

The Science Education of an Enlightened Entrepreneur

Charles Willson Peale and His Philadelphia Museum, 1784-1827

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When Charles Willson Peale, in 1784, began first to consider entering the museum business (and make no mistake, it was as a business that he first considered it), he had had no experience with museums; there is no evidence that he had ever even been in one. Yet, once established, income from the museum supported his large family. Between 1795 and 1802, annual income averaged \$2,200; from 1802 to 1809 the average was \$4,700. When Peale retired (for the first time) in 1810, annual receipts from the Peale Museum were over \$8,000 and shortly before his death in 1827, he was offered \$100,000 for the museum contents.¹ The museum collections began with a dried paddlefish from the Alleghany River and a badly preserved Angora cat. In 1831, the museum contained 250 quadrupeds, 1,310 birds, more than 4,000 insects, 8,000 minerals, 1,044 shells, several hundred fish, more than 200 snakes, lizards, turtles and tortoises and the major U.S. Collection of fossil bones; it had become *the* primary resource for American natural history.² This extraordinary achievement was, throughout, a private venture and, for more than half of Charles Willson Peale's tenure as its head, was without significant institutional support.

The story of Peale's Museum can be, and indeed has been, told in a number of ways. The late Charles Sellers, himself a descendent of Peale,

did much to keep the memory of the Peale family and their art alive while all scholars of American natural history are obligated to, and dependent upon, Seller's *Mr. Peale's Museum: Charles Willson Peale and the First Popular Museum of Natural Science and Art*. Sellers was not primarily interested in the American scientific context and the problems this brought to Peale, nor in Peale's solutions of them. He was concerned, as have been many others, with the personal, familial, social and political aspects of Peale's museum.³

Transitions in American popular culture are, for example, to be traced in the museum's changes from a Jeffersonian deistic temple for the religion of humanity, to a Philadelphia resort of family and polite society entertainment, to its ultimate, ambiguous, incarnation as a failing competitor of P. T. Barnum's Jacksonian theater of the absurd. The museum also illustrates, in another of its aspects, significant weaknesses in the political and institutional structures of the young United States. From as early as 1792, as he began to comprehend the dimensions of the task he had undertaken, Charles Willson Peale attempted, without success, to gain institutional support for the acquisition, design and preservation of museum collections. Although city, state and national governments each, in their turn, refused to assume ultimate responsibility for the museum, under Jefferson and Monroe, Peale's Museum became the unofficial repository for the collections of the Lewis and Clark, Pike and Long expeditions.

By 1842, however, personal jealousies and a new administration's disinclination to aid a private commercial venture resulted in the careless and unceremonious removal from their storage in the Peale Museum of the specimens from the Wilkes Expedition. There being no other, more official storage adequate to the task, most of those specimens were in consequence destroyed and lost. Shortly thereafter, Peale's Museum went bankrupt and its collections, primary sources for every significant natural history monograph on ornithology, entomology, zoology and paleontology written in the United States during the first three decades of the nineteenth century, were wantonly dispersed, without a single institution or government agency to raise a protest.

Many of these issues can, however, be addressed in an approach to the museum's history which also directs attention to the most obvious question of all: How was it possible for a person, with no training in natural history, formal or informal, and no previous interest in that subject or in the equipping and running of a museum, to conceive—and to bring off—an enterprise of such magnitude? In attempting to answer that question, we come to terms with an attitude and a behavior characteristic of the best of enlightened America. For Peale subscribed to neither of the accepted models for an antebellum American: he did not concentrate his attention to become a proto-professional, nor did he decide, as a "democratic natural man," that he knew truths spontaneously without the study of

anything in particular. Instead, in a good eighteenth-century manner, he seems always to have assumed that he could learn whatever it was necessary for him to know for this or any other enterprise. He had started his successful career as portrait painter with this assumption; he was to continue as museum proprietor in the same manner. To focus study of the museum on the person of its founder and his associates is, therefore, to examine, in another of its aspects, that brief period in American history when Enlightenment philosophy and Republican virtues were joined in an optimism which would appear shallow indeed were it not for achievements such as Peale's museum.

The personal story of Peale and his museum begins when he concluded that his zeal in support of revolutionary causes had permanently alienated the aristocratic patrons of his portrait painting. Needing a source of income, and wishing also to create an estate for his large family, Peale proposed to open a picture gallery in which a new class of patrons might pay to view his numerous portraits of Revolutionary heroes. While readying the gallery wing to his Philadelphia home, Peale agreed to make full-scale drawings of some large fossil bones which had been found in the Big-Bone Lick in Ohio Country. The 30 to 40 drawings were soon taken to Göttingen, later to resurface in the Peale Museum story. The bones were returned to their owner, Dr. John Morgan, but they had been seen in Peale's studio by his brother-in-law, Nathaniel Ramsay, who declared his preference for seeing such curiosities of nature over any picture whatever.

Now the use of science as socially acceptable entertainment was not entirely new, even in North America, as the number of itinerant subscription lecturers might attest. Nonetheless, the possibility of financial gain in a permanent establishment for the satisfaction of public curiosity was not a commonplace. Peale perceived the implications of Ramsay's "hint," but asked the opinion of two of Philadelphia's most respected scientists, David Rittenhouse and Dr. Robert Petterson, professor of mathematics at the University of Pennsylvania, on the potential for a museum of natural curiosities. Rittenhouse was discouraging, suggesting that more profit with less labor was available to Peale through his craft of portrait painting. Patterson, on the other hand, was enthusiastic. He gave Peale the dried, four-foot paddlefish (polydon spathula) which became his first museum exhibit and, more significantly, appears to have introduced him to the library of the University of Pennsylvania and to the Comte de Buffon's *Histoire Naturelle*, of which more than twenty-five volumes had then been published, with more still to come.

Peale would not be the first person seduced to natural history by the grace and verve of the writings of Buffon. It has been said that the *Histoire Naturelle*, for all its many volumes, probably sold more widely than any other single work written and published in eighteenth-century France. Certainly, in the United States, it was long regarded as *the* bible

of Nature and Peale received more than one testimonial to its value. James Madison, for example, enthusiastically recommended Buffon to Peale as a guide. Nor would Peale be the first person to be misdirected by the biased enthusiasms and inaccuracies of that work. Surely it was Buffon's zeal which prompted Peale to expand the intention of his enterprise as it was Buffon's errors which persuaded him that the expansion was possible. Buffon declared ". . . there are not in the whole habitable earth above two hundred species of quadrupeds, even including forty different species of monkeys . . . ," and "three hundred species [of birds] may be reckoned belonging to our [temperate] climates. . . ."4 From this Peale conceived his grand design. He would create "a world in miniature," a museum which would include an example of every subject of the animal, vegetable and mineral kingdoms as a great national school of science, of reason and of morality.⁵ For, like most eighteenth-century enlightened deists, Peale believed that the way to a knowledge of God and man was through "natural religion"—the application of man's "right reason" to his observations of the world about him.

Peale never quite lost his initial enthusiasm for Buffon and, as late as 1801 he acknowledged the "infinite use to me" of Buffon's works; the plates, especially, enabling him to identify many of his specimens and the "brilliancy" of Buffon's language enriching his own descriptions.⁶ By that time he had, however, already demonstrated his awareness, and resentment, of the most glaring of Buffon's insular prejudices. Far from degeneration, as Buffon suggested, the new, *free*, world was destined, thought Peale, to be the scene of a great cultural explosion—in art, literature and science. Like other Americans, Peale rejected Buffon's declarations:

In America . . . animated Nature is weaker, less active, and more circumscribed in the variety of her productions; . . . the number of species is not only fewer, but, in general . . . all animals are much smaller than those of the old continent.

* * *

. . . in all populous and civilized countries, most of the birds chant delightful airs, while, in the extensive deserts of Africa and America, inhabited by roving savages, the winged tribes utter only harsh and discordant cries and but a few species have any claim to melody.⁷

But these were easily refuted by contrary example, as Benjamin Franklin, personally, and Thomas Jefferson, in his *Notes on the State of Virginia* (first edition, Paris, 1784-85) were to show. Before the museum project could be realized, there were more important deficiencies in Buffon to be remedied. And before these were discovered, there was a more pressing problem to be resolved.

It quickly became clear that a museum could not be an immediate source of significant income. There was already, that summer of 1784, a museum of natural curiosities in Philadelphia, the "American Museum" of Pierre Eugene Du Simitiere, whose income from viewers was not such as to encourage competitors. Du Simitiere died in October 1784, but Peale made no attempt to acquire the collections of the American Museum.⁸ Instead, for the next two years, he turned his major effort to the exhibition of the newest fad from London, "moving pictures." These moveable panels of semi-transparent scenes, variably and intricately lit, provided a technical challenge to Peale's ingenuity and the income was sufficient, for a time, to justify the effort. By early in 1786 the novelty had worn off, however, and though Peale's correspondence as late as May 1792 still mentions picture exhibitions and he continued with varying frequency to paint portraits all his life, he committed himself to the museum enterprise in a newspaper advertisement of 7 July 1786. Mr. Peale, the notice declared, was to open a repository for natural curiosities, each of which would be classed and arranged according to its species and identified with the name of its donor and place of origin. Mr. Peale would, the advertisement continued, "thankfully receive the Communications of Friends who will favour him with their assistance in this undertaking."⁹

The "repository" described in this advertisement is more restrained and structured than that "world in miniature" of Peale's first conception. As he had been collecting in earnest for less than a month when the notice appeared, this new "scientific" realism can scarcely have been the result of Peale's personal experience. It is tempting to suppose that some of it might have come from the advice of Benjamin Franklin, who had returned to Philadelphia from France the previous year. Franklin certainly was familiar with museums, having seen both the British Museum in London and the Jardin du Roi in Paris. And Franklin did encourage Peale in his undertaking. It was Franklin who gave Peale his second museum specimen, the body of an Angora cat, and referred him to Edme-Louis Daubenton's instructions on taxidermy which Peale was to follow with such unsatisfactory results.¹⁰ Franklin's encouragement had more positive and public consequences in Peale's election to the American Philosophical Society on 21 July 1786.

Peale's entrée into the intellectual environment provided by Franklin and other members of the Philosophical Society gave him a more disciplined and more limited idea of what his museum plan should be. He would not collect plants, for William Bartram was already doing that superbly in his botanical garden just outside Philadelphia. He would not deliberately collect mere curiosities, nor exhibit sports of nature, for these would not reveal the usual regularity and harmony of whole nature, the divine design of the universe. His collections of animals and birds would be adequately tended. Daubenton's "Memoir" having led him astray, he

borrowed a copy of John Coakley Lettson's *Naturalist's and Traveller's Companion, Containing Instructions for Discovering and Preserving Objects of Natural History* (London, 1772) from the Philosophical Society's library. From that beginning, he developed his own techniques of taxidermy (better, he was to find, than those used in Europe), employing arsenic or corrosive sublimate (mercuric chloride) as preservatives. He would not make the mistake of Du Simitiere, whose "magpie collections" had been randomly built and chaotically displayed, nor would his museum be a reflection of personal interests or limitations, as were most private "cabinets." He would show that a republican people could create and support a museum to rival those of kings and princes, in the wholeness of its collections and the orderliness of their display.

Other members of the society besides Franklin could describe museums they had seen in Europe. The Reverend Nicolas Collin, new minister of the Gloria Dei Lutheran Church in Philadelphia, knew the collections of Uppsala and Stockholm; it was probably through Collin also that Peale gained access, physically and linguistically, to David Hultman's dissertation: *Instructio Musei Rerum Naturalium* (Praes. C. Linnaeo, Upsaliae [1753]). Louis M. J. Daubenton's descriptions of the "Cabinet du Roi" scattered through volumes 3-41 of the *Histoire Naturelle* (but not included in the translation) could provide Peale with some other suggestions on how a collection should be displayed, if he wanted to struggle with the French. When Jefferson returned to the United States in 1790, he brought further descriptions of that "Cabinet," soon to become the *Museum Nationale d'Histoire Naturelle*. Shortly thereafter, Peale accessioned into the Philosophical Society's library a copy of George Shaw's *Musei Leveriani explicatio, anglica et latina* (London, 1792), which described parts of Sir Ashton Lever's great proprietary museum in London. Not until 1788 did Peale find it necessary to shift the furnishing of his studio wing to make room for his bird collection and not before 1792 did he declare the museum his principal occupation.¹¹ By that time he had acquired more than a beginning idea of how museum contents might be displayed.

There remained, however, the systematic arrangement of the specimens. His advertisement of 1786 had suggested that these objects would be classed and arranged by species. But from whom was Peale to learn taxonomic methods? It could not be from Buffon, for Buffon ridiculed the authors of systematic taxonomic arrangements, adopting an order in which animals were described and discussed according to his opinion of their importance to man. William Smellie's English translation of the first part of the *Histoire Naturelle*, the *Natural History, General and Particular* of 1781, had added taxonomic notes derived from Linnaeus' *Systema Naturae* with additions and synonyms from later writers such as Thomas Pennant. But Peale's favorite subjects for collecting were birds and the English

translation of Buffon's *Natural History of Birds* was not to appear before 1792-93. By that time, Peale's diary shows him already struggling to classify his bird specimens.¹²

As late as October 1792 his correspondence on exchange of specimens still included references such as: "striped black and white bird, chocolate colored bird with black head, tail and striped wings" etc.¹³ His eventual confidence with taxonomic descriptions probably follows the acquisition of the English translation *Natural History of Birds*, with its forty-two page appendix of Linnaean orders and genera and John Latham's additions and modifications. Yet Peale was surely already familiar with Mark Catesby's *Natural History of Carolina, Florida, and the Bahama Islands* and Jefferson's *Notes on the State of Virginia* and he was certainly using Thomas Tennant's *British Zoology* and Richard Pulteney's *General View of the Writings of Linnaeus* from the library of the Philosophical Society or of "philosophical" friends. Each of these could provide an example of a taxonomic system. The examples were, however, limited in scope and differed from one another in design. If Peale was to achieve a unified systematic arrangement of his collections, an arrangement which mirrored the "true nature of things," he needed more than a random reading of books with taxonomic systems.

It is often said that the problem of systematic taxonomy in zoology was "solved" by Linnaeus' method of formal (diagnostic) description and binomial nomenclature, described in the "definitive" tenth edition of the *Systema Naturae* (1758-60). Less frequently mentioned is the confusion which reigned for so long a time afterward, while succeeding authors each modified the particular application of the Linnaean system, to correct or extend it, for his particular area of natural history. As each new book appeared, there would be new contradictions, new synonyms, and occasionally, even new systems. When he attempted to rationalize and organize his collections, Peale consulted these books and he, no more than their author-specialists, was able to determine which of the profusion of proposed new classes, orders, genera and species provided the most acceptable method. Which of the modifications of Linnaeus was the most natural? That is, in which were the discriminating taxonomic elements those which truly and essentially distinguished between families of created beings. Which was the most capable of being extended, without modification, to include newly discovered types? And which system was most likely to provide the means of international communication and ready identifications? In time there would appear, in connection with the museum, expert Americans to use, and therefore to advise concerning each of the major collections. Meantime, Peale needed help, particularly in arranging for exchanges to broaden and fill in those collections.

For assistance Peale first corresponded with institutions abroad, it appearing more likely that they would have the excess of specimens he

hoped to tap and the trained staff he hoped to consult. Nicolas Collin had been sending specimens of plants and small animals back to old friends in Uppsala and in the Swedish Academy of Sciences at Stockholm for some fifteen years. Collin suggested that Peale write to Stockholm, which he did in 1791, sending a collection of birds and requesting exchanges.¹⁴ He soon received an answer, but from a private collector, Gustav Paykull, not from the Academy and though he repeated his letters and shipments for another four years, he finally desisted, complaining that he had received neither acknowledgement nor return for his efforts.¹⁵ He approached the British Museum through Sir Joseph Banks, Britain's most widely known naturalist and long-time President of the Royal Society of London, only to receive a condescending response in 1794, suggesting that perhaps James Parkinson, the bewildered new owner (by lottery) of the Leverian Museum, might be willing to exchange specimens. Not until late in 1800 did Peale write to Parkinson and no exchange seems to have been worked out.¹⁶ Peale's primary resource for specimens in England was always to be a private dealer in natural history objects, Thomas Hall of Moorfields, London.¹⁷

Through the initiative of the French botanist, Ambroise M. F. J. Palisot de Beauvois, exiled from Haiti by a rebellion there and temporarily assistant to Peale in an abortive attempt to catalogue the entire contents of the Philadelphia museum, Peale approached the Museum d'Histoire Naturelle in Paris. This appeared, at first, a more promising lead. Andre Thouin responded with a request for plants, which Peale evaded, suggesting that Palisot would no doubt supply these. More significantly, Etienne Geoffroy Saint-Hilaire wrote, for himself and Jean Baptise Lamarck, requesting information and a selection of animals and fossil bones.¹⁸ Lamarck and Geoffroy were ultimately to achieve notoriety (and then fame) as supporters of a type of organic evolution and some of their questions may have looked for evidence supporting their view. Peale could not have known this, but he could and did know their names as leading zoologists of the Museum. He was delighted with their expression of interest and at once responded with a shipment of birds (selected, as Geoffroy had requested, from Catesby's designations), snakes and a live opossum with young. Peale sent two more letters, describing further shipments, to Geoffroy during 1797 and 1798, but early in 1799 Peale complained, in a letter to the Prince of Parma, that public museums were less responsible than individuals in returning specimens for those he had sent them. In June of that year he wrote Palisot de Beauvois, now returned to Bordeaux, that he would neither send specimens nor write to the Museum d'Histoire Naturelle until he had received some response for what he had already sent.¹⁹ Public institutions, it appeared, would accept specimens from the unknown American, but did not reciprocate.

Not until the Peale Museum acquired its most famous exhibit, the nearly-complete skeleton of a fossil mastodon, did European institutions discover advantages in acknowledging Peale's existence. Fossils were then the focus of the biggest arguments in zoology and geology. Were they remains of once living creatures? If so, were their species extinct or still extant in unpopulated parts of the world? If extinct, what relation did they have to living species? Answers to these questions were dependent upon the acquisition of specimens, and the more complete the specimen, the more satisfactory the reconstruction of the original. Peale's skeleton was the most complete mastodon then known and every zoologist in Europe wanted to learn of it, in detail.

Sir Joseph Banks suddenly became very cordial, entertaining Rubens and Rembrandt Peale and gaining them access to the British Museum on their 1802 London trip to exhibit the skeleton of a second mastodon. Charles Willson Peale belatedly heard, in a flurry of letters, from Geoffroy and from Georges Cuvier, now dominant director of the *Museum Naturelle* and soon to be the acknowledged expert in the comparative anatomy and taxonomy of fossil animals. Geoffroy and Cuvier sent a case of fifty-four birds and a request for plaster casts of fossil bones.²⁰ Once the institutions got what they immediately wanted, however, this degree of acceptance faded. Though the Peale museum obtained some international recognition through its communications with public institutions, it gained little in the way of information or museum objects.

Nonetheless, Peale's museum did obtain specimens from a wide variety of sources, outside as well as within the United States. Through his personal friends in the federal government, contacts with ambassadors and consuls and growing acquaintance with a collector's network, Peale developed an extensive list of private foreign correspondents with whom he exchanged specimens and from whom he sometimes also acquired copies of their books for the museum library: John Latham, for example, sent English birds and a copy of his *General Synopsis of Birds* (1781-85); at the suggestion of Constantine Rafinesque, Francois Marie Daudin sent French birds and his *Traité Elementaire et Complet d'Ornithologie* (1800). Also from France, Peale received a box of minerals and the *Traité de Mineralogie* (1801) from the Abbé René Just Haüy, in exchange for a copy of his portrait by Rembrandt Peale. Over the years he would, as well, exchange minerals, birds and insects with Abraham Gevers and Louis Willens of Amsterdam, with Johann Christian Daniel von Schreiber of Erlangen and Leopold von Fichtel of Vienna with correspondents in Zurich, Moscow, Trieste, Leipsig and Rio de Janeiro. Throughout the Museum's history, however, the major source of specimens was always to be from American citizens.

Charles Willson Peale, his sons, daughters and eventually in-laws (excepting Angelica Kaufman Peale's husband, Alexander Robinson of

Baltimore, who thought the whole thing degrading) actively participated in collecting. The Peales ranged from New York to Maryland, shooting birds, catching insects, fish, snakes and lizards; they bought strange fish in the markets of New York, Philadelphia and Baltimore, strange birds and animals from sailors in the seaports. Raphaelle Peale went on a collecting expedition through the southern states and into Mexico and Cayenne. Titian Ramsay Peale, the naturalist-son, was eventually to go far afield: in 1817 with George Ord, Thomas Say and William Maclure through Georgia and Florida; in 1818-19, with Major Stephen Long to Nebraska, Colorado and Oklahoma; in 1829 to Columbia; and finally, in 1838, with the Wilkes Expedition to the South Pacific. Specimens from all these expeditions (save the latter) went to the museum to join the collections deposited there from Lewis and Clark's and Pike's expeditions.

Most of the Americans, familiar in the history of early science in the United States, sent objects, domestic or foreign, to the Peale Museum: Benjamin Smith Barton, Samuel Latham Mitchill, David Hosack, Adam Seybert, Frederick V. Melsheimer, Gerald Troost, Isaac Lea and Benjamin Silliman, who even sent an out-of-this-world gift, a piece of a meteor which had fallen in Connecticut in 1808. Still, the bulk of the collections came, at random and generally unsolicited, from merchants, sea captains, sailors, doctors, farmers, etc. Peale's diaries, letters and museum books are filled with records of deposits: a swordfish from New Jersey, a jackal and a mongoose from a Captain Bell, from a boy, a weasel killed in Philadelphia; twelve cases of East Indian insects, a full-grown lion (at a cost of \$50), an African ostrich and Gallapagos turtle, a jaguar from St. Croix, an antelope from Senegal, a Russian sheep, insects from Canton; West Indian birds and an elephant, leopard and beaver seal from the de Peysters, the family of Peale's second wife. These and more, alive and dead, came into the museum to be cared for, preserved and displayed.

As the specimens came, the museum quickly grew too large for Peale's home. In 1794, he negotiated a move to quarters in Philosophical Hall, rented from the American Philosophical Society. By 1802, that space was too small and he found more room on the top floors and tower of the old state house, Independence Hall, rented from the state when the capital moved from Philadelphia. After the move to Independence Hall, Charles Willson began to relinquish control over the museum and, in January 1810, formally retired at age sixty-eight, leaving the operation to Rubens Peale.²¹

It is in its establishment in the state house that the fullest description and only pictures of the Peale Museum exist: Up the tower staircase to the second floor, one emerged into the lobby containing apparatus for electrical demonstrations. From the lobby, one entered the Quadruped Room, 40 feet long, with the larger specimens (including a bison, elk, great anteater, sloth, grizzly bear, llama, musk ox and twenty-one mon-

keys) mounted in natural attitudes and grouping, the smaller in glass cases with painted landscape backgrounds. Turning the corner, there was the Long Room, 100 feet long and 12 feet high, with the more than 1,000 birds, in 140 cases, also mounted naturally against appropriately painted backgrounds. Above the birds stretched a long double row of portraits of famous scientists, explorers and revolutionary heroes. Opposite, between the tall windows, were upright glass cases extending into the room, holding insects (the smaller mounted under magnifying glasses), minerals, shells, smaller fossils, coins and curiosities. In the center was a small organ loft and, at one end, the physiognotrace—a silhouette-cutting machine. Around another turn was the Marine Room, with two huge Chama shells, a hammerhead shark, other fish, corals, sponges, amphibia and snakes, both alive and preserved.

Each room contained a framed Linnaean catalogue of the genus and species of every object in it, keyed by number to the cases, and over each case, the Latin, English and French names of the objects when known. Across the yard, in Philosophical Hall, there yet remained three rooms: that holding the mounted skeleton of the mastodon, with the skeleton of a mouse at its feet for contrast, flanked by the bones of the *Megalonyx jeffersoni* with an engraving of the more-complete Madrid megalonyx on the side wall; the antique room, holding objects of archaeological and ethnological interest; and the room containing models of the latest inventions.

This was the museum as Charles Willson Peale had built it and for which he repeatedly and vainly attempted to gain some governmental support. Having failed in that, he turned control over to his son, Rubens, a more astute business manager perhaps and certainly less interested in science. Rubens changed the emphasis of the museum's operations from its unique mixture of natural history, natural theology and entertainment. Collecting continued, some of it through large-scale purchases or expeditions, but the purpose was that of making money in competition with newer institutions of popular amusement. In 1811 Rubens closed the three-room annex in Philosophical Hall and gathered the entire collection in Independence Hall. He installed gas lights in 1816 and replaced the Linnaean catalogues with framed Biblical verses. Rubens Peale brought out into prominence previously sequestered natural curiosities, such as two-headed cows and faked mermaids, which Charles Willson had hidden, and scheduled popular entertainments for the evenings.

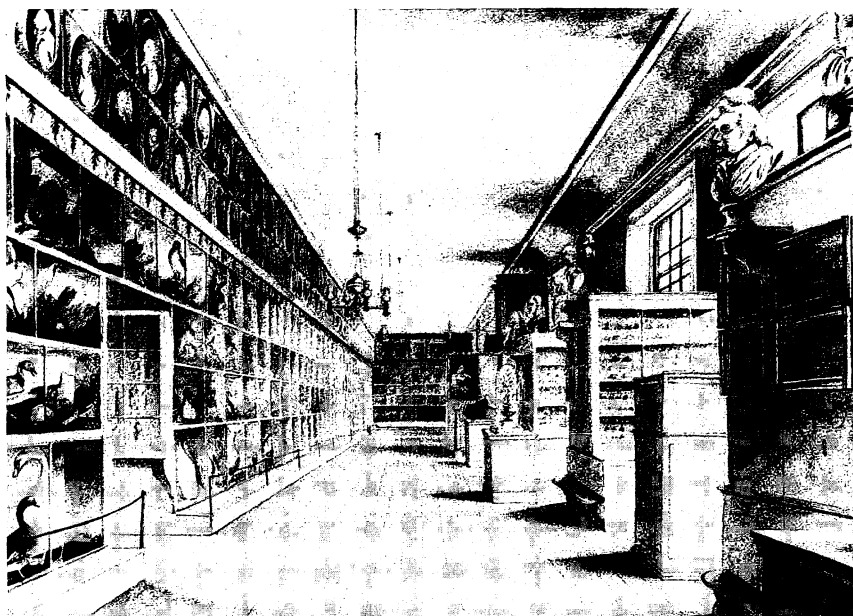
The transformation failed. Now neither purely educational nor entirely entertaining, the museum (and the income it brought to the Peale family) was on the point of collapse. In 1821, the operation was reorganized as a joint-stock company in a final effort to insure its permanency. Charles Willson Peale, a widower for the third time, returned as manager. At eighty, but still indomitable, Charles Willson appointed a quartet of mu-

seum professors—John Godman, in physiology; Gerald Troost, in mineralogy; Richard Harlan, in comparative anatomy; and Thomas Say in zoology—to restore the museum to its educational and inspirational purposes. The attempt failed, few lectures were given and the drift toward amusing trivia was merely slowed. In 1826, the museum was to be moved again, this time into its own building. Before the move was achieved, on 22 February 1827, Charles Willson Peale died. Now under financial pressure from a host of heirs, the museum operations were more and more frankly popular. After yet another move, the museum went bankrupt in the failure of the United States Bank in 1845 and its collections were sold at auction in 1848.²²

Long before that happened, however, the museum had succeeded in a way beyond anything that Peale could have expected. Peale's enlightened notion of a museum as science education and spiritual inspiration for "everyman" had become archaic by the beginning of the nineteenth century. Even natural history was becoming an arena for specialized investigators. But his concept of a complete and orderly representation of the world was as useful in the new view of nature as it had been in the old. In one area after another, people working with his museum collections made substantial contributions to scientific knowledge.

Probably the most famous example is in paleontology. The drawings of the "great incognitum," whose execution had been the initial occasion of the museum's founding, were taken by their owner, Dr. Christian Friedrich Michaelis, to Göttingen. Michaelis sent copies to Dr. Petrus Camper, of Groningen, who published one of them (of an upper jawbone) in a paper describing the "incognitum" bones, printed in 1788 in the *Nova Acta* of the Imperial Academy of Sciences of St. Petersburg. In 1801, Charles Willson Peale extracted from a farmer's marl-pit in Orange County, New York, the nearly complete skeleton of an "incognitum" and, from a farm nearby, another, slightly less complete skeleton. The second of the two specimens, now assembled and called the mammoth, was taken on tour to England and through the southern United States and then placed in the Baltimore offshoot of Peale's Philadelphia Museum. The other, assembled and mounted with Charles Willson Peale's famous painting: "The Exhumation of the Mastodon" as its background, became a feature of the Peale Museum in Philosophical Hall and later in Independence Hall.²³ It also acted as a magnet for other collections of fossil bones sent either to the museum itself or, as with Jefferson's megalonyx, to the American Philosophical Society which deposited them with Peale.

Rembrandt Peale wrote a pamphlet (published in London in two editions, 1801 and 1803) describing the discovery, but scientifically significant publication began with a curious translation of Charles Willson Peale's letter on the subject to Geoffroy Saint-Hilaire, published in the *Annales du Museum National d'Histoire Naturelle* in 1802. Faujas Saint-



The Long Room, or Interior Front Room in Charles Willson Peale's Museum at Independence Hall, 1822. Painted in watercolor by his son Titian Ramsay Peale. The Long Room housed an impressive collection of over 1,000 birds in the 140 cases. Reproduced courtesy of The Founders Society, The Detroit Institute of Arts.

Fond followed it, the next year, with a paper in the same journal on fossil ox bones, described from plaster casts shipped by Peale to the Museum in Paris. A year later Georges Cuvier published a paper in the *Annales* on the Megalonyx, again based on plaster casts sent by "M. Peale, well-known for the marvelous museum he has established in Philadelphia." Finally, in 1806, the *Annales du Museum* published a paper by Cuvier, illustrated with one of the Peale drawings for Michaelis and essentially based on casts of the Peale mastodon, which established the nature of the creature and gave it the name mastodon. Much of that material was repeated, this time with an engraving of the mounted mastodon taken from a drawing by Rembrandt Peale, in Cuvier's *Less Ossesmens Fossiles des Quadrupedes* (1812).²⁴

Fossils exhibited in Peale's museum also inspired publications of five of the major early American paleontologists. Jefferson and Caspar Wistar separately discussed the megalonyx in American Philosophical Society *Transactions* papers in 1799. Two fossil skulls presented to the Society by Jefferson were described by Wistar in a *Transactions* paper in 1818,

illustrated by engravings of six drawings by Charles Willson Peale; four of those illustrations were re-engraved for John Godman's *American Natural History* of 1826-28. There were other illustrations of fossils from the Peale Museum in Godman's book and his paleontological papers in the *Journal of the Academy of Natural Sciences*, *Journal of the Franklin Institute*, and *Transactions of the American Philosophical Society* were, in part, derived from specimens in that museum. Many of these papers were sharply contradicted by Richard Harlan, whose taxonomic descriptions and identifications differed from those of Jefferson, Wistar and Godman. Harlan's own specimens were deposited, on loan, in Peale's museum and his paleontological papers, in the *Journal of the Academy of Natural Sciences*, *American Journal of Science*, *Transactions of the Geological Society of Pennsylvania* and the *Annual Reports of the British Association for the Advancement of Science* were partially based on Peale Museum specimens. And, finally, Thomas Say's invertebrate paleontological studies of fossil shells repeatedly refer to specimens in Peale's museum.²⁵

The importance of Peale's museum for the study of ornithology was as great as for paleontology—and is less complicated to demonstrate. Until the period 1808-1814, not a single work in ornithology with any claim to regional completeness combined good illustrations, systematic descriptions and binomial nomenclature and sensitive, non-anthropomorphic, accounts of bird songs, appearance, habits, distributions, etc. That situation was changed by the publication of Alexander Wilson's *American Ornithology*, subsequently described by a successor, Charles Lucien Bonaparte, as a book without equal for any part of the world.

Wilson arrived in the United States from Scotland in 1794, penniless, a weaver with no obvious qualifications for ornithological study other than a love of nature and a fondness for writing bad poetry. It detracts nothing from his achievement to point out that page after page of his *American Ornithology* demonstrates that the work could never have been carried to publication without substantial assistance, especially that of Charles Willson Peale. William Bartram provided initial support for Wilson's project and continued encouragement during his collecting trips. Bartram, however, was primarily a botanist and the confusion of Linnaean designations for birds described in his *Travels Through North and South Carolina* (1791) indicate how little he could contribute to Wilson's formal taxonomic education.

Wilson borrowed books from the libraries of Bartram, Thomas Say, the Library Company of Philadelphia and the Peale Museum. He learned principles of description and classification from William Turton's translation of Linnaeus's *Systema Naturae, A General System of Nature . . .* by Sir Charles Linne (1806) and, especially, from John Latham's *General Synopsis of Birds*. Buffon's *Natural History of Birds* showed the importance of illustrations, but Wilson could not, at first, draw or etch. He took

drawing lessons from Alexander Lawson (and surely learned, as well, from Charles Willson Peale), but never learned to sketch accurately from moving subjects. His illustrations are all taken from birds he collected, preserved (by techniques learned from Peale) and mounted or from those already preserved and mounted in the Peale Museum.

Of the 262 species figured in the *American Ornithology*, 39 were newly described and 23 others were, for the first time, clearly differentiated from European species. Most of the species Wilson described, he had seen himself; many he collected and eventually deposited in Peale's museum. Many of the others he found already in the Museum and all of the European species, against which his comparisons were made, were displayed there. Each bird described was given a Linnaean designation, with synonyms from Catesby, Pennant, Buffon, Latham, etc., as appropriate, and each is provided with a number indicating the specimen to be seen in the Peale Museum collection.²⁶

The first volume of Wilson's *American Ornithology* appeared in 1808; Wilson died in 1813 while volume eight was in press. That volume and volume nine (1814) were edited by Wilson's good friend, George Ord. Twelve years later, Charles Lucien Bonaparte issued the first volume of his *American Ornithology: or, The Natural History of Birds Inhabiting the United States, not Given by Wilson*, completed in a fourth volume in 1833. By this time there were competing collections of birds, e.g., in the Academy of Natural Sciences, Philadelphia, and dependence upon the Peale Museum was less complete. Nonetheless, Bonaparte employed Titian Ramsay Peale as artist for most of the plates in the first volume and some of those in volume four, acknowledged him as the source for birds of the West and of Southern Florida and continued the style of designating his text descriptions with their Peale Museum specimen number.²⁷

The collections of minerals and insects in Peale's museum were each extensive and though neither had clearly traceable influence in American natural history, each invoked expert attention in its organization and major figures in American mineralogical and entomological studies are known to have used them. Charles Willson Peale appears never to have concerned himself seriously with the collection of minerals, but notes of their acquisition are liberally scattered through the pages of the Museum record books and, because of their potential economic value, their organization and display became an early concern of museum associates. When Peale appointed a "Committee of Visitors" to the Museum in 1792, its first official action was to recommend a complete catalogue of museum contents and the second was a resolution, by three members—Caspar Wistar, Beale Bordley and John Vaughan—to meet weekly until the minerals in the collection were organized.²⁸

Whether the three did so meet seem unlikely (the "Committee of Visitors" having soon ceased to function), but the minerals did get organ-

ized, according to the external-characteristics system of Abraham G. Werner, described in modified detail in Richard Kirwan's *Elements of Mineralogy* (1784). In spite of the variant system recommended by the Abbé Haüy in his *Traité de Mineralogie* (1801), sent to the Museum by the Abbé in 1809, the mineral collection retained its Kirwanian structure until after publication of Parker Cleaveland's *Elementary Treatise on Mineralogy and Geology* (1816). The reorganization of the mineral collection seems to have occurred about the time that Gerald Troost, Dutch-born and French-trained mineralogist, became associated with the Museum, eventually to lecture there using its mineral collection as well as his own. It is hard to believe that Troost's early papers on American minerals, published in the *Journal of the Academy of Natural Sciences* and in the *American Journal of Science*, were entirely unrelated to his use of the collections in the Museum, though no positive evidence supports that inference.

For insects, the situation was somewhat different, as Peale enjoyed collecting them and conscientiously added to his museum's collection through exchanges. The insects probably were organized by the system used in Edward Donovan's *Natural History of British Insects* (10 vols., 1802); certainly the Museum possessed a copy of that work in 1805 when Peale lent volume one to his (third) bride-to-be, Hannah Moore.²⁹ Yet nothing approaching a description of Museum insects seems ever to have existed. When Thomas Say was inspired by the example of Alexander Wilson to project a book on American insects, his work was based upon his own collecting, specimens obtained from F. V. Melsheimer and a meager collection at the Academy of Natural Sciences. But he also obtained specimens through James Griffith, an employee at the Peale Museum, and six plates of his abortive *American Entomology, or Descriptions of the Insects of North America* (1817) were engraved from drawings of Titian Ramsay Peale. When the project was resumed in 1824, volume one of Say's *American Entomology* was published with the imprint of Peale's Philadelphia Museum and all eighteen colored plates were from drawings by Titian Ramsay Peale. By the time the second volume appeared, Say had gone, with Maclure, Troost and Robert Owen, to new Harmony, Indiana, and volumes two and three were published there. Yet ten of the thirty-six plates in the last two volumes were signed by T. R. Peale and, it may be supposed, were taken from specimens in the Peale Museum. T. R. Peale had, however, a collection which he treated as his own, from which he published a prospectus number, with four colored plates, of *Lepidoptera Americana: or Original Figures of the Moths and Butterflies of North America* (1833) and which he left to the Academy of Natural Sciences.³⁰

The Quadruped Room provided the last significant contribution of Peale's museum to American science. In spite of resentment of Buffon's slurs on American animals, no general work on American zoology, written

by an American, appeared for years. Regional studies, such as Jefferson's on Virginia or Samuel Williams's *Natural and Civil History of Vermont* (1794) were available and Samuel Latham Mitchill contributed some descriptions and figures of American species to his edition of Bewick's *General History of Quadrupeds* (1804), but the best sources of American zoology remained Buffon or Thomas Pennant's *Arctic Zoology* (1784-87).³¹ Each of these had been written prior to serious exploration of the interior of North America. Meriwether Lewis intended to publish his journal of the Lewis and Clark Expedition, with scientific notes by Benjamin Smith Barton and illustrations by Charles Willson Peale, but Lewis's death and then Barton's put an end to that project.³²

The gap in American zoology began to be filled with an anonymous appendix to the second American edition (1815) of William Guthrie's *New Geographical, Historical, and Commercial Grammar*, written by George Ord. This is chiefly a compilation from foreign authors, especially Turton's edition of Linnaeus, and any new material deals almost exclusively with species from the Lewis and Clark Expedition, citing type specimens from Peale's museum.³³ Richard Harlan's *Fauna Americana: Descriptions of the Mammiferous Animals Inhabiting North America* (1825) was primarily an English version of A. G. Desmarest's *Mammalogie* (1821), with corrections and notes, especially on American fossils. It was essentially ignored, or severely criticized, especially by John Godman, whose *American Natural History, or Mastology* (1826-28) was due to appear the following year. Godman, a grandson-in-law of Charles Willson Peale, began working on his book in 1823 and its contents reveal the full complement of aids from Peale Museum associates. The title page to volume one has an engraved vignette drawn by James Peale, Jr.; there are acknowledgements to Charles Lucien Bonaparte, Thomas Say, George Ord and Titian Ramsay Peale. Throughout the four volumes there are references to specimens in the Peale Museum and the numerous illustrations, drawn by Charles Alexander Lesuer, appear uniformly to have been taken, in form and attitude, from mountings of specimens in the Quadruped Room of the Peale Museum. As late as 1887, Godman's *American Natural History* was described, by George Brown Goode, as ". . . the only separate, compact, illustrated treatise on the mammals of North America ever published, and is useful to the present day."³⁴

Charles Willson Peale was dead when Godman's book finally appeared, but he would have gloried in it, as he had delighted in Wilson's *Ornithology*. It was the kind of approach to nature that he most approved: produced by an American, precise but enthusiastic, celebrating throughout the artistry and contrivances of the Creator. Peale was always tempted to call his museum a temple and enjoyed quoting Constantin Volney's remark, of 1797, upon entering the Museum: "This is the House of God! Here is nothing but truth spoken."³⁵ Unfortunately, the uniquely eight-

eenth-century equation of nature, truth, divinity and profit which made Peale's museum an urban temple had essentially been "disproved" by early in the nineteenth century. As with other urban "temples," when the Museum's original constituency disappeared, it attempted to find others. In that attempt, it ultimately failed. The physical elements of Peale's Museum vanished as the inspiration behind its creation lost credence.

But Peale had built better than he realized. For some forty years, his museum had provided income for his large family. To achieve that end, Peale had provided enlightenment and inspiration for the museum's Philadelphia patrons and he had done this with integrity and intelligence. What he created was, therefore, in the end, an American classic. Like other classic creations, the design and execution of the Philadelphia Museum held different levels of significance for different generations. While its referents to pure entertainment, general education and natural religion disappeared, at least temporarily, those to science and natural history remained. Though the material assets of the museum were dispersed or destroyed, science and American culture became permanent heirs of Peale's work through the published writings of Cuvier and Harlan, Wilson and Bonaparte, Ord, Godman and Say.

Notes

1. Lillian B. Miller, ed., *The Collected Papers of Charles Willson Peale and His Family* (Millwood, New York, Kraus Microforms, 1980), (cited hereafter as *CWP Papers*), Series XI-B, Card 6. Charles Coleman Sellers, *Mr. Peale's Museum: Charles Willson Peale and the First Popular Museum of Natural Science and Art* (New York, 1979, 1980), 195.

2. *CWP Papers*, Series XI-B, Cards 6, 15.

3. Sellers, *Peale's Museum*, but see also Charlotte M. Porter, *The Eagle's Nest: Natural History and American Ideas, 1812-1842* (University, Alabama, 1986), especially chapter 2.

4. Count de Buffon, *Natural History, General and Particular* (London, 1791), translator and ed., William Smellie, vol. 5, 146; *Natural History of Birds* (London, 1792-3), I, 14. Translated quotations from Buffon were verified in the original. Note that in the "Plan de l'ouvrage sur l'Histoire des Oiseaux," which is not included in the translation, Buffon suggests that there may be as many as two thousand species of birds. As Peale could not easily read French at this time, he would depend upon the translation cited above, as that appeared. The translator's preface (iv) does suggest that there are "at least ten times" more species of birds than of quadrupeds.

5. Charles Coleman Sellers, *The Artist of the Revolution: The Early Life of Charles Willson Peale* (Hebron, Connecticut, 1931), 249.

6. *CWP Papers*, Ser. II-A, Card 24, letter to Madison, 21 May 1801.

7. Buffon, *Natural History*, LI, 115; *History of Birds*, I, 113.

8. In 1787, Ebenezer Howard, Post-master General of the United States and executor of Du Simitier's estate, gave Peale some specimens from that museum.

9. Sellers, *Museum*, 23.

10. Daubenton sent Franklin a short memoir: "Method of Preserving Birds and Other Subjects of Natural History," at Buffon's suggestion in July 1773, and the memoir was deposited in the library of the American Philosophical Society by the following summer. The memoir was also printed in *The Columbian Magazine, or Monthly Miscellany* I (1786-87), 326-327, and Peale copied a version of it, for his own use, in 1787.

11. *CWP Papers*, Ser. II-B, Card 9, Diaries, 6 July 1788; Ser. II-A, Card 17, Letter to Mr. Valk, 5 May 1792.

12. *CWP Papers*, Ser. II-B, Card 9, 46.

13. *CWP Papers*, Ser. II-A, Card 17, letter to Thomas Hall, 12 October 1792.
14. *CWP Papers*, Ser. II-A, Card 16, 11 May 1791.
15. *CWP Papers*, Ser. II-A, Card 20, letter to Thomas Jefferson, 22 June 1796.
16. *CWP Papers*, Ser. II-A, Cards, 19, 23; 1 Oct. 1794, 30 December 1800.
17. When the Leverian collections were sold at auction in 1806, Hall acquired some lots which he passed to Peale, see Sellers, *Museum*, 170-71.
18. That letter, dated 30 June 1796, has been published by Bashford Dean, "A Reference to the Origin of Species in an early letter (1796), signed by both Lamarck and Geoffroy," *Science* 19 (n.s. 1904), 798-800. The reference to origin of species is less clear than Dean seems to believe, but there are questions relating to the nature of species in general, to possible degeneration of recently transplanted species due to environment, and to comparisons between old and new world species.
19. *CWP Papers*, Ser. II-A, Card 21: 28 January, 17 March, 30 April, 1 June, 18 August 1797; Card 22: 23 February, 16 June 1799.
20. *CWP Papers*, Ser. II-A, Card 26: 22 June 1802, Joseph Banks; 14 July 1802, Palisot de Beauvois; 16 July 1802, Georges Cuvier. This may be unfair to Geoffroy, who had gone with Napoleon to Egypt in 1798 and not returned till 1801. On the other hand, Peale noted, in a letter to Cuvier, 21 April 1808, that receipt of the casts had not been acknowledged except in publications and, in a letter to Geoffroy, 21 April 1808, that he had last heard from him in 1801 and that letters and gifts of 1804 and of 1807 had not been answered; see Ser. II-A, Card 43.
21. *CWP Papers*, Ser. II-A, Card 36: letter to Angelica Kaufman Peale Robinson, 19 October 1808, ". . . for one or two years past, I have left the whole labour of the Museum to Rubens. . . ."
22. Except for the pictures, most of which were retained in Philadelphia, the contents of the museum went to P. T. Barnum. The parts he retained vanished in fires of 1851 and 1865. Some of Barnum's purchases went to his Boston partner, Moses Kimball, and part of that, in 1893, to the Boston Society of Natural History. After further vicissitudes, much of the Peale-Kimball material ended in Harvard's Museum of Comparative Zoology and the Peabody Museum of Archaeology and Ethnology, where some items can still be identified. See Sellers, *Museum*, 302-328; Walter Faxon, "Relics of Peale's Museum," *Bulletin of the Museum of Comparative Zoology* 59 (1915), 117-148.
23. The "Baltimore" mastodon has been preserved, unmounted, in the American Museum of Natural History, New York City. The "Philadelphia" mastodon, by devious paths, ended up in the Geologische-Mineralogische Abteilung des Hessischen Landesmuseums in Darmstadt, Germany, where it still remains. See George Gaylord Simpson and H. Tobien, "The Rediscovery of Peale's Mastodon," *Proceedings of the American Philosophical Society* 98 (1959), 279-281.
24. *Annales de Museum National d'Histoire Naturelle* 1 (1801), 251-253; 2 (1803), 188-200 (especially 191-192, 196); 5 (1804), 358-375 (especially 361); and 8 (1806), 270-312. The story of the Michaelis drawings is told by Whitfield J. Bell, Jr., "A Box of Old Bones: A note on the identification of the Mastodon, 1766-1806," *Proceedings of the American Philosophical Society* 93 (1949), 169-177.
25. For Godman and Harlan, see Patsy A. Gerstner, "The 'Philadelphia School' of Paleontology: 1820-1845," unpublished dissertation, Case Institute of Technology, 1967; for Thomas Say, see G. D. Harris, ed., "A Reprint of the Paleontological Writings of Thomas Say, with introduction," *Bulletin of American Paleontology* I (1896), 273-354, with appendix: "Notes from Long's Expedition to the Rocky Mountains," 377-385. Say also drew on the Peale Museum collections for his studies of shells, see Say, "Conchology" in the 1819 American edition of Wm. Nicholson's *Encyclopedia*.
26. Elsa Guerdrum Allen, "American Ornithology before Audubon," *Transactions of the American Philosophical Society* 41 (n.s. 1951), 387-591. Frank L. Burns, "Charles W. and Titian R. Peale and the Ornithological Section of the Old Philadelphia Museum," *Wilson Bulletin* 44 (1932), 23-35. Faxon's "Relics of Peale's Museum," *op. cit.*, identifies the Peale Museum birds now in the Museum of Comparative Zoology by comparing their mounting with Wilson's illustrations.
27. Charles Lucien Bonaparte, *American Ornithology . . .* (Philadelphia, 1825, 1828, 1833); Jessie Poesch, *Titian Ramsay Peale 1799-1885, and His Journals of the Wilkes Expedition* (Philadelphia, 1961, American Philosophical Society, Memoir 52), 46.
28. *CWP Papers*, Ser. XI-A, Card 1: 10 July 1792.
29. *CWP Papers*, Ser. II-A, Card 35: 17 July 1805.
30. See Harry B. Weiss and Grace M. Ziegler, *Thomas Say: Early American Naturalist* (Springfield, Illinois, 1931) and "Titian Ramsay Peale," *Entomological News* 24 (1913), 1-3.
31. Pennant had intended to write on North American zoology, but changed the aim and title of his work out of mortification at the loss of the American colonies.

32. Charles Coleman Seller, "Charles Willson Peale with Patron and Populace: A Supplement to *Portraits and Miniatures by Charles Willson Peale with a Survey of his Work in Other Genres*," *Transactions of the American Philosophical Society* 59 (n.s. 1969), 36-37. This was unfortunate for Peale, who had withdrawn from publication a paper for the American Philosophical Society on the pronged antelope and ceased his plans for other papers. Because he never honored the privilege of naming the non-descript birds of his collection and lost that of naming any of the animals, his chances for taxonomic immortality went by default to Wilson, Bonaparte, Ord and Godman—a neat demonstration of the dictum: "Publish or perish."

33. Samuel N. Rhoads, ed., *A Reprint of the North American Zoology, by George Ord. Being an Exact Reproduction of the Part . . . Compiled by Mr. Ord for . . . [the] Second American Edition of Guthrie's Geography, in 1815* (Haddonfield, New Jersey, 1894).

34. John D. Godman, *American Natural History* (Philadelphia, 1826-28). George Brown Goode, "The Beginnings of American Science, The Third Century," *Annual Report of the Board of Regents of the Smithsonian Institutions: Report of the U. S. National Museum*. Part II (Washington, D.C., 1901), 409-466, especially 451.

35. *CWP Papers*, Ser. II-A, Card 35: letter to David Hosack, 29 June 1805.