Stearns, *Science in the British Colonies of America* (Chicago: University of Illinois Press, 1970), pp. 1–7, 19–43, 51–52, 67–83.

² Edward P. Alexander, "Sir Hans Sloane and the British Museum: From Collection of Curiosities to National Treasure," in *Museum Masters: Their Museums and Their Influence* (Nashville: American Association for State and Local History, 1983), pp. 19–42; Cadwallader Colden, *The History of the Five Indian Nations of Canada: which are dependent on the province of New-York in America, and are the barrier between the English and French in that part of the world* (London: 1747); Brooke Hindle, *The Pursuit of Science in Revolutionary America, 1735–1789* (Chapel Hill: University of North Carolina Press, 1956), pp. 15–16, 19, 24–26, 30, 36–48, 56, 121, 227; Joseph Kastner, *A Species of Eternity* (New York: Alfred A. Knopf, 1977), pp. 3–7, 18–25, 37–39, 63, 83, 107–108, 195–196; Arthur MacGregor, ed., *Sir Hans Sloane: collector, scientist, antiquary, founding father of the British Museum* (London: British Museum Press, 1994); Stearns, *Science in British Colonies*, pp. 102–106, 235–236, 258–262, 266–290, 478–497, 530, 535, 543, 559–566, 570–575; J. Benjamin Townsend, ed., *This New Man: A Discourse in Portraits* (Washington, D.C.: Smithsonian Institution Press, 1968),



FIGURE 14. Natural History exhibit in the southeast range of the United States National Museum, 1886. Smithsonian Institution Archives.

p. 98; Mary Lou Lustig, "Colden, Cadwallader," John A. Garraty and Mark C. Carnes, eds., *American National Biography* (New York: Oxford University Press, 1999).

³ Hindle, *Science in Revolutionary America*, p. 30; Kastner, *Species of Eternity*, pp. 16–55, 58; Stearns, *Science in British Colonies*, pp. 268, 280–293.

⁴ Hindle, *Science in Revolutionary America*, pp. 16–17; Stearns, *Science in British Colonies*, pp. 110, 403–426, 465–467.

⁵ Hindle, *Science in Revolutionary America*, pp. 15–19, 34–35, 55–57; Stearns, *Science in British Colonies*, pp. 106–116, 195–196.

⁶ Mark Catesby, *Natural History of Carolina, Florida, and the Bahama Islands* (London: Printed at the expence of the author, 1731–1743); Kastner, *Species of Eternity*, pp. 16–19; Stearns, *Science in British Colonies*, pp. 286–288, 319–326.

⁷ William Bartram, *Travels through North and South Carolina, Georgia, East and West Florida, the Cherokee country, the extensive territories of the Muscogulges or Creek confederacy, and the country of the Chactaws: containing an account of the soil and natural productions of those regions: together with observations on the manners of the Indians* (Philadelphia: James and Johnson, 1791); Kastner, *Species of Eternity*, pp. 40–67; Stearns, *Science in British Colonies*, pp. 575–593.

⁸ Antonello Gerbi, *The Dispute of the New World: The History of a Polemic, 1750–1900*, trans. Jeremy Moyl (Pittsburgh: University of Pittsburgh Press, 1973), pp. 3–34, 52–79, 158–179.

⁹ Ralph S. Bates, *Scientific Societies in the United States* (Cambridge, Massachusetts: The M.I.T. Press, 1965), pp. 5–9; Hindle, *Science in Revolutionary America*, pp. 67–74, 127–145.

¹⁰ Bates, *Scientific Societies*, pp. 9–11; Hindle, *Science in Revolutionary America*, pp. 263–268.

¹¹ Kastner, *Species of Eternity*, pp. 159–194; Alexander Wilson, *American Ornithology: or, The natural history of the birds of the United States* (Philadelphia: Bradford and Inskeep, 1808–1814).

¹² Gerbi, *Dispute of the New World*, pp. 252–267; John C. Greene, *American Science in the Age of Jefferson* (Ames: University of Iowa Press, 1984), pp. 10–11, 27–36.

¹³ Greene, *American Science in Age of Jefferson*, pp. 196–217.

¹⁴ Greene, *American Science in Age of Jefferson*, pp. 199–209, 267, 293, 440 n29; <http://www.monticello.org/jefferson/lewisandclark/>.

¹⁵ Edward P. Alexander, “Charles Willson Peale and his Philadelphia Museum: The Concept of a Popular Museum,” in *Museum Masters*, pp. 43–77; David R. Brigham, *Public Culture in the Early Republic: Peale’s Museum and Its Audience* (Washington, D.C.: Smithsonian Institution Press, 1995), pp. 11, 13–20, 34–50, 84–85; Kastner, *Species of Eternity*, pp. 143–157; Stearns, *Science in British Colonies*, pp. 52–57, 207.

¹⁶ Brigham, *Public Culture in Early Republic*, pp. 38–44, 48–49, 64–66; Kastner, *Species of Eternity*, pp. 151–153; Stearns, *Science in British Colonies*, pp. 54–55, 285–288.

¹⁷ Brigham, *Public Culture in Early Republic*, pp. 51–56, 129–137; Kastner, *Species of Eternity*, p. 158; Stearns, *Science in British Colonies*, pp. 25–27.

¹⁸ Brigham, *Public Culture in Early Republic*, pp. 34, 76, 83; Kastner, *Species of Eternity*, pp. 156–157; Finding Aid to the Records of the Philadelphia Museum Company, Smithsonian Institution Archives, hereafter SIA.

¹⁹ Alexander Adams, *John James Audubon: A Biography* (New York: Putnam’s, 1966); Kastner, *Species of Eternity*, pp. 207–242.

²⁰ Quoted in Carl Bode, *The American Lyceum: Town Meeting of the Mind* (New York: 1956); Dirk J. Struik, *Yankee Science in the Making* (Boston: Little, Brown and Co., 1948), pp. 206–211; for a list of scientific academies and societies in this era, see G. Brown Goode, “The Origin of the National Scientific and Educational Institutions of the United States,” in *Report of the U. S. National Museum, Part II, Annual Report of the Smithsonian Institution for 1897*. (Washington, D.C.: Government Printing Office, 1901), p. 315.

²¹ Bates, *Scientific Societies*, p. 39; Greene, *American Science in Age of Jefferson*, pp. 70–75, 105; Sally Gregory Kohlstedt, “From Learned Society to Public Museum: The Boston Society of Natural History,” in Alexandra Oleson and John Voss, eds., *The Organization of Knowledge in Modern America, 1860–1920* (Baltimore: Johns Hopkins University Press, 1979), pp. 386–406, and “The Nineteenth Century Amateur Tradition: The Case of the Boston Society of Natural History,” in Gerald Holton and William Blampied, eds., *Science and Its Public: The Changing Relationship* (Holland: D. Reidel Pub. Co., 1976), pp. 173–190.

²² Simon Baatz, *Knowledge, Culture and Science in the Metropolis: The New York Academy of Sciences, 1817–1970* (New York: Academy of Sciences, 1990), pp. 9–93; Bates, *Scientific Societies*, p. 41; George H. Daniels, *American Science in the Age of Jackson* (New York: Columbia University Press, 1968), pp. 217–218; Greene, *American Science in Age of Jefferson*, pp. 103–106, 252, 301.

²³ Bates, *Scientific Societies*, p. 43–44, 68; Daniels, *American Science in Age of Jackson*, pp. 215, 217, 221; Patsy A. Gerstner, “The Academy of Natural Sciences of Philadelphia, 1812–1850,” in *The Pursuit of Knowledge in the Early American Republic: American Scientific and Learned Societies from Colonial Times to the Civil War*, Alexandra Oleson and Sanborn C. Brown, eds. (Baltimore: Johns Hopkins University Press, 1976), pp. 174–193; Greene, *American Science in Age of Jefferson*, pp. 57–59, 231–232, 267–269, 410.

²⁴ “Introduction” and “Biographical Sketch,” Finding Aid to the Thomas Law Family Papers, 1791–1834, Maryland Historical Society; Madge E. Pickard, “Government and Science in the United States: Historical Backgrounds,” *Journal of the History of Medicine and Allied Sciences* 1, 2 (1946): 254–256.

²⁵ Goode, “Origin of Scientific Institutions,” pp. 281–287, 329–339; Pickard, “Government and Science,” pp. 256–265; Richard Rathbun, *The Columbian Institute for the Promotion of Arts and Sciences*, United States National Museum Bulletin 101 (Washington, D.C.: Government Printing Office, 1917), pp. 10–29, 37–48, 54–59.

²⁶ Charles Boewe, “Darlington, William,” *American National Biography*; William Darlington, “A plea for a national museum and botanic garden: to be founded on the Smithsonian Institution, at the City of Washington,” read before the Chester County Cabinet of Natural Science, December 3, 1841 (West Chester, Pennsylvania: 1841); Rathbun, *Columbian Institute*, pp. 16, 36.

²⁷ *A Popular Catalogue of the Extraordinary Curiosities in the National Institute, Arranged in the Building Belonging to the Patent Office. Curiosities Collected from All Parts of the World, by the Officers of the Army and Navy of the United States. Curious and Strange Articles, Presented by Private Individuals. Revolutionary Relic of Extraordinary Interest. Articles of Immense Value, Presented to the United States Government and Its Officers, Deposited Here According to Law.* (Washington: Alfred Hunter, 1859), copy located in National Institute, Records, Box 18B, Folder 5, SIA; Pickard, “Government and Science,” p. 263; Rathbun, *Columbian Institute*, pp. 54–58.

²⁸ Rathbun, *Columbian Institute*, pp. 5, 55, 65.

²⁹ “Introduction” and “Historical Note,” Finding Aid to the Columbian Institute, Records, 1816–1841, with related papers, 1791–1800, SIA; Pickard, “Government and Science,” pp. 262–265; Rathbun, *Columbian Institute*, pp. 21–23.

³⁰ American Historical Society, 1835–1841, Proceedings, Box 1, SIA.

³¹ Rathbun, *Columbian Institute*, pp. 59–60.

³² Douglas E. Evelyn, “A Public Building for a New Democracy,” dissertation, The George Washington University, 1997, pp. 275–282, and “Exhibiting America: The Patent Office as Cultural Artifact,” *Smithsonian Studies in American Art* 3, 3 (Summer 1989): 25; Goode, “Origin of Scientific Institutions,” pp. 311–312; Sally Gregory Kohlstedt, “A Step Toward Scientific Self-Identity in the United States: The Failure of the National Institute, 1844,” *Isis* 62, 3 (1971): 342–348; Pickard, “Government and Science,” pp. 265–271; Nathaniel Philbrick, *Sea of Glory: America’s Voyage of Discovery, the U.S. Exploring Expedition, 1838–1842* (New York: The Viking Press, 2003), pp. 46–54, 304–307, 331–346.

³³ *Popular Catalogue of the National Institute*, pp. 12–13, 15; Richard Rathbun, *The National Gallery of Art, Department of Fine Arts of the National Museum*, United States National Museum Bulletin 70 (Washington, D.C.: Government Printing Office, 1909), pp. 25–44.

³⁴ G. Brown Goode, *The Smithsonian Institution: The History of Its First Half Century* (Washington, D.C.: Smithsonian Institution, 1897), pp. 37–39, 833; Kohlstedt, “Failure of National Institute,” pp. 345–348; Rathbun, *Columbian Institute*, p. 1; William Henry Holmes, *Catalogue of Collections: National Collection of Fine Arts* (Washington, D.C.: Government Printing Office, 1922), p. 2; Joshua C. Taylor, *National Collection of Fine Arts* (Washington, D.C.: Smithsonian Institution Press, 1978), p. 6; *Annual Report of the Smithsonian Institution for the Year 1879* (Washington, D.C.: Government Printing Office, 1880), pp. 157–158; John Carroll Brent, *Letters on the National Institute, Smithsonian Legacy, The Fine Arts, and Other Matters Connected with the Interests of the District of Columbia* (Washington, D.C.: J. & G. S. Gideon, 1844), copy located in National Institute, Records, Box 18B, Folder 1, SIA.

³⁵ Sally Gregory Kohlstedt, “Collections and Cabinets: Natural History Museums on Campus, to 1860,” *Isis* 79 (Fall 1988): 405–426.

³⁶ Alexis de Tocqueville, *De la démocratie en Amérique* (Paris: Librairie de C. Gosselin, 1835–1840); A. Hunter Dupree, *Science in the Federal Government: A History of Policies and Activities to 1940* (Cambridge: Belknap Press of Harvard University Press, 1957), pp. 118–119, 135–142; Gerbi, *Dispute of New World*, pp. 460–490; Kohlstedt, “Collections and Cabinets,” p. 410.

³⁷ Will of James Smithson, James Smithson Collection, Box 2, SIA; Paul H. Oehser, *The Smithsonian Institution* (New York: Praeger Publishers, 1970), pp. 4–8, 12–15.

³⁸ *National Intelligencer*, 16 October 1835, 17 February 1836, 2 May 1836; *Portsmouth Journal*, March 28, 1840; An Act to Establish the “Smithsonian Institution,” for the Increase and Diffusion of Knowledge Among Men, 9 Stat. 102, *United States Statutes at Large*, Vol. 9 (Boston: Little, Brown and Co., 1862); William Jones Rhees, *The Smithsonian Institution: Documents Relative to Its Origin and History*, Vol. I (Washington, D.C.: Government Printing Office, 1901), pp. 126, 141–198, 208–229, 247, 262, 306–331, 337, 349–354, 409–410, 467, 499, 763–802, 837–842, 856–859, 930–943; Wilcomb E. Washburn, ed., *The Great Design: two lectures on the Smithson bequest by John Quincy Adams* (Washington, D.C.: Smithsonian Institution, 1965).

³⁹ Dupree, *Science in Federal Government*, pp. 79–88, 135; Nathan Reingold, “Definitions and Speculations: The Professionalization of Science in America in the Nineteenth Century,” in *Science, American Style* (New Brunswick: Rutgers University Press, 1991), pp. 24–53; Marc Rothenberg, “First Secretary Had a Vision for Research at the Smithsonian,” *Smithsonian Institution Research Reports* 83 (Winter 1996): 4; Marc Rothenberg, et al., eds., *The Papers of Joseph Henry: January 1847–December 1849: The Smithsonian Years*, Vol. 7 (Washington, D.C.: Smithsonian Institution Press, 1996), pp. xiii–xxii; Wilcomb E. Washburn, “Joseph Henry’s Conception of the Purpose of the Smithsonian Institution,” in *A Cabinet of Curiosities: Five Episodes in the Evolution of American Museums*, Whitfield J. Bell, Jr., ed. (Charlottesville: University Press of Virginia, 1967), pp. 108–143.

⁴⁰ 9 Stat. 102; Alexander, “Sir Hans Sloane,” pp. 34–39; Barbara J. Black, *On Exhibit: Victorians and Their Museums* (Charlottesville: University Press of Virginia, 2000).

⁴¹ William Healey Dall, *Spencer Fullerton Baird; a biography, including selections from his correspondence with Audubon, Agassiz, Dana, and others* (Philadelphia: J.B. Lippincott Co., 1915), pp. 34–56, 61, 67, 73–75, 158–159, 179, 304–305; Daniels, *American Science in Age of Jackson*, pp. 65–66, 86; Dupree, *Science in Federal Government*, p. 83; Benjamin Farrington, *Francis Bacon: Philosopher of Industrial Science* (New York, 1949); Pamela M. Henson, “Spencer Baird’s Dream: A U.S. National Museum,” in Alan E. Leviton and Michele L. Aldrich, eds., *Cultures and Institutions of Natural History* (San Francisco: California Academy of Sciences, 2000), pp. 101–126; Edward F. Rivinus and Elizabeth Youssef, *Spencer Baird of the Smithsonian* (Washington, D.C.: Smithsonian Institution Press, 1992), pp. 44, 153–155.

⁴² Washburn, “Henry’s Conception,” pp. 129–143; Marc Rothenberg, et al., eds., *The Papers of Joseph Henry: January 1850–December 1853: The Smithsonian Years*, Vol. 8 (Washington, D.C.: Smithsonian Institution Press, 1998), pp. xvii–xxvii; *Fourth Annual Report of the Board of Regents of the Smithsonian Institution for 1849* (Washington: by the

Printers to the Senate, 1850), pp. 20–21.

⁴³ Marc Rothenberg, et al., eds., *The Papers of Joseph Henry: January 1854–December 1857: The Smithsonian Years*, Vol. 9 (Washington, D.C.: Smithsonian Institution in association with Science History Publications/USA, 2002), pp. xii–xxxii, 43–57, 64–68, 77–79, 446–448, 452–453.

⁴⁴ *Annual Report of the Smithsonian Institution for the Year 1862* (Washington, D.C.: Government Printing Office, 1863), p. 16; Goode, *Half-Century Book*, pp. 38–48, 305–306, 837; Rhees, *Smithsonian: Documents*, p. 640.

⁴⁵ Dall, *Spencer Fullerton Baird*, pp. 287–301, 308–310, 336–339; William A. Deiss, “Spencer F. Baird and his Collectors,” *Journal of the Society for the Bibliography of Natural History* 9, 4 (1980): 635–645, and “The Making of a Naturalist: Spencer F. Baird, The Early Years,” contained in *Society for the History of Natural History Special Publication* 3 (London: Society for the History of Natural History, 1985), pp. 141–148; Dupree, *Science in Federal Government*, pp. 85–87, 92–100; Daniel Goldstein, “‘Yours for Science’: The Smithsonian Institution’s Correspondents and the Shape of the Scientific Community in Nineteenth Century America,” *Isis* 85 (1994): 573–599, and “Midwestern Naturalists: Academies of Science in the Mississippi Valley, 1850–1900,” dissertation, Yale University, 1989; Philip J. Pauly, *Biologists and the Promise of American Life: From Meriwether Lewis to Alfred Kinsey* (Princeton: Princeton University Press, 2000), pp. 44–70.

⁴⁶ *Annual Report of the Board of Regents of the Smithsonian Institution for 1857* (Washington: William A. Harris, Printer, 1858), pp. 34, 46–49; “List of the More Important Explorations and Expeditions, the collections of which have constituted the principal sources of supply to the National Museum, with indication of the department of the government under which prosecuted,” *Annual Report of the Board of Regents of the Smithsonian Institution for 1877* (Washington: Government Printing Office, 1878), pp. 105–117; Dall, *Spencer Fullerton Baird*, pp. 305, 313–314, 318, 321–322, 330–334; William H. Goetzmann, *Exploration and Empire: The Explorer and Scientist in the Winning of the American West* (New York: Alfred A. Knopf, 1966), pp. 496–498, 501–502, 515–516, 527–529, 562–563, 572–576; Rivinus, *Baird of Smithsonian*, pp. 61–62; Frederick W. True, “Exploration Work of the Smithsonian Institution,” in *Half-Century Book*, pp. 459–480.

⁴⁷ Dean C. Allard, Jr., *Spencer Fullerton Baird and the U.S. Fish Commission: A Study in the History of American Science* (New York: Arno Press, 1978); Dupree, *Science in Federal Government*, pp. 236–238; Debra J. Lindsay, *Science in the Subarctic: Trappers, Traders, and the Smithsonian Institution* (Washington, D.C.: Smithsonian Institution Press, 1993), pp. 123–125, note that Lindsay questions the decisiveness of Baird’s testimony in the decision to purchase Alaska; Pauly, *Biologists and American Life*, pp. 56–60.

⁴⁸ Goode’s essays have been reprinted in G. Brown Goode, *The Origins of Natural Science in America: essays of George Brown Goode*, Sally G. Kohlstedt, ed. (Washington, D.C.: Smithsonian Institution Press, 1991); Edward P. Alexander, “George Brown Goode and the Smithsonian Museums: A National Museum of Cultural History,” in *Museum Masters*, pp. 277–309; Sally Gregory Kohlstedt, “History in a Natural History Museum: George Brown Goode and the Smithsonian Institution,” *The Public Historian* 10, 2 (Spring 1988): 7–14.

⁴⁹ Pamela M. Henson, “‘Objects of Curious Research’: The History of Science and Technology at the Smithsonian,” *Isis* 90 (1999): S249–S269; Kohlstedt, “Goode and Smithsonian,” pp. 7–14; Robert W. Rydell, *All the World’s A Fair: Visions of Empire at American International Expositions, 1876–1916* (Chicago: University of Chicago Press, 1984), passim.

⁵⁰ *A Handbook to the National Museum at the Smithsonian Institution, Washington* (New York: Brentano, 1886); *Annual Report of the Board of Regents of the Smithsonian Institution for 1887* (Washington: Government Printing Office, 1889), pp. 17–18; Dall, *Spencer Fullerton Baird*, p. 408; Henson, “Baird’s Dream,” pp. 115–119; Oehser, *Smithsonian*, pp. 44–47.

⁵¹ *Annual Report of the Board of Regents of the Smithsonian Institution for 1882* (Washington: Government Printing Office, 1884), pp. 119–120, 124–126.