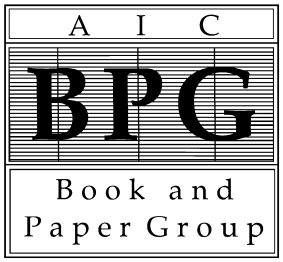



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**Preserving Cultural Heritage**

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# Restoration, Rebinding, Conservation: Changes in Collections Care over 275 Years at the APS Library

## INTRODUCTION

The American Philosophical Society (APS) has maintained a research library since its founding in 1743. In the institution's 275-year history, the library's approach to collections care has changed as the conservation field has evolved, from binding loose documents and pamphlets in the 1700s to item-level treatment in today's fully staffed and well-equipped conservation laboratory. In the years between, the APS forged relationships with many contract binders and restorers beyond its walls and established its own in-house conservation facility. The APS Archives reveal the library's long-standing concern with stabilizing its collections, and provide details concerning the individuals hired to perform the work, including Philadelphia binder Jane Aitken in the early 19th century; Library of Congress manuscript restorer William Berwick in the early 20th century; Carol Rugh (later Carolyn Horton), who was hired as the first APS on-site conservator in 1935; and Willman Spawn, the society's first full-time conservator. Not all of these restorers and conservators left records of their work, but the collections themselves reflect the changing materials and methods in use over the years, from Western-paper fills and silk lamination to indiscriminate rebinding to today's historically sensitive item-level treatment. This long, varied history of collections care also means that today's conservators must sometimes reverse earlier treatments that no longer serve the needs of the books and documents they were designed to protect. This constant engagement with and reassessment of conservation work from the past is common in smaller research libraries, particularly as scientific conservation techniques have been slower to catch on in the complex interplay among binders, restorers, and program-trained book conservators. The society's approach to the evolving history of conservation treatment may serve as a guide for other institutions in like circumstances.[1]

Papers presented during the Book and Paper Group Session, AIC's 48th Virtual Annual Meeting, May 21-September 2, 2020

## EARLY HISTORY OF THE APS COLLECTIONS AND THEIR CARE

Benjamin Franklin founded the APS in 1743 for the "pursuit of useful knowledge," bringing together a small group of men who studied the latest developments in science and agriculture to promote the welfare of the American colonies. These men read and collected books and papers on the latest scientific discoveries, exchanged botanical and mineralogical specimens, and established ties with scholars in other parts of the world. In December 1768, the APS merged with another small society with similar aims, the American Society held at Philadelphia for Promoting Useful Knowledge. The books, papers, and specimens of both societies were brought together, and by 1770 one of the main goals of the enlarged society was to maintain a Cabinet—a research library and museum—worthy of international acclaim. The committees of the expanded society, and its growing library, focused on geography, mathematics, natural philosophy, and astronomy; medicine and anatomy; natural history and chemistry; trade and commerce; mechanics and architecture; and husbandry and American improvements. In the last decades of the 18th century, the society's Cabinet contained donated and purchased reference books, papers submitted to the society, and meeting minutes, as well as natural history specimens, medals, and architectural and mechanical models.

The APS Minutes from this period reveal the society's concern with the security and preservation of its growing collections. The society purchased a new bookcase for its library in 1773, when its members met in rented space in Carpenters' Hall, and more cases were added as the collections continued to expand. David Rittenhouse was appointed the first APS Librarian in 1775, charged with overseeing the society's collections and monitoring its lending practices. From 1783 to 1790, while the society struggled to purchase land and erect a building after the Revolutionary War, Rittenhouse stored the APS Library and Museum collections in his own home. Printed ownership labels were pasted into the books and pamphlets during this period. The collections moved into the

Fig. 1. Philosophical Hall, which contained the APS meeting rooms and library, after its construction in 1790. APS Archives, unprocessed collection, M42.34.25. Courtesy of the American Philosophical Society.

newly constructed Philosophical Hall in early 1790 (fig. 1). In 1792, the society established regulations for the management of the library, including cataloging guidelines, lending restrictions, and fines for overdue books. The society's curators were to use the proceeds from any fines for the "augmenting of their Library, & keeping the same in proper preservation" (Minutes 1787–1793, 222).

According to the APS Minutes, society members first called for the library collections to be cataloged in 1790, when the books were moved to their new home, but the process took years to complete. In early 1793, all of the loaned books were recalled from borrowers for the purposes of creating the catalog. When Charles Willson Peale rented part of the society's hall for his museum in 1794, he was named Librarian

of the Society and given the responsibility of caring for both the collections and the building. Along with two other APS members, he presented a draft of the library catalog in 1796. Discussions for printing the catalog were under way in 1797, and the society moved on to cataloging its "cabinet of minerals" and "mathematical and philosophical apparatus" (Minutes 1793–1798, 170). The library catalog project appears to have stalled, however, perhaps because books kept disappearing. Although unauthorized borrowing or outright theft are not addressed directly in the APS Minutes (1793–1798), a committee was directed "to take proper measures to secure the property in the Society Room" in November 1798 (233), and locks were installed on the bookcases before the next meeting. New bookcases with glazing were installed the following year to assist with the cataloging process. The catalog was finally completed in December 1799, and the books were grouped by size and numbered sequentially. This catalog was revised from 1807 to 1814; in 1819 (by which time the collection had again outgrown its bookcases); from 1822 to 1824; and in 1838, when the society also purchased a stamp for marking the books. Lists of book donations—and the ever-increasing costs for insuring the library collections—reflect the growing size and importance of the APS holdings during this period.

*Binding as Collections Care*

As part of the process for preparing the first catalog of the library collections, the society ordered in March 1797 "that the pamphlets belonging to the Society be arranged and uniformly bound" (Minutes 1793–1798, 160), and in November 1799 that all of the unbound books in the society's possession be bound. Binding loose papers provided protection against both mishandling and loss, and it appears to have become a standard procedure. On October 15, 1802, the APS Minutes (1799–1804) note that an incoming donation of quartos from another learned society "being unbound [will] be bound" (129). A year later, APS members were not permitted to borrow the latest or "loose" journals, suggesting that the library's usual practice was to bind sets of journals on a regular basis (Minutes 1799–1804, 170).

Starting in 1821, the APS Librarian (John Vaughan, fig. 2) was given an appropriation for binding each year, starting at $50 and growing to $200 annually by 1843. The binders used for this routine work cannot be identified from the APS Minutes alone, although they show that the APS paid Samuel Taylor, Robert Aitken, Jane Aitken, and "Mr. Gaskill" for binding society publications between 1771 and 1837. Spawn's research on early American bindings established that Robert Aitken bound many additional volumes for the APS (Baker 2004), perhaps including most of the incoming books, until his death in 1802. Further research into the Librarians' correspondence and Spawn's papers (which now await processing at the APS) may reveal a list of Robert Aitken's bindings and the identities of later binders.

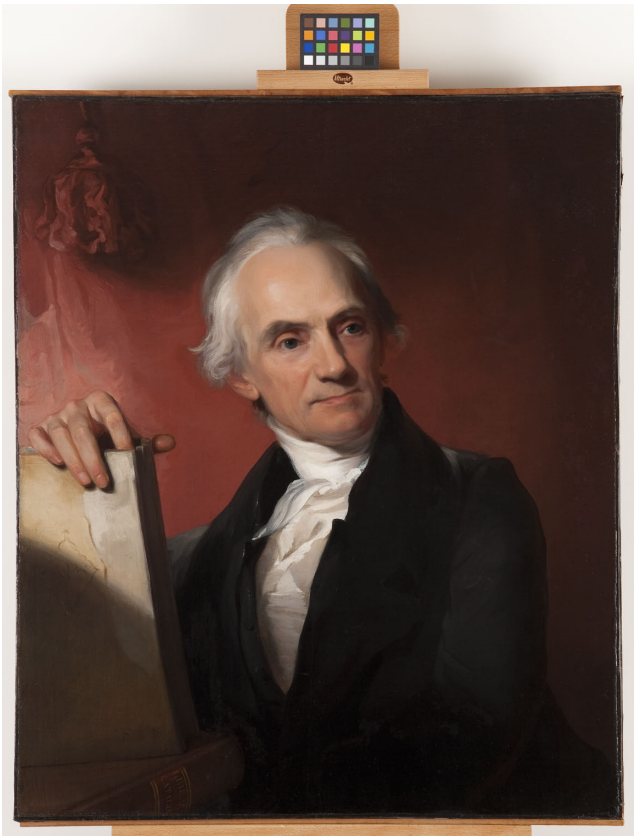


Fig. 2. John Vaughan, a Philadelphia wine merchant, served as APS Librarian from 1803 until his death in 1841. The first printed catalog of the APS Library was produced under his aegis, and he also donated many valuable books. Thomas Sully's 1823 portrait depicts Vaughan holding an APS book with a torn parchment binding propped on a copy of the library's catalog. Thomas Sully, *Portrait of John Vaughan*, 1823. Oil on canvas. 40.25 × 35 in. Courtesy of the American Philosophical Society.

Earlier references to binding deal with printed materials; however, the society also bound many of its manuscript collections, including its own archival records, as well as donated letters and other historical documents. On November 17, 1837, the APS secretaries were instructed "to cause the Records and Documents, connected with the History and Transactions of the Society, to be properly arranged and bound" and installed in appropriate cases (Minutes 1834–1839, 174). This directive was carried out by March 5, 1841, when the papers had been bound into "18 quarto and 2 folio volumes" (Minutes 1840–1842, 122). The APS Minutes of July 17, 1840, note that "[Charles Pemberton] Fox had deposited in their archives a collection of papers and original letters of Dr. Franklin" (57). The following month, the society appointed a committee "to arrange the Franklin papers deposited with the Society, and to report a plan for the better preservation of the Manuscripts

of the Society" (Minutes 1840–1842, 62). As Berwick's later correspondence reveals, the loose Franklin letters were subsequently oversewn and bound. On October 21, 1842, Librarian George Ord "called the attention of the Society to the condition of the bound manuscripts in the Library, some of which are without indices, and parts of others have been cut out of the volumes which once contained them, and have been removed" (Minutes 1840–1842, 294). A committee was appointed "to consider the Manuscripts in the possession or custody of the Society . . . [and to report] . . . what action may be proper for their secure preservation, and for facilitating their usefulness" (Minutes 1840–1842, 295). This approach also appears to have involved binding or rebinding, although the APS Minutes do not specify what was done; the committee was disbanded in August 1845.

*Other Early Preservation Efforts*

Although care for the library collections appears to have focused on binding during the 18th and 19th centuries, the society was also interested in preserving its instruments, natural history specimens, and artworks from harm, and in repairing them when they were damaged. On April 4, 1783, the curators presented a "report on the state of the natural curiosities in the Museum," and the society "ordered that the curators take immediate measures for preserving the same from further decay" (Minutes 1774–1778, n.p.). Based on these records and the letters of Peale, it is safe to assume that any skins and taxidermied specimens then in the APS collections have been treated with arsenic, mercury, or other toxic materials during that time. In early 1802, the society considered several options for repairing and maintaining its timepiece. On June 18, 1802, the curators were "requested to put the Lens [of the telescope] in good order & have the globes varnished with spirit varnish and properly covered" (Minutes 1799–1804, 126). On June 17, 1836, the society turned its attention to repairing its "transit instruments," which had been used to observe the transit of Venus across the face of the sun (Minutes 1834–1839, 109). Franklin's portrait was "cleaned and repaired" for the sum of $28 in 1842 (Minutes 1842–1846, 30). All of this information is valuable for today's conservators, who may be called upon to re-treat instruments, specimens, or paintings that were first restored more than 150 years ago. At other institutions as well, the archives may fill in some of the blanks concerning restoration work undertaken before the age of modern conservation documentation.

The APS Archives also provide tantalizing clues concerning the early study of preservation and the development of new materials and technologies. The society actively collected information related to preservation and conducted its own research on the matter. On March 20, 1789, the APS Minutes recorded the donation of a dissertation in French on protecting paper from the ravages of insects. On February 16, 1798, a committee of three was appointed "to devise the best method of preserving fossil bones" as they were raised from the ground (Minutes 1793–1798, 210). On January 17, 1806, an Italian pamphlet was criticized for containing "nothing of importance, except a mode of preserving books from worms, which simply consists in mixing oil of turpentine with the paste used in binding—which, in drying, the writer says, forms a vitreous substance with the paste" (Minutes 1805–1814, 37). The APS Minutes (1815–1825) also reflect its members' interest in mulberry paper from American trees, the development of machine-made paper in 1819 such as Josiah and Thomas Gilpin's "endless sheet" (98), methods for shaping caoutchouc, early Daguerreotypes and other photographic techniques, the first metal-nib pens, and experiments to develop a sediment-free ink for such pens.

## RESTORATION AND CONSERVATION IN THE 20TH CENTURY

Although further research in the APS Archives—its manuscript minutes, librarians' correspondence files, and staff records—will no doubt cast further light on preservation in the second half of the 19th century, those records are not available in digital form and could not be accessed while preparing this article. The author hopes to return to the subject when regular on-site work resumes. In the meantime, this narrative must skip forward approximately 50 years to 1900, when the APS hired expert paper restorer Berwick to again address its collections pertaining to Franklin, Thomas Jefferson, Nathanael Greene, and other luminaries of the early republic.

It is worth noting that the APS Library remained in Philosophical Hall throughout this interim, but that its collections were rapidly outgrowing the space. A blind third floor with a clerestory was added on top of Philosophical Hall in 1890 purely to house the books and manuscripts. This extra floor spoiled the Federal style of the building and was derogatively likened to an ugly top hat, but it remained in place until construction of Independence National Historic Park in 1949 (figs. 3, 4).

*William Berwick, Paper Restorer, 1900–1920*

William Berwick's professional career and cultural milieu have been expertly covered in the magnum opus *Yours Respectfully, William Berwick: Paper Conservation in the United States and Western Europe, 1800 to 1935* by Christine Smith (2016), and the following paragraphs owe much to her labors. Berwick was born in London on February 28, 1848, and apparently apprenticed as a bookbinder. He emigrated to Canada in or around 1866, and as a young man worked as a binder in Hamilton, Toronto, and Montreal. While in Montreal, he married Mary Gillespie, and by the time they immigrated to Lansing, Michigan, around 1882, they had two daughters, Mae and Edith. In Lansing, Berwick worked as a binder and restorer, repairing and mounting maps for the

Fig. 3. Philosophical Hall after its 1890 renovation, which added a blind third floor with a clerestory to house the APS Library collections. Print Collection, graphics:9588. Courtesy of the American Philosophical Society.

state land office. When his firm went out of business, he took the civil service examination, and in 1897 he applied successfully for a binding job at the US Government Printing Office. He made his prior restoration experience known, and in 1899 he was assigned to the Division of Manuscripts in the Library of Congress on his birthday, at the age of 51. He directed manuscript preservation at the Library of Congress until he died unexpectedly at his bench in 1920.

In addition to his full-time work at the Library of Congress, Berwick took on vast quantities of contractual work for other employers, including the APS, the New York State Library, and the State Historical Society of Wisconsin. His correspondence with I. Minis Hays, the ophthalmologist and APS member who served as Society Librarian from 1897 to 1922, reveals that Berwick often dedicated evenings, weekends, holidays, and vacations to his private work, possibly (as Smith notes) because his pay from the Government Printing Office was so low.[1] Berwick's constant concern—still familiar to modern conservators—was maintaining a steady supply of high-quality materials for his work. Many of his letters to Hays focus on procuring silk crepeline, tracing cloth of the proper color and thickness, and antique papers to be used for fills and false margins. In one early letter to Hays, he wrote, "Often I come across more flyleaves in a book than

Fig. 4. The library on the third floor of Philosophical Hall in 1947, when many of the library's holdings had already been moved to the Drexel Building across the street. APS Archives, Negative no. 9. Courtesy of the American Philosophical Society.

are wanted & so remove them, if you have any old books that can be treated thus I shall be glad if you will attend to it for me" (Berwick, October 31, 1900). Hays apparently followed through on this request at least once, as Berwick notes in a letter dated August 2, 1904:

> The few sheets you took out of the vols when I saw you last are gems in their line & it seems to me to be a crime to allow such paper to remain on shelves, so any time you may have to spare may be put to good use by removing some more & letting me have them. It seems to me that making paper as they did in those days is a lost art.

One wonders which books in the APS collections had their endleaves or blank pages sacrificed for Berwick's labors!

Berwick began work on the society's manuscripts in May 1900 and continued until his death in 1920. He started with the William Penn manuscripts and went on to treat other important APS collections, including the papers of revolutionary Richard Henry Lee, the early laws and provincial council minutes of Pennsylvania, the military correspondence of George Weedon, and Jefferson's muddy, tattered, moldy "Indian vocabularies" of indigenous languages. The only printed work his letters refer to is a "Mercury newspaper," most likely Andrew Bradford's *American Weekly Mercury*, the first newspaper printed in the Mid-Atlantic states, which ran from 1719 to 1749. Berwick's most monumental task, which engaged him for 13 years, was conserving the Benjamin Franklin Papers, Mss.B.F85. This collection contained 13,284 items in 57 bound volumes (which expanded to roughly 114 volumes after Berwick's treatment), and the expert restorer was rightly proud when he had finished.

The manuscripts had all been previously bound, and Berwick's treatment began with disbinding and separating the leaves, a task made more challenging by the poor condition of the documents and the time-saving practices of earlier binders. At least in the cases of the Franklin and Greene papers, the binder or binders hired by the APS had sawn deeply into the spine edges of the letters, then oversewn them as groups of single sheets. This both damaged the writing and allowed glue to penetrate between the letters when the spine was lined and covered, as Berwick noted in his letters to Hays on October 31, 1900, and in August 1915, respectively:

> I have received the vol. of the Franklin papers & agree with you that they are in a very bad condition & will require time,

> very great care & patience to take apart. Letters that are bound in this way are always more difficult to take apart than a folded sheet for in this the glue only touches the outside of the fold, but in single sheets like those sent the glue finds its way in between each sheet & also onto the thread overcasting. I will however take great pains to preserve the mss.
>
> This Vol [5] of Greene letters is the worst bound Vol as yet, the binder ? has taken considerable pains to have deep saw marks & then let the glue run in, in many cases at least an inch making the task of taking it apart very difficult & then at the expense of many mutilated leaves.
>
> It is shameful the way these valuable documents have been treated. What surprises me is how your readers have managed to read the writing close to the back.

Berwick also pointed out that the former binders had often inserted leaves backward, with their fore edges bound into the gutter. He corrected these errors before returning the manuscripts. He was well aware that the treated documents were slated to be bound once more after their return to the APS, and was eager to prevent further errors and damage after his extensive labor. His letters to Hays often offer advice for having the books rebound, stored, and handled, particularly when oversize folded manuscripts or maps needed to be bound in.

Berwick's conservation work to prepare the manuscripts for rebinding included removal of surface dirt (apparently using both dry and aqueous methods), flattening creases and resizing paper, removing former mends and adhesives, adding new Western paper fills and false margins (fig. 5), and lining with paper and/or silk crepeline. The finished manuscripts were hinged to ledger paper with thin tracing cloth or bond paper. Berwick sometimes removed seals and replaced them in their original positions when the paper treatment was finished, and inserted shields to prevent thick seals from damaging adjacent leaves. Occasionally, he also split manuscripts through their thickness, particularly when oversize double-sided sheets would have to be folded prior to rebinding, which would interrupt the flow of the text. In many cases, Berwick described his methods when returning the letters or asked Hays for guidance when more than one solution to a treatment problem presented itself. He also returned the books' detached covers. Berwick does not appear to have used before- and after-treatment photography except for public relations purposes, and he did not provide the detailed written reports that today's conservation ethics require, so the specific materials and techniques he employed cannot be determined. His letters and the treated documents, however, reveal a conscientious, highly skilled practitioner who took great pains to preserve historic texts without damage to ink or paper.

Indeed, Berwick's mastery of silk gauze or crepeline to line and protect manuscripts appears to have been unequaled

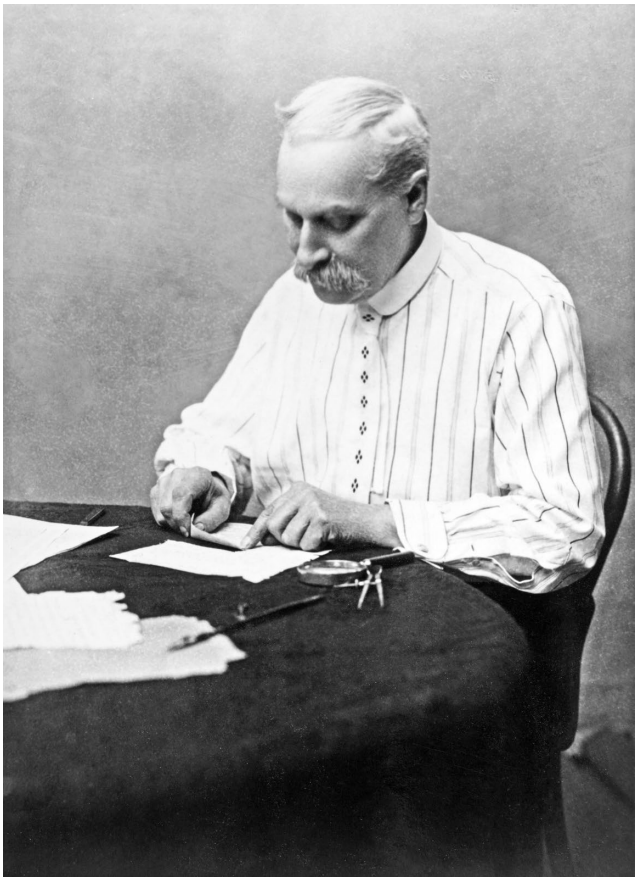


Fig. 5. William Berwick at work, ca. 1916. Courtesy of the William Berwick Family Collection.

in the United States. In her book, Smith describes the evolution of fine silk as a conservation material, concluding that it likely developed from the adhesive-coated silk netting known as court plaster, which was used both cosmetically and medically in the 18th and 19th centuries. Carlo Marrè, a restorer employed by the Vatican Library, perfected the use of silk crepeline on the manuscripts there, and his methods were publicized by Prefect Franz Ehrle in an 1898 article and conference on manuscripts and iron gall ink. Herbert Friedenwald, then superintendent of the Department of Manuscripts at the Library of Congress, wrote to Ehrle while establishing the library's first restoration program and apparently introduced the Vatican method of silking to his employees. On October 27, 1900, Berwick wrote to Hays:

> Crepeline is wonderful stuff for this work & the more I use of it the better I like it. It seems to me that Dr. H. Freidenwald [sic] (whose resignation I very much regret) should be given due credit for his unremitting search for the best material to repair mss. & was, I believe, the first to introduce it into this country & for which all lovers of ancient mss should be grateful.

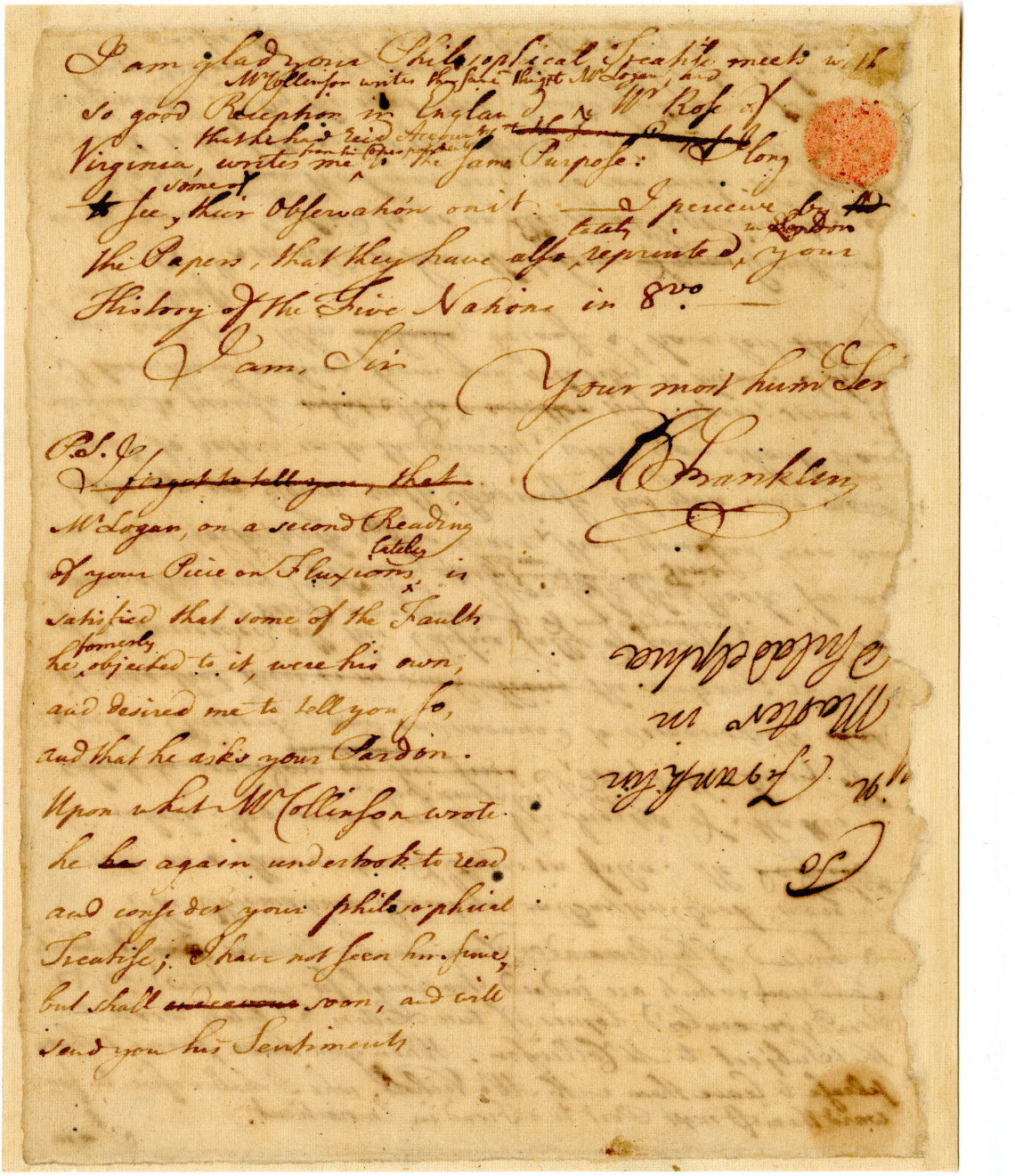


Fig. 6. William Berwick filled the losses in this letter, provided it with handling margins, and laminated it with silk sometime between 1900 and 1913. Benjamin Franklin to Cadwallader Colden, 1747 August 6, Mss.B.F85. Courtesy of the American Philosophical Society.

Today, Berwick's silked documents at the APS remain flat, strong, undarkened, and highly legible (fig. 6). The paper handling margins and fills, which he shaped and beveled to fit each ragged edge or loss, continue to protect the original documents from harm while making each manuscript an aesthetic whole. Although the manuscripts were again disbound, unmounted, and placed into folders during the 20th century, they often retain their tracing-cloth hinges. Berwick's repairs continue to allow the documents to be read and handled by APS researchers more than 100 years after they were made. Further study of the manuscripts may reveal more about his treatment methods.

Following Berwick's unexpected death in 1920, APS Librarian I. Minis Hays made inquiries about hiring another paper restorer, but it is unclear whether he found anyone. Again, studying the Librarians' Correspondence records in the APS Archives may yield further information.

*Carol Rugh (Carolyn Horton), Book and Paper Conservator, 1935–1939*

In 1935, the APS Library hired its first in-house, part-time conservator, Carol Price Rugh, who became Carolyn Horton upon her remarriage. Although the latter name is now famous within the conservation community, the former will be used in this article when referencing work performed at the APS. According to Betsy Palmer Eldridge's overview of Horton's career and accomplishments, she studied bookbinding at the Women's Academy of Applied Art in Vienna from 1929 to 1930, then apprenticed with German binder and restorer Albert Oldach in Philadelphia for five years. At the APS, archival records show that she was paid $1 to $1.50 an hour to mend documents and repair books. With additional income from private binding and conservation work, Horton was able to support herself and her sister through the Great Depression. When she left the APS Library in 1939, Horton went on to become the first book conservator at Yale University, then a binder and conservator in private practice and an expert responder after the Florence Flood in 1966. She is now recognized as a pioneer of modern book and paper conservation (Eldridge 2002).

In her work for the APS from 1935 to 1939, Rugh worked in the library's recently acquired space in the Drexel Building, a towering bank headquarters built across the street from Philosophical Hall in the late 1880s (fig. 7). One of the benefits of moving the society's special collections to the Drexel Building in 1934 may have been the availability of fireproof vaults. In 1929, the published Minutes of the Meetings of the APS reflect a growing concern not only with the overcrowded conditions in Philosophical Hall but with the lack of protection from fire and theft:

> The Library Committee wishes to call the attention of the Society as a whole to the inadequate protection from fire or theft of its priceless collection of Manuscripts and Books and to urge that the Society take action at as early a date as possible, to provide more adequate protection for these treasures, the loss of which would be irreparable. (*Proceedings of the American Philosophical Society* 1929, xii)

Securing the library's collections evidently involved both locating a safer space for its materials and hiring a restorer to assess and repair them.

Rugh treated both manuscripts and printed materials, loose documents, and bound volumes. Her work appears to have been guided by Laura E. Hanson, the first APS Librarian to possess a library degree and the first who was not required to be an APS member.[2] To date, the author has only been able to review Rugh's treatment records from 1935, which she

Fig. 7. The APS Library as housed in the Drexel Building, from an undated photograph. Prints Collection, graphics:9594. Courtesy of the American Philosophical Society.

evidently shared with the APS Library Committee in a report in October of that year and later gave to Spawn to deposit in the APS Archives. Without access to further documentation, it is unclear how her work was selected. In her report, however, she notes, "As each piece of work was begun the value and probable use of the book was discussed with the librarian. The most elaborate restoring has been done only on priceless items" (Rugh 1935, 81).

Although Rugh's work began in May 1935 with treatment of specific treasures from the library's collection—including APS archival documents, copies of early American almanacs, and recently acquired letters from Franklin—by July she had embarked on a survey of the society's special collections to establish condition problems and treatment needs throughout the library, an approach more aligned with preventive conservation. Her survey included the Mason Collection (likely a book donation from William Smith Mason) and the book collections in the library's new fireproof rare book and manuscript vaults. Her resulting notes for the Library Committee broke down needed repairs into manuscript mending (simple and complex), books that needed regluing and recasing or rebacking, books that needed resewing and/or rebinding, and books whose vellum covers required special attention. She also distinguished detached or broken leather bindings from cloth or paper bindings in similar condition. Further research may reveal how her work was guided by her findings and through input from the APS Librarian and Library Committee.

Rugh relied on many of the materials and techniques that Berwick had used—including silk chiffon, tracing cloth, and carefully selected Western papers—but she also adopted new methods under development in the fledgling field of library conservation. Librarians were deeply concerned about the corrosion of iron gall ink by the end of the 19th century; in the early 20th century, they became equally concerned with the rapid deterioration of leather and modern papers. The British Museum established a formula for cleaning and dressing leather that well-meaning conservators—Rugh among them—applied religiously for decades. In June 1935, Rugh's treatment notes refer to 1818 books that were "washed, oiled & polished according to the British Museum formula & technique" and 568 labels that were "oiled and polished" (Rugh 1935, 11). She evidently considered leather dressing part of routine maintenance, as she wrote to the APS Committee on the Library in May 1941 (when her offer was rejected) and in February 1942, offering to oil the bindings again for six cents per volume.

In addition to dressing the society's leather bindings, Rugh performed a variety of more extensive book conservation treatments. Rugh's 1935 treatment notes for specific books (designated by their call numbers and often a short title) indicate that she rebacked decayed leather bindings with buckram or "new American chrome tanned calf" (Rugh 1935, 71), and rebacked damaged cloth or paper bindings with cloth, before mounting the original spines on top. She also soaked the original paper and leather coverings off damaged or rotten book boards and applied them to new boards. Rather than relying on uncertain supplies of antique Western paper, she often used modern Arches paper, both to make new pamphlet covers and to create false margins, which she tinted to match the hue of the original paper. She also used Korean paper for guarding, hinging, and mending. She often specified the use of "Japan vellum," or thick, translucent Japanese paper, for guarding and strip mending the edges of leaves. Although most of this information is gleaned from the treatment notebook she kept for reporting to the Library Committee, the abbreviated treatment records she pasted into the backs of books are also pithy but informative (fig. 8). They reinforce the surprising discovery that she performed certain leather repairs and rebacks with chrome-tanned leather—difficult to pare and tool but extremely durable—evidently in an effort to stave off leather decay.

Like modern conservators, Rugh often addressed the problem of oversize maps folded into books, likely with input from the APS Librarian. In her 1935 treatment of a 1613 German edition of Johann Theodor de Bry's "Small Voyages" with a modern binding, she removed all of the maps, cut them along their folds, and mounted them on cloth (other treatment notes specify "muslin") to prevent wear of the paper at the folds. Three of the maps were then resewn into the book, and the book was recased. The last map in the book, which served as a general reference for the whole work, was provided with its own case of black library buckram.

Rugh also treated damaged wax seals—a conservation challenge unique to manuscripts collections. In a summary detailing her restoration work from November 1, 1936, to

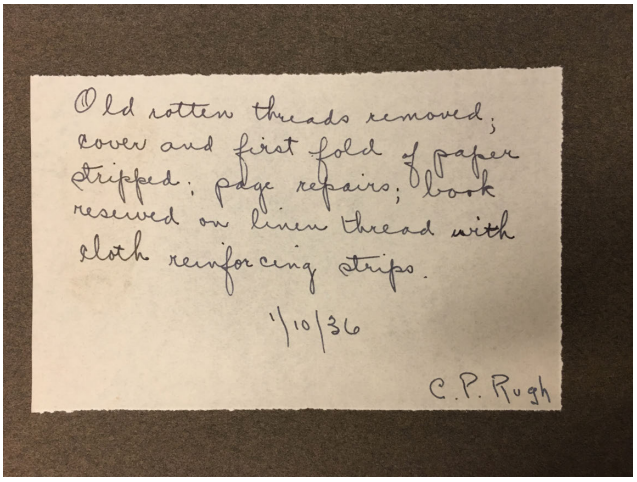



Fig. 8. Carol Rugh's treatment slip for William Poyntell's 1803 thermometrical journal, a pamphlet stitched into a folio of marbled paper. In this case, Rugh pasted her treatment slip into the wrapper she created for the journal. Mss.551.5.P86, American Philosophical Society.

April 30, 1937, she noted that "140 seals were pieced together and restored. Moulds of 34 of these were taken and are being cast in wax" (Rugh 1937, 1). One hopes that further research may determine which seals have been recreated and how the pieced-together seals were restored.

In many ways, Rugh had a modern conservator's sense of what was right: she provided thoughtful estimates, documented her work, and used the best materials available to her. Her October 1935 report to the Library Committee listed the materials she was likely to need for the work covered in her condition survey, budgeting $100 for leather, "buckram, end papers, Japan vellum, repair paper, blotting paper, wax paper, glue, vellum, etc." and $80 for chiffon, "if no rebacking is to be done" (Rugh 1935, 79). She valued her first 5.5 months of labor at $550 and her materials at $89.71 (equivalent to $10,350 and $1,690 in 2020). In explaining these costs, she wrote:

> Since labor is always by far the greatest expense in all such work, the entire effort has been to make the work as lasting as possible. A special effort has been made to use only the very best materials available, so that the work will not have to be done over in the years to come. All paper used has been imported hand-made all rag paper. Glue and paste have been of the best quality. All chemicals have been of U.S.P. [United States Pharmacopeia] quality.
>
> In restoring, the aim has been honest workmanship with no attempt to conceal the fact that work has been done. (Rugh 1935, 81)

*Helen A. Price, Book Conservator, 1942–1949*

After Rugh's departure for Yale in 1939 and Hanson's retirement in 1941, the October 21, 1942, Committee on the Library Minutes address the desire for a new book restorer:

> The assistant librarian spoke of the need for the repair of old books which it is thought inadvisable to send to a commercial binder, and said that it is possible to secure the services of Mrs. Helen A. Price to do this work in our own building at the rate of $1.00 an hour, plus the cost of materials. Dr. Moore recommended Mrs. Price and said that she had done some work of a similar nature for the Academy of Natural Sciences. The Committee agreed that the work should be done, and voted an appropriation of $500 with which to start. (Committee on the Library Minutes 1942, 5)

This note is valuable both for its reference to the use of commercial binders and for its recognition that not all books should receive commercial or library bindings. The distinguishing factors for the books thought to need special treatment remain tantalizingly vague, given the preponderance of rebound books and manuscripts in the society's collections. Some of the library's earliest printed books, including William Cowley's 1758 *Illustration and Mensuration of Solid Geometry* and a copy of Benjamin Rush's 1794 *An Account of the Bilious Remitting Yellow Fever*, were evidently sent to a library binder during the 20th century, and any original bindings they may have had are now lost. The primacy of the text and a disregard for the material culture of historic bindings are clearly illustrated in this period of the society's history, although certain of the library's treasures—often its earliest manuscripts or printed books, or the remnants of Franklin's own library—received the attention of skilled conservators.

Following her mention in the Committee on the Library Minutes, Price was evidently hired part-time by new APS Librarian William E. Linglebach, a historian who led the APS Library until 1958. Price's typed or handwritten slips may be found on treated books scattered throughout the library's collection. According to Spawn, Price also worked as restorer for the Philadelphia Register of Wills and left him a supply of silk chiffon (badly gnawed by cockroaches) for conservation work (Baker 2004). Little more is now known about Price's training or previous experience, or about the specifics of her in-house treatment for the APS. It is hoped that further research in the APS Archives will reveal more about her identity and practices.

*Willman Spawn, Book Conservator and Binding Historian, 1948–1985*

Willman Spawn, who studied bookbinding in the Works Progress Administration bindery at the Smithsonian as a teenager and later trained with Berwick protege Augusta Hitchcock at the Massachusetts Historical Society, became the society's third part-time conservator in 1948 (Baker 2004). In his 2004 FAIC oral history interview, he told Julie Baker:

> The work that the APS had me do initially was basically silking of manuscripts and repair[ing of] manuscripts in the collection. It wasn't until after I came [full time?] that we did any binding work, and after that it was mainly repair on some of the rare books, some of the books from Franklin's library and such . . . I would say the first year I worked on nothing but Franklin items, and one or two Jefferson things. Later on, we got into some of the large maps and things that needed to be conserved. (Baker 2004, 2, 3)

When Spawn was first hired at 10 hours per week (Baker 2004), the APS Library was still housed in the Drexel Building, but Spawn soon assisted with two collections moves as 19th-century buildings made way for a re-envisioned Old City and today's Independence National Historic Park. In 1952, the Drexel Building was slated for demolition, and the APS moved quickly to draft plans for a new Library Hall on the same site. In keeping with the bicentennial fervor

then sweeping the city, the hall's exterior would reproduce the 1790 Library Company building previously erected there. In the interim, Spawn helped transfer the APS collections to the United States Fidelity and Guaranty Company Building.

The old-on-the-outside, new-on-the-inside Library Hall was completed in 1959, and Spawn moved the collections once again in 1960. APS Librarian Richard H. Shryock described the new space in the *Proceedings of the American Philosophical Society* and included floor plans of the building, which featured stacks with room for growth, air conditioning, and a small "restoration laboratory" on the second floor. He wrote, "The air-conditioning will minister to the comfort of the staff and simultaneously to the more effective preservation of books and manuscripts" (Shryock 1960, 356). Shortly thereafter, he promoted Spawn to full-time conservator (fig. 9).

The author has not found any written or photographic documentation dating to Spawn's era, but given his concern with retaining the records of the conservators who went before him—including Berwick and Rugh—it seems unlikely that he did not keep treatment records himself. Further research in the APS Archives, which have not been processed since 1930, may reveal a treasure trove of conservation information. Books that Spawn allegedly bound or rebacked—he did not attach slips summarizing his treatment as Rugh and Price had done—reveal that he continued on the path his predecessors had established. He silked manuscripts using rice starch paste (Baker 2004), applied guards of bond paper, rebacked in leather, or provided new cloth or paper case bindings to replace earlier bindings that no longer served to protect their contents. His oral history reveals that he also split manuscripts to adhere a new paper core between the separated layers to strengthen them (Baker 2004). Fortunately for the society's collections, none of its conservators or contractors experimented with cellulose acetate lamination, which was extremely popular from the 1930s to the 1980s (Woodward 2017).

The Report of the Committee on Library for 1964 provides some insight into the society's preservation activities during Spawn's tenure. Over the course of the year, "in order to facilitate future use of the collections, some 1,200 volumes were bound, 140 rare books were restored, and 126 slipcases were made for rare books and pamphlets" (*Proceedings of the American Philosophical Society* 1965, 189). In his oral history, Spawn expressed frustration that books continued to be sent out for binding (either to commercial binders or trained artisans like Fritz and Trudi Eberhardt) without his input. Yet Spawn seems to have been held in high esteem within the organization, perhaps because of his demand as a teacher within the wider conservation community and because of his own academic prowess. The same report also states:

Fig. 9. Willman Spawn working in the Library Hall conservation laboratory in an undated photograph. APS Archives, graphics:9621. Courtesy of the American Philosophical Society.

> Mr. Spawn, Restorer of Manuscripts, spent several weeks during the Spring in giving instruction to trainees at the Toronto Public Library and the University of Toronto. During the summer, aided by a grant from the Society's Penrose Fund, he was on leave in order to continue research on eighteenth-century American bookbinders. He worked primarily at Boston, Worcester, Providence, and Newport. At the Newport Historical Society he arranged an exhibit and spoke on Francis Skinner, 1708–1785, a binder in that city for more than fifty years. (*Proceedings of the American Philosophical Society* 1965, 187)

As the report suggests, Spawn became a recognized authority on early American binders through studying their tool marks in extant leather bindings. The impressions of hand stamps or rolls on bindings known to be produced by specific individuals—such as Robert Aitken or Skinner—allowed Spawn to attribute previously anonymous bindings with the same tool marks to their historical binders. He urged other conservators and restorers to retain original bindings whenever possible so that their historical evidence would not be lost, and the reuse and retention of existing binding material is now a critical tenet of book conservation.

Many libraries across the country—including Case Western Reserve Library, Temple University Law Library, the Wilmington Public Library, and the Free Library of Philadelphia—also benefited from Spawn's expertise and generosity in responding to leaks and other water disasters. In his oral history, he described sandwiching wet documents between waxed paper and felts so they would dry rapidly, without developing mold. When time was of the essence, he experimented with refrigerating and vacuum freeze-drying wet library collections, a response that has since become a disaster-response standard (Baker 2004).

Spawn also taught staff at local institutions to make "the Spawn wrapper" or "Spawn box," a book housing he invented to prepare the APS Library for its many moves. The wrapper is quick to make and requires no adhesive, but its operation can be mysterious to the uninitiated. It is now found in many library collections throughout the Delaware Valley. According to Spawn's oral history, he was concerned about acid migration and advocated for the use of pH-neutral housings and book boards at the APS (Baker 2004). Shortly before his retirement in 1985, Spawn feverishly built thousands of his wrappers to protect the Library's nonrare printed books during their move to the former Farmers' and Mechanics' Bank Building at 427 Chestnut Street (later renamed Benjamin Franklin Hall).

After his retirement, Spawn served as Honorary Curator of Bookbindings at Bryn Mawr College and continued his research on bookbindings until his death in 2010. Bryn Mawr has since donated his papers to the society, where they currently await processing. One hopes that their contents may eventually contribute further details about 18th-century bindings and mid-century conservation practices to the literature on those subjects.

### *Fritz and Trudi Eberhardt, Bookbinders and Restorers, 1960s–1970s*

Although Spawn preferred to retain original bindings, he could not do all of the book repair required by a growing special collections library. As it had in the past, the APS continued to send many of its damaged books out for repair and rebinding through the late 20th century. In 1965, the APS Committee on Library discussed sending the books in Franklin's library to Harold W. Tribolet of R. R. Donnelley and Sons, Chicago, or to Joseph Ruzicka of Baltimore (*Proceedings of the American Philosophical Society* 1965). It is unclear whether the committee's recommendations were pursued, but many rare books were certainly sent out for repair and returned without their original bindings. Hedi Kyle's 1993 review of conservation practices at the society lists surviving commercial binding records for "MacDonald in New York, Storm in Arizona, and Wessely in England" and notes that "the practice of sending serials out to library binderies continues and results in approximately 400 hardbound volumes per year" (Kyle 1993, 1).

In the 1960s and 1970s, two of the society's contract binders were Fritz and Trudi Eberhardt. The couple apprenticed as bookbinders in their native Germany, and Fritz also attended the Academy for Graphic Arts in Leipzig and the Offenbach School of Fine Arts for binding and calligraphy, becoming a master binder. After World War II, Fritz escaped Soviet Eastern Europe on foot, despite one leg that had been lamed by childhood polio. He later met Trudi, and the two married in Sweden, eventually emigrating to Philadelphia in 1954. Their characteristic leather bindings—with rounded spines, crisp raised bands, gold-tooled titles, and flattened endcaps—can be found at the APS and in many other local institutions.

These bindings offended Spawn's sensibilities when applied to early American books, but he apparently had no say in whether or which rare books were sent out for repair. In his oral history, he complained (likely of Fritz Eberhardt),

> that he had restored a book in a good Scottish binding of Robert Aitken's that had been perfectly [planned] and efficiently done in 1779 in Philadelphia by Robert Aitken, and it looked like a German binding with gold tooling. It was so inappropriate that it really bothered me, and it made me realize that any binding that I saw in the APS collection, that the only way I could protect it was to make a very nice box for it and keep it out of sight. Because if the book was preserved in a box, it wouldn't be sent out for restoration. I am grateful for the books that I saved in the collection by putting [them] in a case. (Baker 2004, 9–10)

Although the Eberhardts are primarily remembered as contract binders, they evidently performed a fair amount of

book restoration as well. In a 1993 oral history, Fritz recalled their early days in Philadelphia, repairing and binding pamphlets for Edwin Wolf II, Library Company Librarian:

> We had—our workload doing pamphlets, the rebinding, maltreated and raped pamphlets, abused pamphlets [that we put] into their own little hard cover with a title on. Washing them, cleaning them, mending them and all that. And they went, at the beginning, for $3.00 a piece, finished . . . We took them in lots of one hundred. (Metzler 2002, 51)

In the same interview, Trudi reported, "There was a lot of paper repair in the beginning. That's very technical work" (Metzler 2002, 52). The Eberhardts had not been trained in restoration when they emigrated, but they found that American clients were far more willing to pay a living wage for the restoration of historical documents than for well-made new bindings. Trudi stated:

> We, of course, both learned bookbinding and not restoration because that wasn't done at that time. And when we came to this country, there was more and more need for it. For restoration. And so a lot of things we figured out for ourselves but then we figured out we should go back to Germany sometime and see what they're doing. Because . . . [after] the World War, there were lots of libraries who needed restoration. (Metzler 2002, 73)

In 1972, the couple returned to Munich, Göttingen, and Wolfenbüttal, and, according to Trudi, "visited several different institutions that had restoration workshops. And they were very accommodating. They showed us everything we wanted to see and we learned . . . quite a lot there" (Metzler 2002, 73).

By the time the Eberhardts studied restoration in Germany, they had been living and working in rural Harleysville, Pennsylvania, for a decade. The majority of the Eberhardts' work for the APS likely occurred during this period. As Trudi said:

> At the time, we mostly worked for the rare book collection of universities. And they didn't just come from around here. We worked for Wyoming, for the University of Connecticut, then Arizona for a while, Rice University. And so on and so forth. They came from all over. So it was very good that we could just stay at home, do the work, pack it up, and send it out. (Metzler 2002, 81)

The Eberhardts also trained binders who were serious about learning traditional hand skills, including Don Rash, who studied with them for several years (Metzler 2002). Rash later taught the author to bind books following the Eberhardt model, albeit over a far shorter time span. Thus, in a roundabout way, the Eberhardts' work continues to influence the collections at the APS. Further research in the APS Archives may reveal the extent of their original contributions to the APS Library.

*Hedi Kyle, Book Artist and Conservator, 1986–2003*

Hedi Kyle became head of conservation at the APS after Spawn's retirement (fig. 10). Like the Eberhardts, she had trained as an artist in Germany before immigrating to the United States in the early 1960s. In the 1970s, she studied with bookbinder and early book conservator Laura Young in New York, and from 1979 to 1985 she served as head conservator at the New York Botanical Garden. Shortly after she was hired at the APS in 1986, she renovated and enlarged the conservation laboratory in Library Hall. She also created the first APS Library Disaster Plan with conservator Gail Harriman.

Kyle's 1993 overview of conservation changes at the APS suggests that the lion's share of her work involved rehousing the collections, and she often taught workshops on the construction of boxes, wrappers, and folders. The book housings produced by herself and her trainees were always thoughtfully constructed and sometimes gorgeously decorated, incorporating bright bookcloth, paste papers, or dyed Tyvek. In addition to rehousing books, Kyle and her assistants performed full treatments on flat paper and bound documents, including aqueous washing and sun bleaching. For two decades, Kyle also mentored graduate book arts students at the University of the Arts, many of whom—notably Denise Carbone—later served as interns or staff in the APS conservation laboratory. Kyle's most enduring legacies since her retirement in 2003 have been as a book artist and teacher. Her iconic book designs continue to draw inspiration from historic bindings and her conservation experience.

Kyle and her staff certainly kept records of their work during treatment, for they routinely reported the total number of items and pages treated to the APS Library Committee. These reports rarely include the details of what treatment involved, however, and the surviving documentation is scarce. The conservators and interns may have retained their own records rather than placing them in a physical or digital archive at the library, although some handwritten and digital records have been found. Rough treatment notes occasionally accompany partially treated materials, and they range from interns' handwritten notes and diagrams to a variety of preprinted condition and treatment forms. The detailed checklist book treatment form used in the 2000s provided spaces for recording binding and sewing structures, condition problems, and repair methods and materials. Full written and photographic documentation does not appear to have been the norm for even the most complex book treatments, and final treatment reports were not routinely included with repaired library books. Those that have been found range from full printed reports with photographs to handwritten

Fig. 10. Hedi Kyle assists a student with a folded paper structure in an undated photograph. APS Archives, graphics:9785. Courtesy of the American Philosophical Society.

slips. It is hoped that further research in the APS Archives will uncover more information about the book treatments undertaken during this period.

## CONSERVATION AT THE APS LIBRARY AND MUSEUM TODAY

Today, the APS employs three conservators with master's degrees in art conservation: Anne Downey, Anisha Gupta, and the author. Their specialized graduate education and training allow them to apply more knowledge of materials science, chemical principles, and recent developments in library conservation to the treatment work than has likely been employed at the APS in the past. Downey, head of conservation, has a degree in paper conservation from Buffalo State. Gupta and the author both graduated from the Winterthur-University of Delaware program, specializing in paper and photograph conservation and in book conservation, respectively.

Shortly after Downey joined the APS in 2003, she oversaw the design of a new, larger conservation laboratory in Franklin Hall, with bench space for four workers. Although it has the disadvantage of being separated from the rare book and manuscript collections by a busy city street, it provides space for treatments that could not be accommodated within Library Hall. The laboratory contains a wet treatment area, a humidity cabinet, mobile drying racks, a fume hood, chemical storage, and a separate room for UV examination and mold remediation. Last year, part of the space was revamped to include a tethered-capture digital photography system, which has made photographic documentation far more efficient.

Documentation is now far more standardized than ever before. New file-naming and organizational protocols ensure that today's treatment records will remain accessible to future conservators. All treatments are logged by call number, title, and date, with—at minimum—brief statements of initial condition and the treatment performed. Any treatments that go beyond minor, routine repairs also require full written and photographic documentation. Any hard-copy treatment records are scanned to PDF and retained. The contents of treatment records are also entered into Mimsy XG, a collections-management database that the library shares with the museum. Gradually legacy conservation records will be entered as well.

Hands-on rehousing and repair of collections material remain a high priority for the APS Library and Museum, with 40–60% of each conservator's time spent at the bench. Conservators continue to create specialized enclosures for unusual library collections; however, their focus is now on

item-level conservation treatment and preventive care. The society orders most of its custom book boxes from one of the many vendors with programmable board-cutting machines. Two fantastic volunteers handle the measurement and housing of new accessions. Almost every year, the APS conservation laboratory also accepts either a conservation graduate student or a preprogram candidate into the paid Willman Spawn Conservation Internship, with a focus on treatment and overall collections care.

## GENERATIONS OF RE-TREATMENT AT THE APS LIBRARY AND MUSEUM

Given the long history of the APS, it is not unusual for today's conservators to confront books, manuscripts, and other documents that have been treated before. Their need for treatment may stem from exhibition, researcher or staff use, or special significance to donors. The library recently established an "adopt-a-book" program, for example, that has sponsored conservation treatment for several decrepit volumes, some with great historic value and some that are interesting purely for their structure. (The author's enthusiastic description of a mold-eaten English scaleboard binding has borne fruit.) The two biggest drivers for re-treatment, however, are exhibition and regular use.

In 2019, the APS Library and APS Museum (one entity until their collections were separated in 2000) were reintegrated to form the APS Library and Museum. Even before reintegration, the society served not only reading room researchers but the museum-going public, and the conservators' more interventive treatments have often stemmed from exhibit preparation. Until the current pandemic disrupted normal operations, the APS Museum mounted an exhibition in Philosophical Hall each year, generally from April 15 to December 31. Although the museum exhibitions typically include three-dimensional objects and paintings, as well as printed books and archival documents, APS Library holdings predominate. At the start of each exhibition cycle, the conservators assess the physical and chemical stability of library materials proposed for exhibition and treat them when necessary, even when that means undoing a previous conservator's work.

Use in the library—whether by visiting researchers or APS staff—is another factor that drives conservation treatment of books and manuscripts. Items that require stabilization for safe handling range widely, from overstuffed scrapbooks assembled with pressure-sensitive tape to oversize folded maps. Some of the most frequently handled objects are the most iconic books and documents in the library's possession, which see constant use on tours for donors and other library visitors. In many cases, these "treasures" have received repeated conservation interventions over their long history with the library. Treatment for the bound volumes among these treasures—books that once belonged to figures like Franklin and Peale—often goes beyond stabilization and into restoration. Today's librarians often desire such books to look intact and "well cared for," leading to the repair of minor visible damage that does not affect the book's function. Informed discussion about the pros and cons of such an approach is a necessary part of establishing a treatment plan.

The following case studies describe treatments carried out in the past two decades on library materials that had been treated at least once before. Their former restorers and conservators include Berwick, Rugh, Spawn, and Carbone. In each case, these men and women were doing the best they could with the information, skills, and materials they possessed. In some cases, these methods and materials did not age well and were removed because they were causing physical or chemical damage. In other cases, former treatments introduced errors such as mispagination, or caused discoloration and staining in paper. In still others, the former repairs had nothing to do with the reasons for re-treatment, and their retention or removal was merely a by-product of treatment designed to address a completely separate condition issue.

### *David Rittenhouse, Diaries, 1784–1785 and 1792–1805, Mss.B.R51d*

In addition to serving as one of the earliest APS Librarians, David Rittenhouse was a Philadelphia instrument maker, astronomer, and surveyor, as well as treasurer of Pennsylvania and the first director of the US Mint. A self-taught mathematical genius, Rittenhouse built clocks, orreries, and telescopes; observed the 1769 transit of Venus across the sun from his own private observatory; and assisted with the 1784–1785 survey extending the Mason-Dixon line to the southwest corner of Pennsylvania.

The APS holds two of Rittenhouse's diaries. The first covers the period from 1784 to 1785, and includes both meteorological observations and notes from his surveying trip in western Pennsylvania. The second contains meteorological observations from 1792 to 1805; these were carried on by family members for nine years after Rittenhouse's death. Recently, it was discovered that the two diaries display the work of three generations of book conservators at the APS. Both volumes were displayed open in the APS Museum's 2007 *Undaunted* exhibition, which seems to have been the catalyst for their most recent treatment.

The later and larger of the two books retains its original binding, but with substantial alterations (fig. 11). Rugh mended the book block in 1936. She also consolidated the leather, sewed new endbands, and rebacked the book with chrome-tanned calf. In 2007, Carbone treated the book again, mending additional edge tears, reinforcing the leather edges, and setting down the lifting front label. Both conservators documented their work with handwritten slips and minimal information about the materials used (fig. 12).

The original binding of the first diary was allegedly rebacked by Spawn in the 1950s (fig. 13). Carbone removed this binding

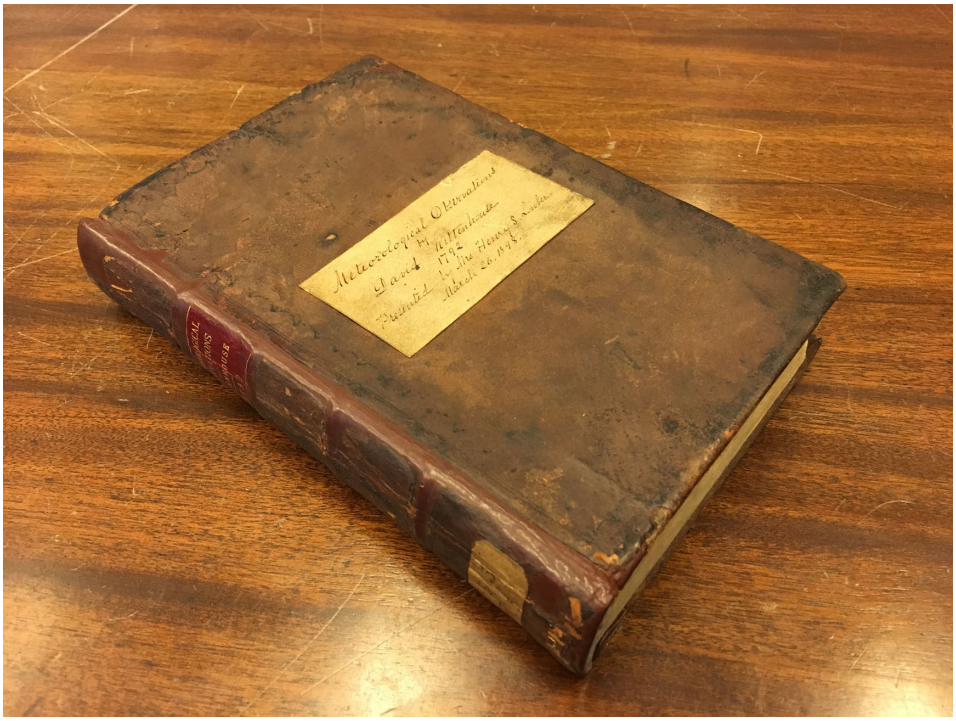



Fig. 11. David Rittenhouse diary, 1792–1805, Mss.B.R51d vol. 2., American Philosophical Society. Carol Rugh rebacked this volume in chrome-tanned calf in 1936. Denise Carbone performed additional mending in 2007.

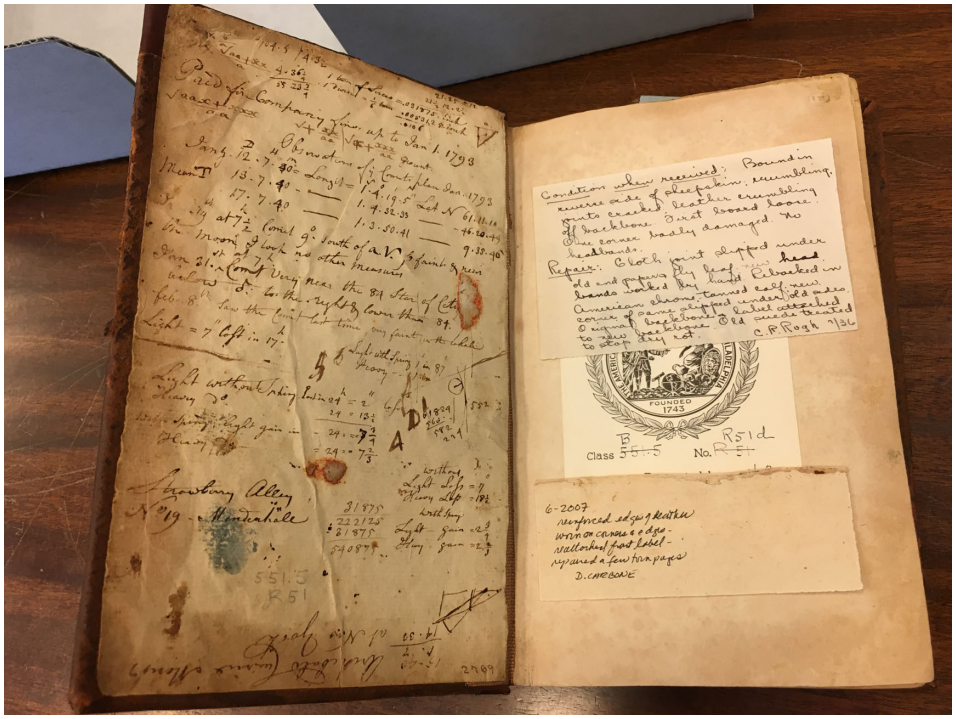



Fig. 12. David Rittenhouse diary, 1792–1805, Mss.B.R51d vol. 2., American Philosophical Society. Carol Rugh's and Denise Carbone's pithy handwritten treatment slips (from July 1936 and June 2007, respectively) are adhered to the front flyleaf of the volume.

Fig. 13. David Rittenhouse diary, 1784–1785, Mss.B.R51d vol. 1, American Philosophical Society. Willman Spawn allegedly rebacked the original binding for this volume in the 1950s.

in 2007, perhaps because it opened poorly. Condition notes from the museum's item list say that the binding was "bad," with leaves "cracking and falling out." After exhibition, the binding was not reattached, but it was retained and provided with an interior support of corrugated alkaline paperboard. The handwritten slip left with this support does not provide any context for the treatment beyond the date and Spawn's prior involvement with the binding (fig. 14).

The first diary is now sewn into a contemporary variant of the laced-case binding executed in heavy brown paper (fig. 15). Nonadhesive paper bindings like these were frequently employed during Kyle's and Carbone's tenures at the society, and they provide incontrovertible visual evidence that the object has been treated. They also generally open very flat, which would have been helpful during exhibition. Although the current conservation staff would likely pursue a different approach to treating this diary, reusing as much original material as possible, the laced-case binding is not causing harm and is not scheduled for replacement. The question may be revisited in the future if returning the book to its original context becomes a priority.

*Vocabulary of the Delaware Indians, Mss.497.V85 no.17*

Thomas Jefferson, who served as president of both the United States and the APS, was convinced that a comparative study of American indigenous languages would reveal their common roots and suggest how recently each tribe had diverged from a common, ancestral tongue. To support his theory, he collected lists of Native vocabulary words. Around 1791, he had large vocabulary forms printed with English words, and asked friends and military officers across the young United States to fill in the forms with the words' indigenous equivalents. Each

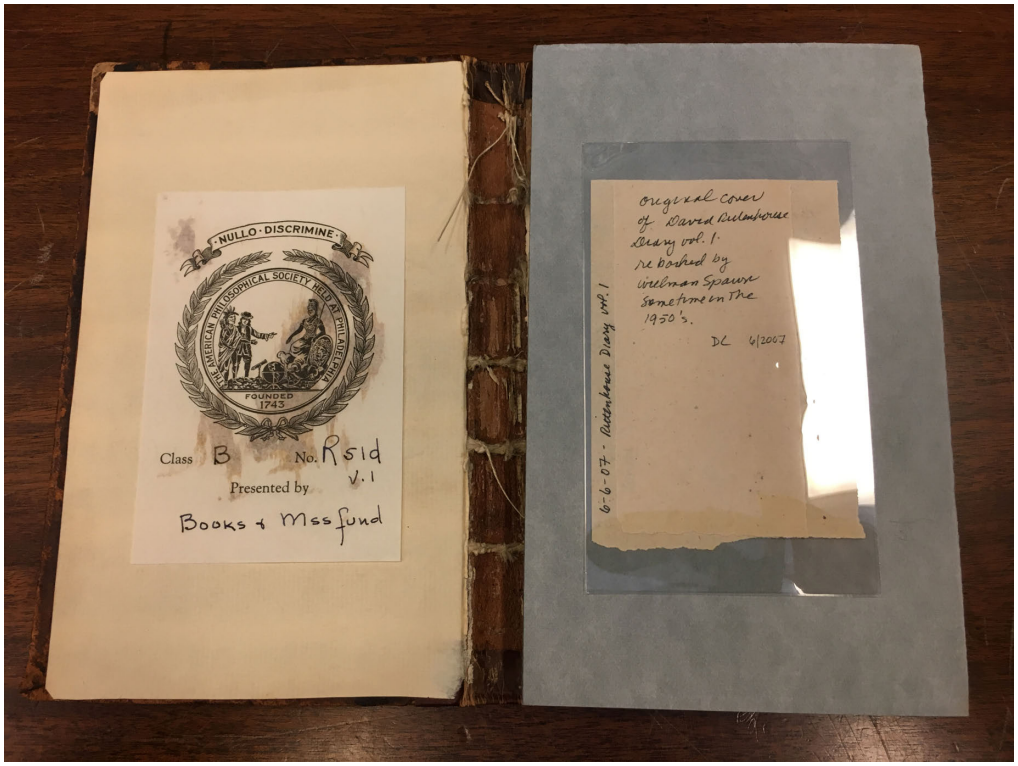



Fig. 14. David Rittenhouse diary, 1784–1785, Mss.B.R51d vol. 1, American Philosophical Society. Denise Carbone removed the volume's rebacked original binding in 2007, probably because it opened too poorly for exhibition, and provided it with an internal support of alkaline corrugated board.


Fig. 15. David Rittenhouse diary, 1784–1785, Mss.B.R51d vol. 1, American Philosophical Society. Denise Carbone rebound the volume in a contemporary paper variation of the laced-case structure. The unlined spine allows for unrestricted opening.

large printed sheet contained about 280 English words on each side, beginning with "fire," "water," "air," and "earth," and moving on to days and seasons, the weather, body parts, types of people, and different birds and animals.

Jefferson had collected hundreds of these vocabulary sheets by the time he left office as President of the United States in 1809, and he had also created lists comparing the words from different languages to one another. He packed the one-of-a-kind manuscripts in a trunk for shipment to Monticello, but en route, thieves mistook the trunk for a different sort of treasure and rifled its contents. Disappointed to find only documents, they flung the comparative vocabulary lists into the James River. The few surviving sheets, gathered by the APS Historical and Literary Committee in 1816 for publication, remained stained by mud and mold. Many of them were in tatters (fig. 16). Given their historical importance and lamentable condition, APS Librarian I. Minis Hays shipped them to Berwick for restoration in late 1913, after he had finished work on the Benjamin Franklin Papers. Berwick also treated the few surviving printed vocabulary forms.

The printed vocabulary lists were quite large, roughly 19.5 × 13.5 in., with identical printed matter on both sides of each sheet. Generally only one side of each sheet was filled out, typically in iron gall ink, leaving a blank form on the other. Berwick treated three completed vocabulary forms, for the Delaware, Miami, and Nanticoke tribes. Prior to his involvement, the sheets appear to have been folded vertically down the center and stitched through the fold. In 1913, however, the society's intention seems to have been to bind the miscellaneous contents of the American Indian Vocabularies Collection (now Mss.497.V85) into one book, incorporating both the small and oversize manuscripts. Berwick addressed this challenge in his October 24, 1913, letter to Hays:

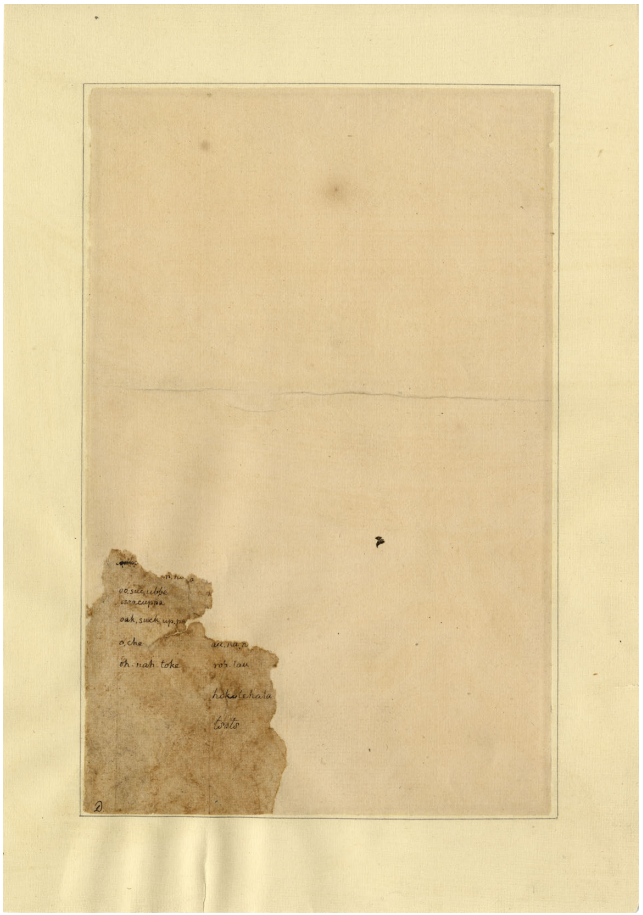


Fig. 16. This fragment is from one of the many sheets on which Thomas Jefferson compared the Native words collected from his vocabulary forms. The comparative vocabularies suffered extremely when thieves threw them into the James River. According to his letter to I. Minis Hays on January 24, 1914, William Berwick split this fragment to avoid covering any of Jefferson's handwriting with fills. The split halves were then mounted on blank paper the size of the original document, provided with a frame, and silked. Thomas Jefferson, Comparative vocabularies of several Indian languages, 1802–1808, Mss.497.J35. Courtesy of the American Philosophical Society.

> I have examined the Miami & Delaware language sheets. It seems a pity to take them out of the rest of the collection & bind them on larger sheets. It would not do to mount them as in Dummy A inclosed [sic]—but would there be any objection to mounting them like Dummy B? The fold would be at the front instead of the back of the ledger paper but the reading matter would not be interfered with as in Dummy A in which the fold would break the reading matter in half on the back side.

Although the "dummies" Berwick refers to have disappeared, it can be inferred that both mock-ups featured a vocabulary list cut in half horizontally and mounted within false margins of ledger paper. In each case, the mounted list

was rotated 90° and folded to create a folio. In Dummy A, the fold (with the new cut edges of the manuscript adjacent to it) was bound into the gutter or "back" of the book. In Dummy B, the fold was placed at the fore edge of the book rather than in the gutter. Opening the fore-edge fold in option B would allow the list to be read in its entirety on both the front and the back, which would be impossible with option A.

Hays's feedback to Berwick's question is unknown, but Berwick apparently decided that even option B was too unwieldy for long-term preservation of the vocabulary lists. He worked on the vocabularies during his 1913 Christmas and New Year's holidays, and shipped the completed documents to Hays by American Express on January 5, 1914. In his accompanying letter, Berwick wrote:

> The fault in doing the large vocabularies like the dummy I sent you was that to leave the writing intact it was necessary to hinge them at the end, & in turning over these large sheets the danger of tearing them would be great. The only way to avoid this & at the same time to make them handier to read was to split the paper, when of course the inner side of the (now) two sheets would be blank. This has been done. Each sheet was then lined & crepelined as usual . . . Splitting paper which can easily be replaced if spoiled is comparatively easy but with an old document only one of its kind & covered with writing is rather more hazardous, but I had no doubt of the result of the operation, although quite tedious.

Berwick did not reveal his technique for splitting the paper, but his treatment portfolio—which he kept for marketing rather than documentation purposes—includes several samples of split paper documents (figs. 17a, 17b). Examining the samples, which have not yet been processed, may reveal some of the details of his treatment process. According to Brückle and Dambrogio (2000), paper splitting historically involved facing both sides of the paper with a viscous adhesive and overhanging support sheets, then peeling the halves apart while the center of the paper remained damp. The separated halves might be lined separately, as in Berwick's treatment of the printed vocabulary sheets, or rejoined over a strengthening core paper (see fig. 16). Today, manual paper splitting often employs thick gelatin to attach the facing papers and a starch-based adhesive or cellulose derivative to secure any core paper. The facing papers can be removed with warm water, which will not dissolve the inner adhesive layer.

Berwick apparently cut the sheets for the Delaware and Nanticoke Indians in half horizontally along a previous fold. He then split the halves, lined the resulting thinner sheets with ledger paper, and silked them. The two halves of each sheet were then provided with a cloth hinge for binding in the format he had originally suggested for Dummy A, with the hinge in the gutter of the book (figs. 18a, 18b). The blank form from the back of the Delaware vocabulary was mounted in the same way (fig. 19). The split Miami vocabulary sheet

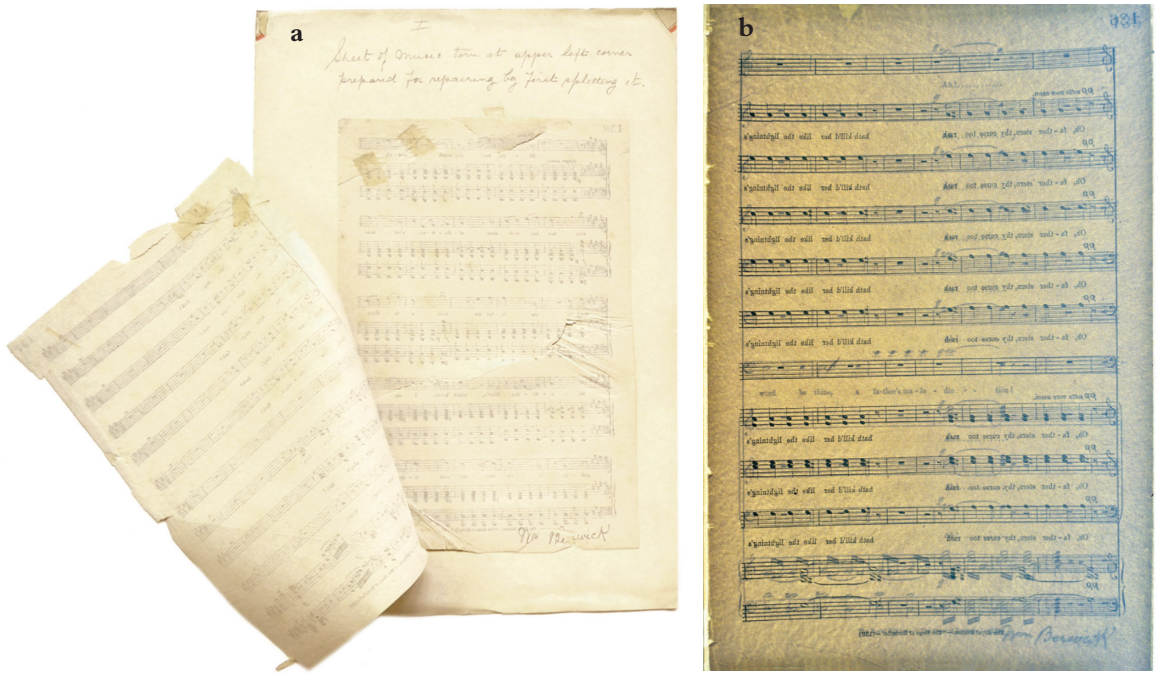



Fig. 17. William Berwick's treatment portfolio, which his descendants donated to the APS in 2006, includes these samples of split music sheets. (a) The sheet has been split in preparation for further repair, and Berwick has signed one of the split sheets on its interior surface. (b) The halves of a similar sheet have been laminated to either side of a new paper core. Berwick's signature on the interior can be seen in transmitted light. Unprocessed William Berwick Family Collection. Courtesy of the American Philosophical Society.

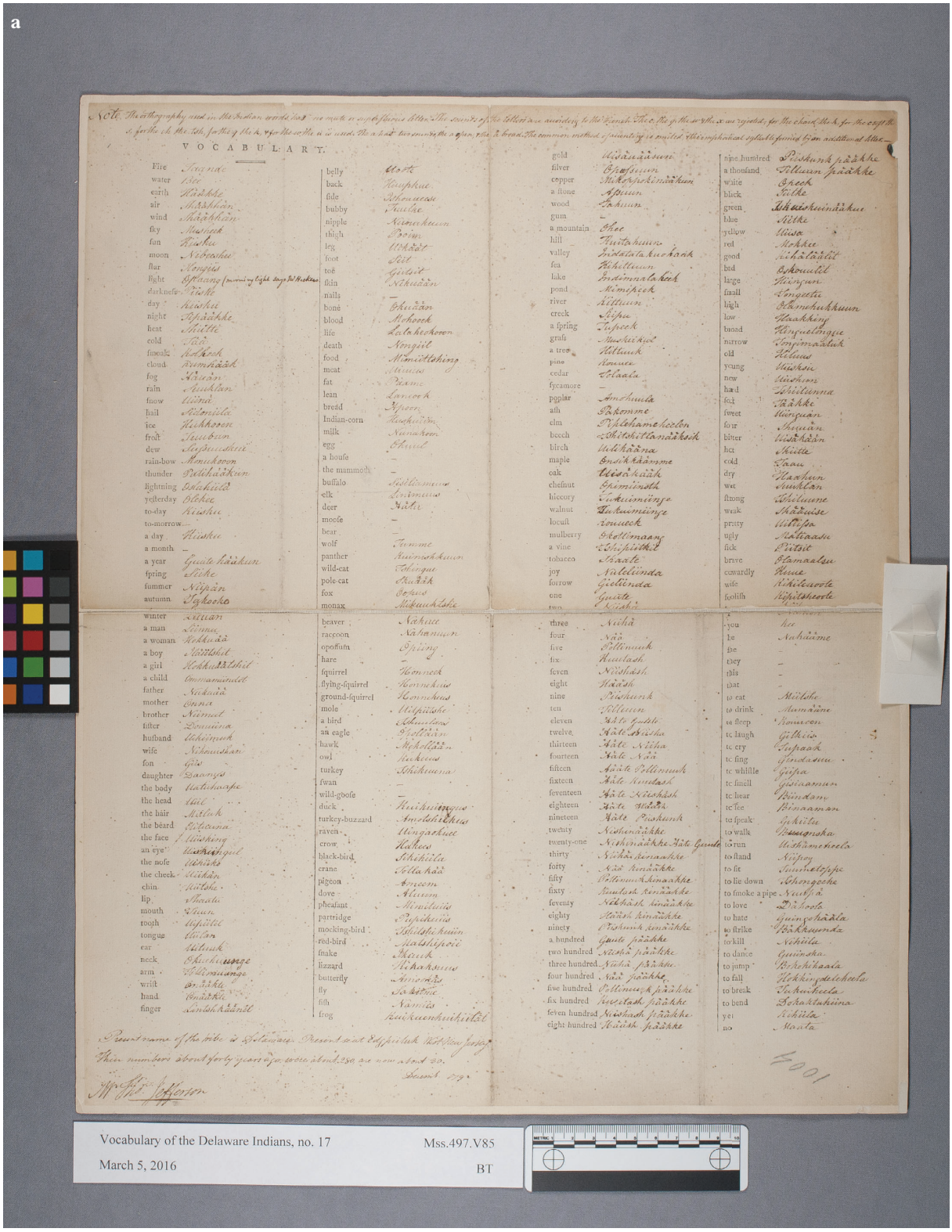



Fig. 18. Vocabulary of the Delaware Indians (a) and Vocabulary of the Nanticoke Indians (b) before treatment in 2015–2016. William Berwick split, mounted, and silked the top and bottom halves of these vocabulary forms. The two halves were then hinged together with linen tape or tracing cloth for sewing. Mss.497.V85, American Philosophical Society Historical and Literary Committee, American Indian Vocabulary Collection. Courtesy of Anne Downey.

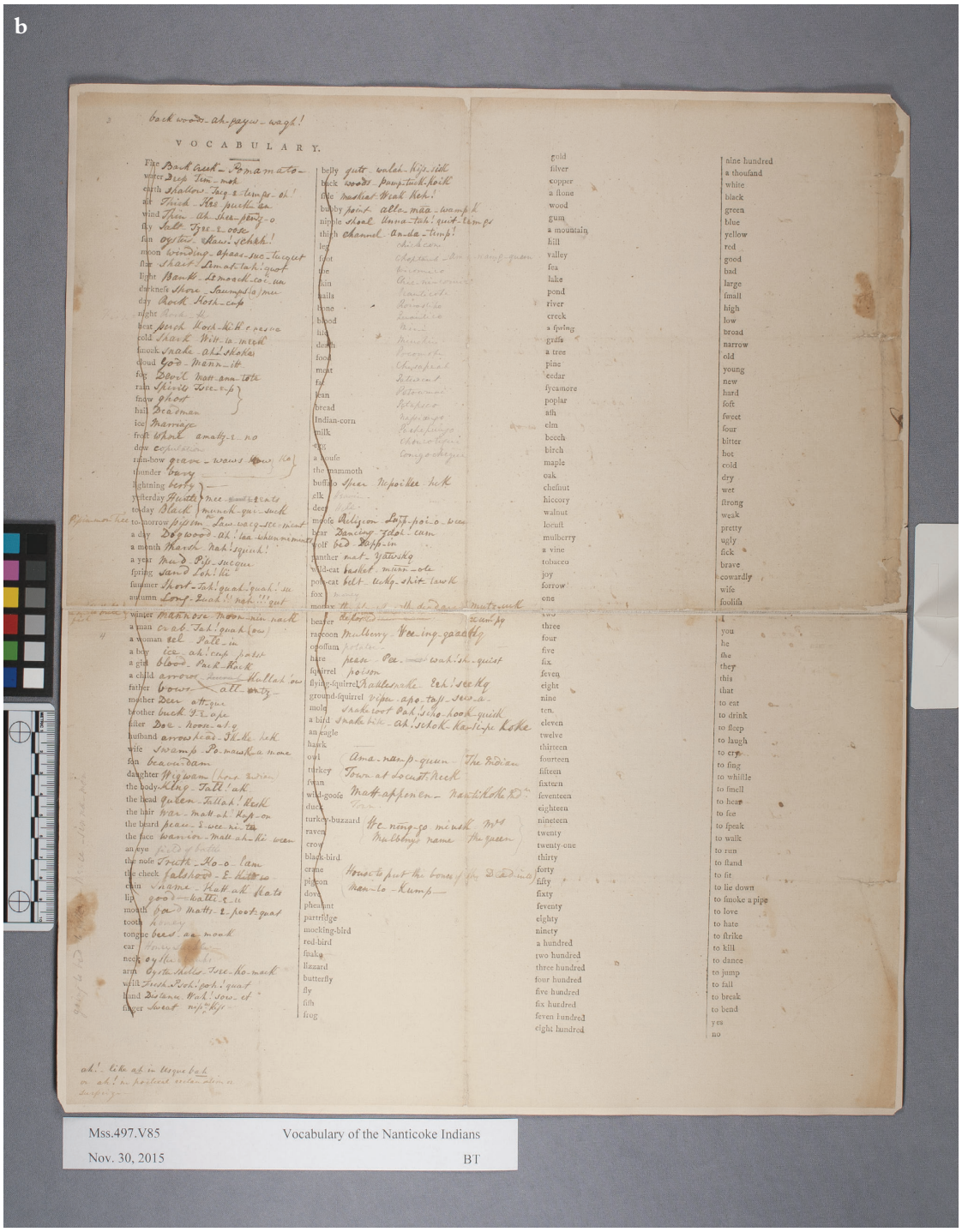
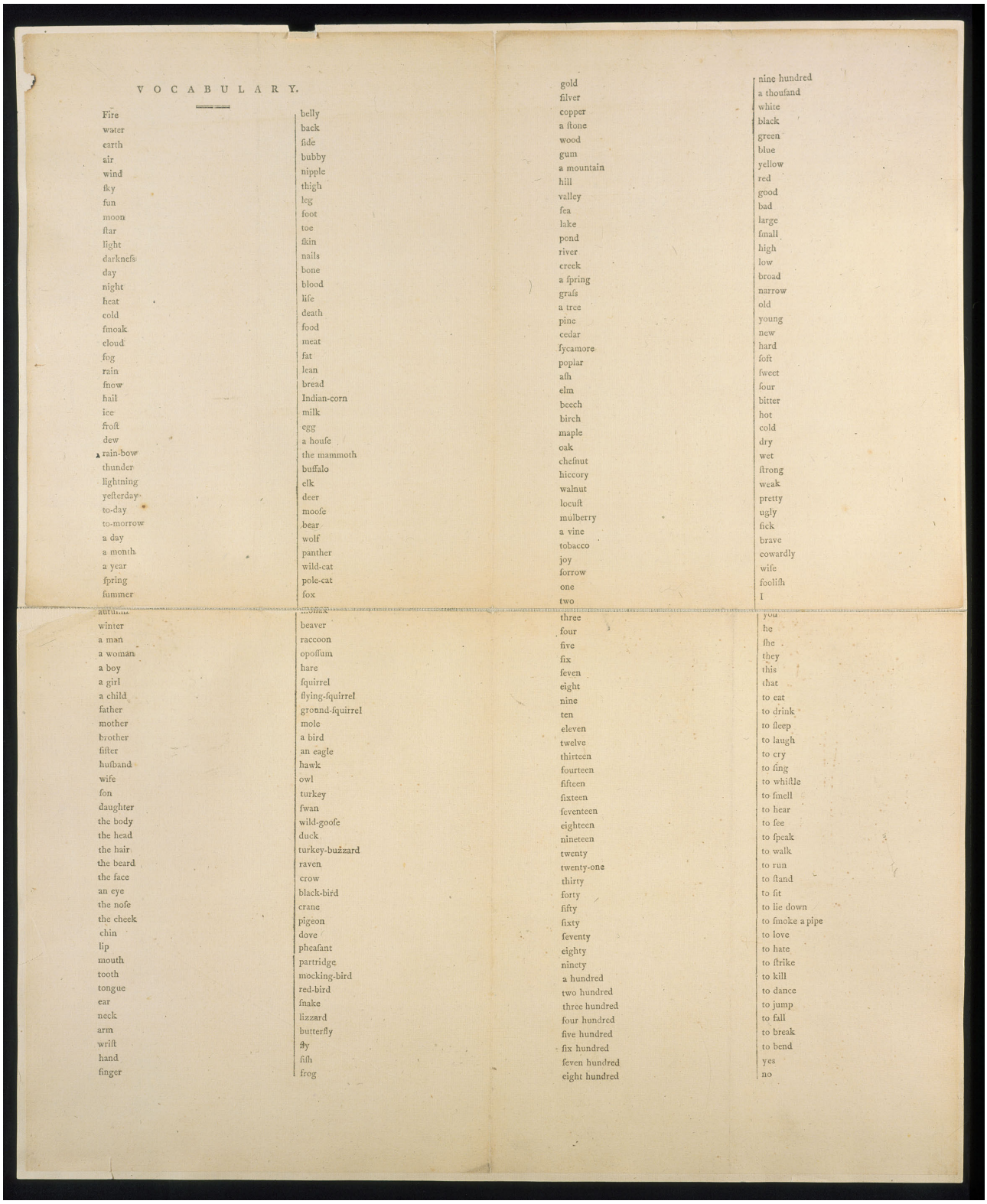



Fig. 18. (Continued)

was mounted on four pieces of ledger paper rather than two, perhaps because it had already split along its central vertical fold. Berwick provided each of the four quarters of the sheet with an additional false margin of antique paper along its horizontal cut edge, apparently to match the leaf size of the rest of the volume more closely (fig. 20). The mounted quarters were likely sewn into the book through hinges attached to their left edges, which have since been removed. It is not clear whether the blank backs of the Miami and Nanticoke vocabularies were retained.

None of this history had been discovered when the Delaware vocabulary form (see fig. 18a) was treated prior



VOCABULARY.

Fire
water
earth
air
wind
ſky
ſun
moon
ſtar
light
darkneſs
day
night
heat
cold
ſmoak
cloud
fog
rain
ſnow
hail
ice
froſt
dew
rain-bow
thunder
lightning
yeſterday
to-day
to-morrow
a day
a month
a year
ſpring
ſummer
autumn
winter
a man
a woman
a boy
a girl
a child
father
mother
brother
ſiſter
huſband
wife
ſon
daughter
the body
the head
the hair
the beard
the face
an eye
the noſe
the cheek
chin
lip
mouth
tooth
tongue
ear
neck
arm
wriſt
hand
finger

belly
back
ſide
bubby
nipple
thigh
leg
foot
toe
ſkin
nails
bone
blood
life
death
food
meat
fat
lean
bread
Indian-corn
milk
egg
a houſe
the mammoth
buffalo
elk
deer
mooſe
bear
wolf
panther
wild-cat
pole-cat
fox
beaver
raccoon
opoſſum
hare
ſquirrel
flying-ſquirrel
ground-ſquirrel
mole
a bird
an eagle
hawk
owl
turkey
ſwan
wild-gooſe
duck
turkey-buzzard
raven
crow
black-bird
crane
pigeon
dove
pheaſant
partridge
mocking-bird
red-bird
ſnake
lizzard
butterfly
fly
fiſh
frog

gold
ſilver
copper
a ſtone
wood
gum
a mountain
hill
valley
ſea
lake
pond
river
creek
a ſpring
graſs
a tree
pine
cedar
ſycamore
poplar
aſh
elm
beech
birch
maple
oak
cheſnut
hiccory
walnut
locuſt
mulberry
a vine
tobacco
joy
ſorrow
one
two
three
four
five
ſix
ſeven
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nine
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eleven
twelve
thirteen
fourteen
fifteen
ſixteen
ſeventeen
eighteen
nineteen
twenty
twenty-one
thirty
forty
fifty
ſixty
ſeventy
eighty
ninety
a hundred
two hundred
three hundred
four hundred
five hundred
ſix hundred
ſeven hundred
eight hundred
nine hundred
a thouſand
white
black
green
blue
yellow
red
good
bad
large
ſmall
high
low
broad
narrow
old
young
new
hard
ſoft
ſweet
ſour
bitter
hot
cold
dry
wet
ſtrong
weak
pretty
ugly
ſick
brave
cowardly
wife
fooliſh
I
you
he
ſhe
they
this
that
to eat
to drink
to ſleep
to laugh
to cry
to ſing
to whiſtle
to ſmell
to hear
to ſee
to ſpeak
to walk
to run
to ſtand
to ſit
to lie down
to ſmoke a pipe
to love
to hate
to ſtrike
to kill
to dance
to jump
to fall
to break
to bend
yes
no

Fig. 19. William Berwick split this blank vocabulary form from the filled-in vocabulary for the Delaware Indians, as revealed by the corroded inkblot common to both (see fig. 18a). Mss.497.V85, American Philosophical Society Historical and Literary Committee, American Indian Vocabulary Collection. Courtesy of the American Philosophical Society.

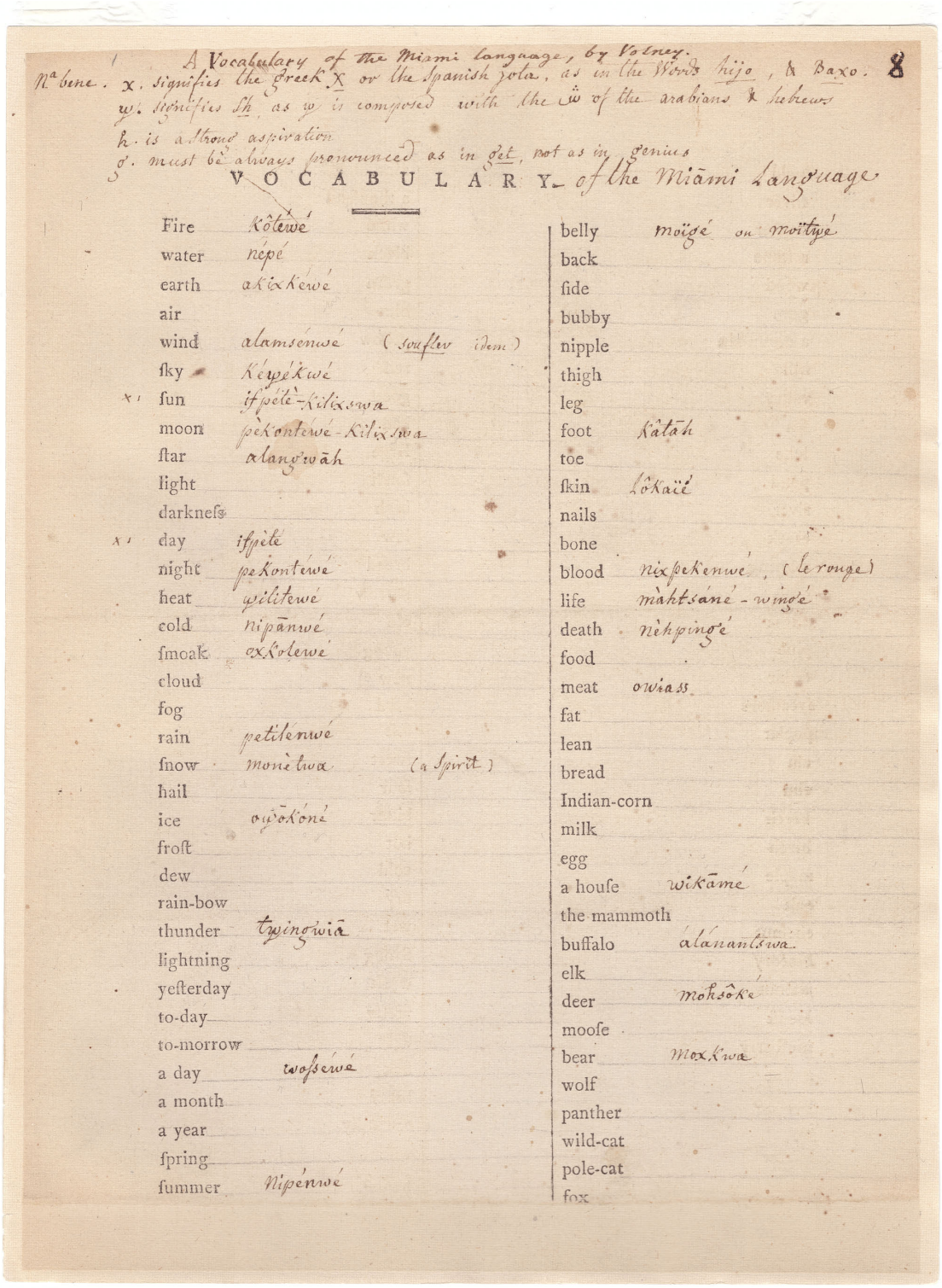


Fig. 20. Top left quarter of the vocabulary form for the Miami Indians. Although William Berwick cut the other vocabulary forms in half after mounting, the Miami form was mounted in quarters, perhaps because it had already split along previous folds. The cut horizontal edge of each of the four quarters was provided with a false margin of antique paper to approximate the leaf size of the bound volume for which they were destined. Mss.497.V85, American Philosophical Society Historical and Literary Committee, American Indian Vocabulary Collection. Courtesy of the American Philosophical Society.

to display in the society's 2006 *Treasures of the APS* exhibit. In her 2003 treatment report, Downey noted that the form "had been restored within recent years," an ironic testament to the durability of Berwick's 90-year-old restoration. She went on to describe how the form had been cut, mounted onto heavy wove paper, and laminated with silk, with a cloth hinge (likely Berwick's favorite tracing cloth) attached over the cut edge for folding. Downey continued, "The object was also trimmed along the edges: the bottom of the Jefferson signature has been trimmed away." Given Berwick's frequent insistence that "not a particle of the writing has been injured or lost" (this particular example comes from his letter to Hays on November 16, 1903), it seems likely that this trimming was carried out by an earlier binder of the vocabulary lists. Downey observed that the heavy lining paper was "weak and brittle," with dog-eared and torn corners, and that the cloth hinge was also torn. Her 2003 treatment involved reinforcing the hinge and secondary support, leaving the existing restoration intact.

In 2015, both the Delaware and Nanticoke vocabularies were slated for exhibition, this time in the APS Museum's *Gathering Voices: Thomas Jefferson and Native America*. By this time, the lining paper and silk crepeline were markedly weak and brittle, providing inadequate support for the original documents. Downey also tested the iron gall ink on both forms with bathophenanthroline test strips and found evidence of free iron(II) ions in the inscriptions. These findings led Downey to perform a calcium phytate treatment on the vocabulary forms, during which the silking, lining paper, and residual adhesives were removed or reduced to the extent possible. Once the thin handmade paper of the original documents had air-dried, Downey was able to see that both sheets were skinned unevenly across their back surfaces. This, along with the papers' unusual reactions during bathing, led her to conclude that they had been previously faced with "strong gelatin or glue" and split.

Looking through the Berwick-Hays correspondence, which had been uncovered during Smith's first research trip to the APS Library around 1998, Downey discovered Berwick's references to splitting the vocabularies. A corroded inkblot common to both sheets allowed her to link the Delaware vocabulary she had just washed with the blank vocabulary form from which it had been split (see figs. 18a, 19). With this knowledge in hand, Downey sized the skinned side of the Delaware vocabulary with a 0.5% gelatin solution to combat its curl from the residual facing adhesive. She then mended both documents with Asian paper, bridging Berwick's cuts along the horizontal folds and returning the forms to single sheets (figs. 21a, 21b). Downey also recorded information about Berwick's previous paper-splitting campaign in her treatment reports. Copies of the pertinent letter to Hays now reside with Downey's treatment reports in the objects' folders.

*Charles Willson Peale, Diary Vol. 1, 1765–1767, Mss.B.P31*

The earliest Charles Willson Peale diary in the APS collection is a small volume bound in green parchment, 6 × 4 in., designed to fit comfortably in a pocket. The back cover of the volume once had a fold-over flap with a metal pin that snapped into a metal clasp on the front cover to hold the book shut. Peale appears to have used the blank volume not only as a diary (the first leaves describe a 1765 trip to Boston on which he suffered from toothache) but for to-do lists and daily recordkeeping. Several leaves in the middle of the volume recount expenses for food, pigments, and canvas. Other leaves contain technical drawings or sketches of people in ink or graphite.

Two of these pencil sketches date to Peale's 1767 stay in London, where he studied under American ex-patriot portraitist Benjamin West. During his studies, Peale found his way to Franklin's residence and was allowed to entered the house despite his lack of an invitation. From the stairs, Peale spied Franklin in an inner room, busily engaged with a previous visitor. Rather than retreating, he pulled out his pocketbook and documented the scene. The two sketches, made on facing pages of Peale's diary, reveal an aging Franklin holding a young woman on his lap, caressing her hand, and kissing her (fig. 22).

For the APS Museum's 2017 exhibition, *Curious Revolutionaries: The Peales of Philadelphia*, curators wanted to display the diary open to the scandalous sketches, but the volume was initially in no shape to be exhibited. The binding was detached and only the front cover and the torn, crumpled spine remained (fig. 23). Although the spine of the binding was half an inch thick, the surviving leaves made a pile less than a quarter-inch high, suggesting that much of the original book was missing. Furthermore, the leaves had been reassembled into a set of four small pamphlets during a previous restoration campaign, likely under the direction of Kyle or Carbone, given the hard modern sewing thread that was commonly used during that period (fig. 24). The pages had never been numbered, making the order of the pamphlets—and of the leaves within them—unclear. In one place, Peale had clearly turned his diary sideways to write a poem across two facing pages, but when the leaves were resewn into pamphlets, the two halves of the poem were separated by an unrelated folio of paper (figs. 25a, 25b). In 2017, the goals of conservation treatment were to determine the original order of the leaves and to rebind them in their original cover, adding new material as necessary to make the book strong and functional.

Several physical and textual clues assisted the author in approximating the original order of the diary. Many of the leaves had suffered extensive water damage in the past, with varying degrees of brown discoloration, bleeding ink, marks from rusted straight pins, and mold stains. Other leaves, and the extant cover of the volume, had very little water staining, confined to

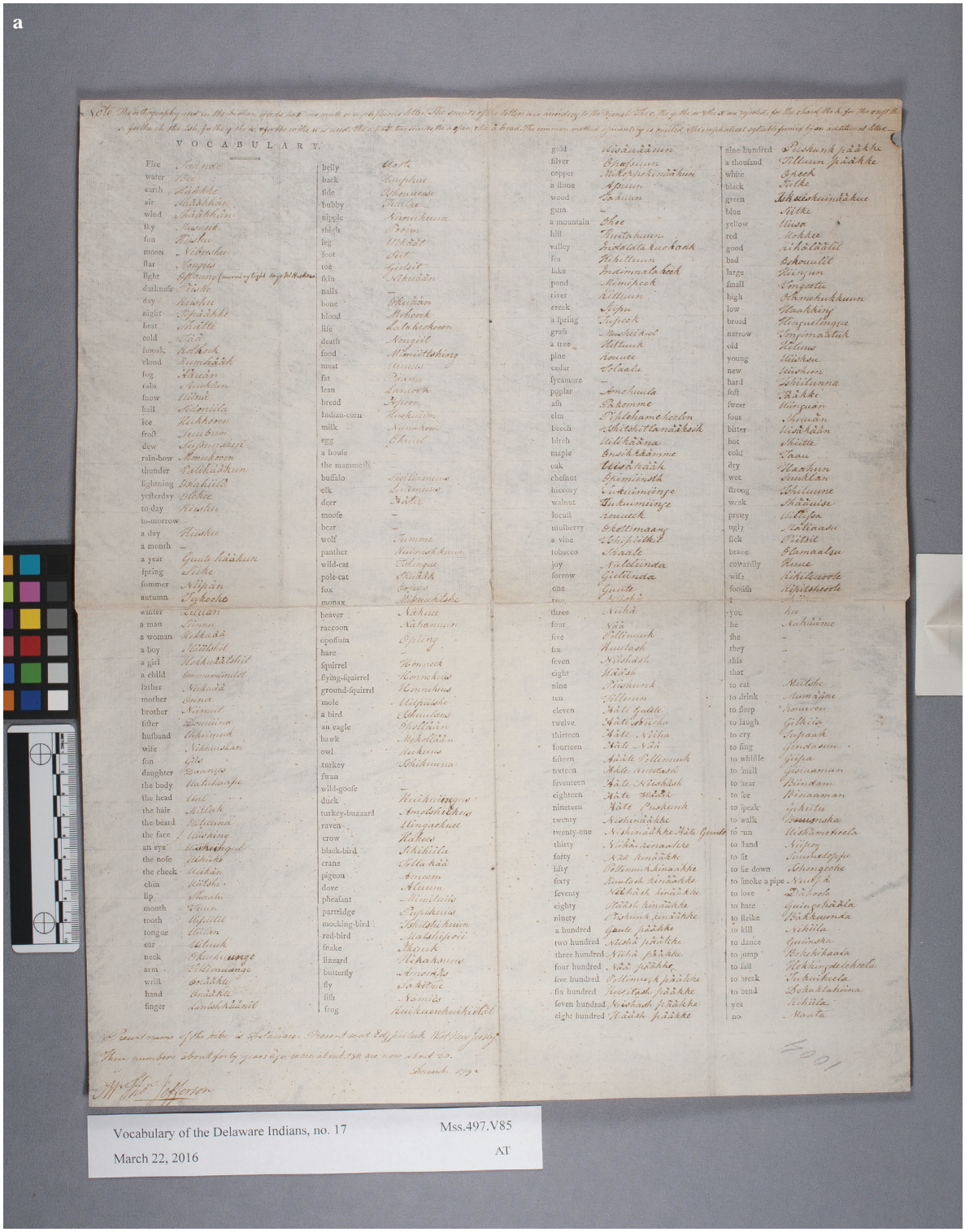


Fig. 21. Vocabulary of the Delaware Indians (a) and Vocabulary of the Nanticoke Indians (b) after treatment in 2016. Anne Downey performed calcium phytate treatment on these vocabulary forms in 2015 and 2016, removing William Berwick's brittle mounting systems at the same time. The sheets were mended to form single sheets once more, although they remain half their original thickness. Mss.497.V85, American Philosophical Society Historical and Literary Committee, American Indian Vocabulary Collection. Courtesy of Anne Downey.

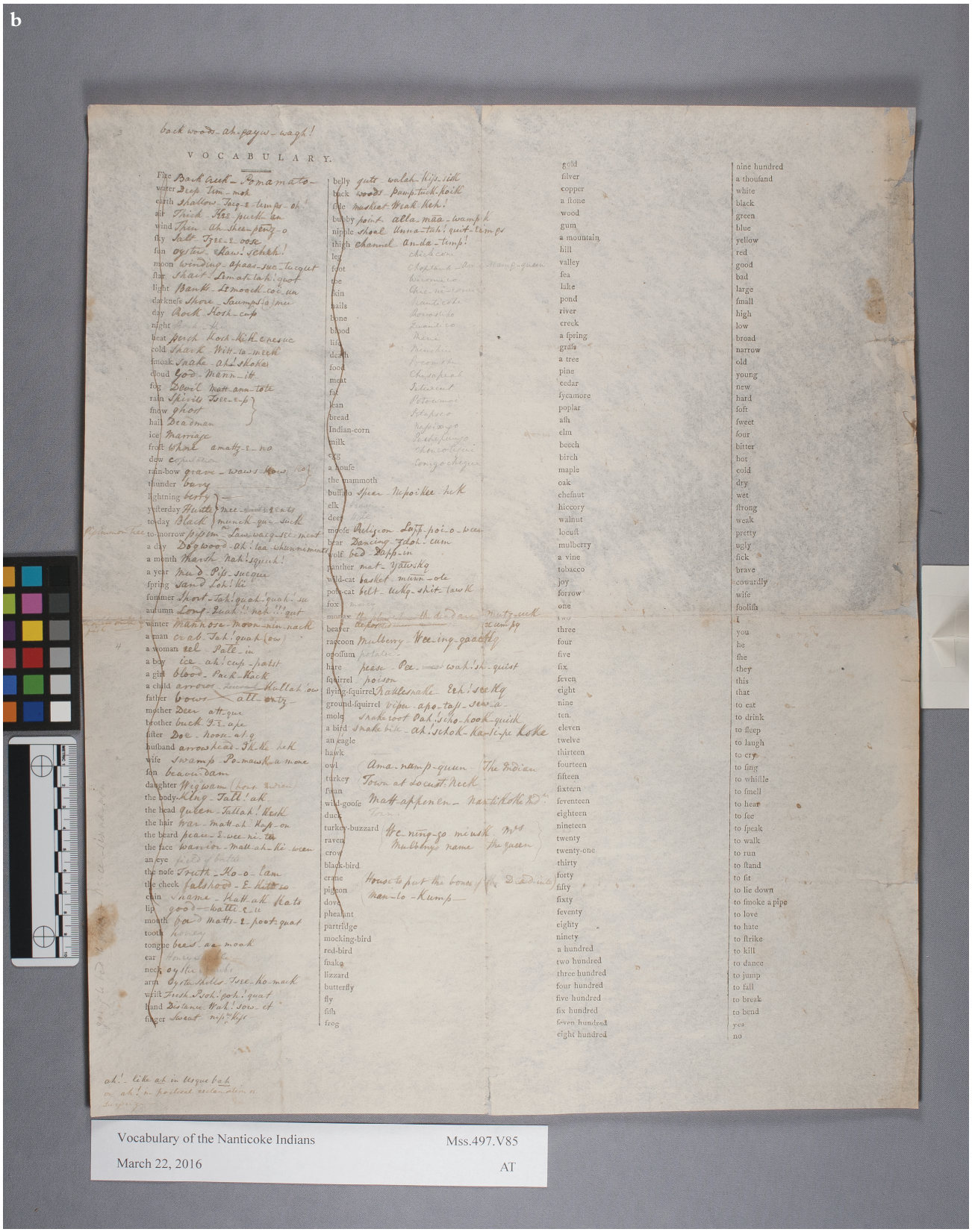


Fig. 21. (Continued)

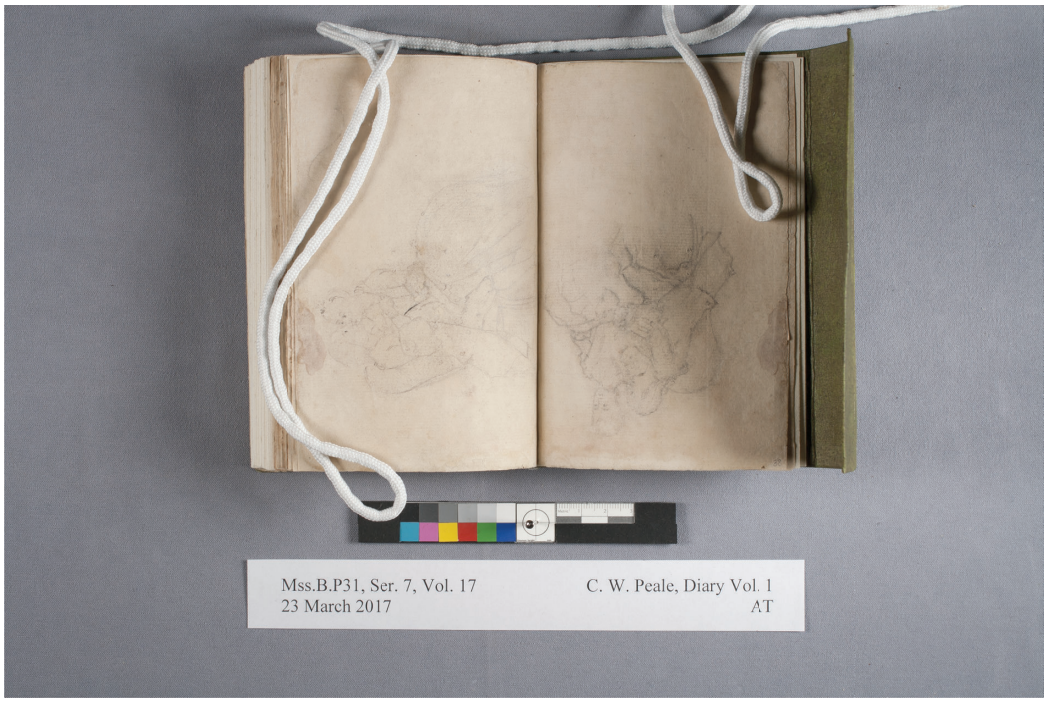


Fig. 22. In 1767, Charles Willson Peale hid outside the London room where Benjamin Franklin was fondling a young woman and sketched their activities in his pocket diary. After conservation treatment, these pages were on display in *Curious Revolutionaries*. Mss.B.P31, Peale-Sellers Family Collection, 1686–1963, American Philosophical Society.


Fig. 23. When Charles Willson Peale's diary arrived in the APS conservation department, all that was left of its original parchment binding was this detached front cover with the tattered spine attached. Mss.B.P31, Peale-Sellers Family Collection, 1686–1963, American Philosophical Society.

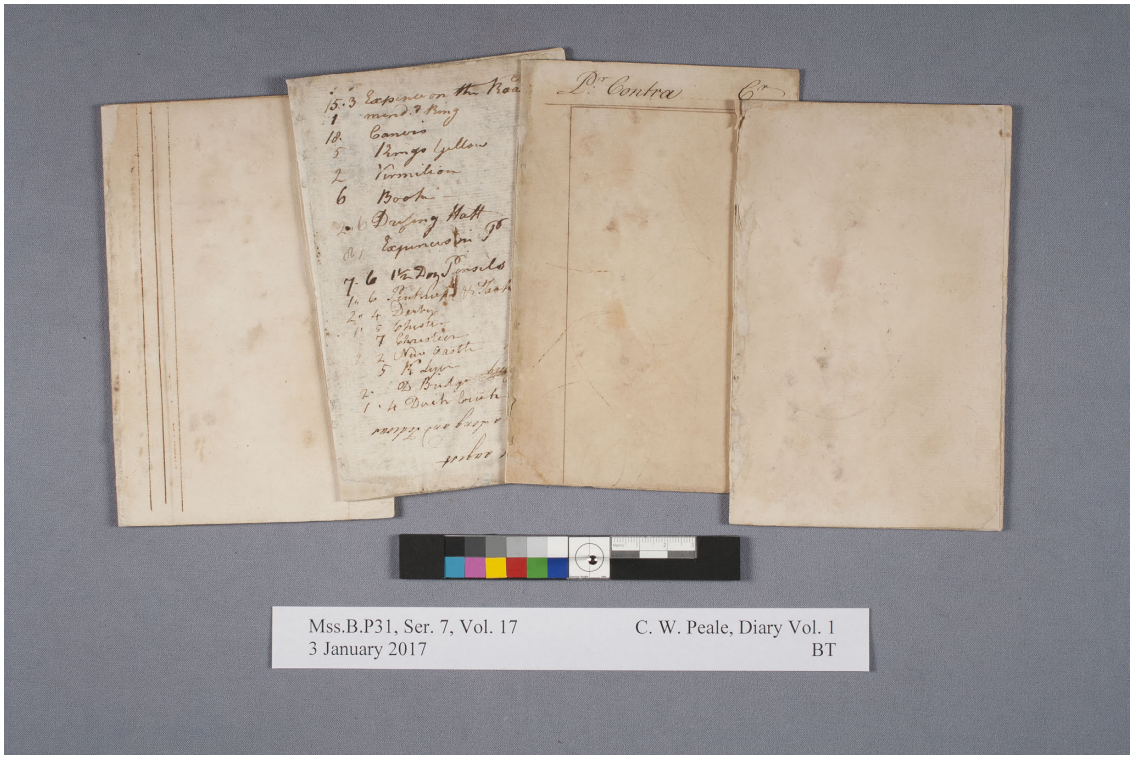


Fig. 24. Sometime between 1948 and 2015, the surviving leaves of Charles Willson Peale's diary were guarded and sewn into four thin pamphlets with hard modern sewing thread. The pamphlets on the right exhibit moderate discoloration and staining from moisture and mold. Mss.B.P31, Peale-Sellers Family Collection, 1686–1963, American Philosophical Society.

the very edges of the leaves. The clean, white leaves were also dated to Peale's diary entries from 1765, allowing the surviving cover to be identified as the front cover. Sometime after 1765, Peale appears to have flipped the book over and resumed writing from the back (a common practice for his time), and many of the severely moisture- and mold-stained leaves are upside down in relation to the first leaves. These observations led the author to conclude that the extant leaves composed the first section and the last two sections of the diary, which are dated to 1767. There were most likely several sections between them in the original diary; these are now missing.

The minimal moisture staining on the front cover and leaves, along with the severe moisture- and mold-staining of the last leaves, provided a rationale for the missing back cover of the diary, whose parchment binding would have been extremely susceptible to water damage. The mold stains and tide lines also proved to be extremely helpful in reordering the water-damaged leaves. Stains at the fore edge of the diary could be aligned, and the leaves could be ordered so the size of the stains progressed logically as the pages were turned, becoming larger toward the back cover.

A 1948 microfilm of the diary was also helpful, revealing that the book had already been water damaged and improperly rebound by that date. Mold stains in the back of the book showed that certain leaves had been bound in upside down. The undamaged leaves, however, appeared to be logically ordered.

Based upon the evidence from the moisture staining, the microfilm, and the text of the surviving diary pages, the leaves were collated with a soft graphite pencil to correspond to their most likely original order. The pamphlets were then disbound, and the folios were reguarded where the hard, thin thread from the previous treatment had cut the paper. The missing portion of the diary was replaced with sections of blank alkaline paper (fig. 26). The reordered book block was then resewn with soft two-ply linen thread, and rebound using the original front cover and spine, which were stabilized with acrylic-toned Asian paper reinforcements. A new back cover with a fore-edge flap was created from alkaline cardstock covered with acrylic-toned handmade Western paper (fig. 27).

Both the photographic and written documentation for the project provide evidence of the book's previous binding campaigns and of the rationale for redoing the work. In this case, both the erroneous page order and the damaging sewing thread provided reasons for re-treatment. Repairing and reusing the book's original binding also restored some of its historical context, giving researchers and museum viewers a better understanding of how Peale would have used the volume.

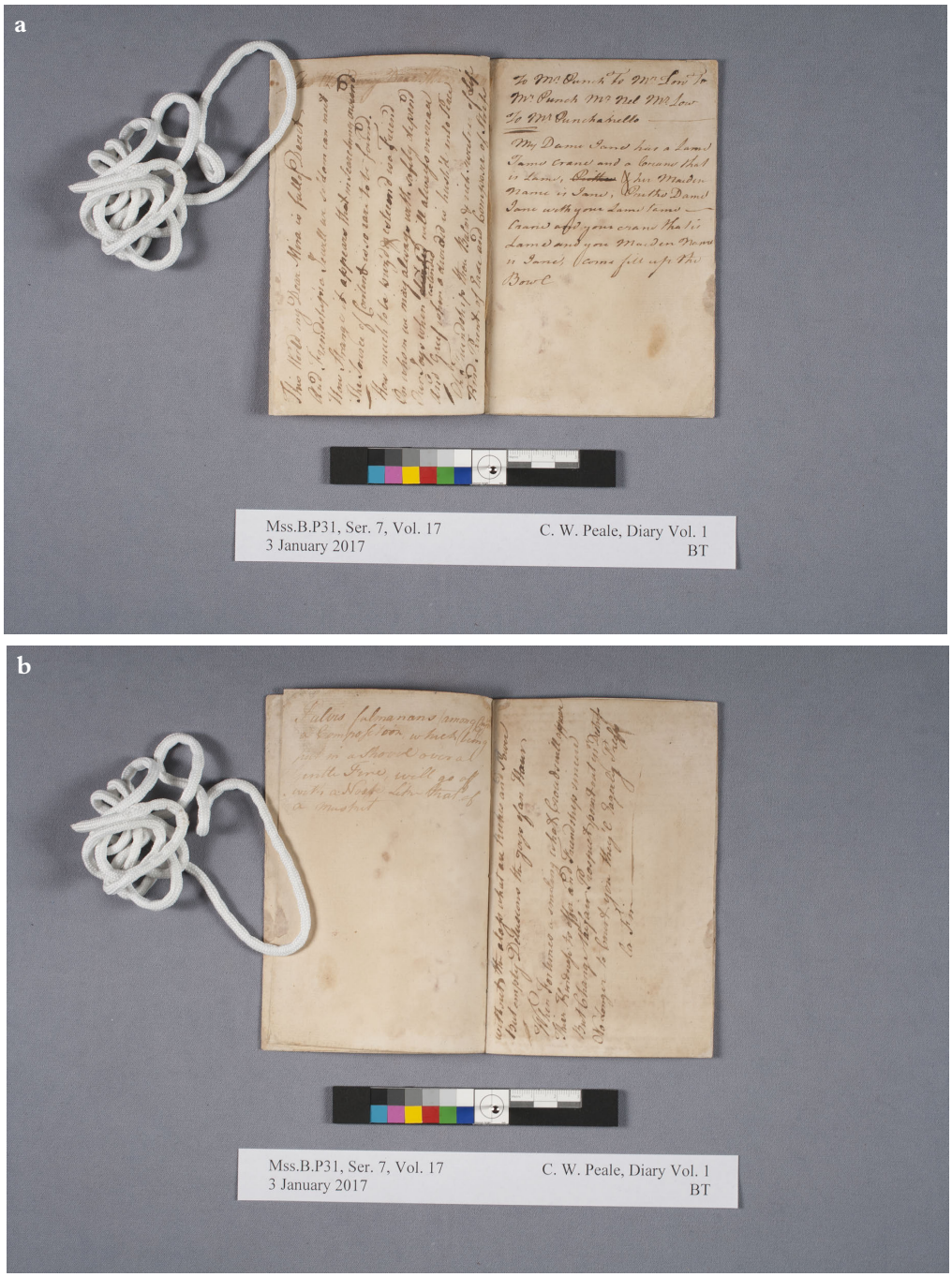


Fig. 25. Charles Willson Peale turned his diary sideways to copy Samuel Wesley's popular song lyrics, "The world, my dear Mira, is full of deceit," written in 1784 for the Duchess of Norfolk. The 20th-century restorer who sewed the diary into pamphlets also misordered its leaves, breaking the song in the middle and preventing it from being read. Mss.B.P31, Peale-Sellers Family Collection, 1686–1963, American Philosophical Society.

*James Thackara and John Vallance, Plan of the City of Washington, 1792, Printed.Maps*

A 1792 engraved map of Washington, DC, was selected for display as part of the APS Museum's 2019 exhibit, *Mapping a Nation: Shaping the Early American Republic*. This exhibition focused on the role of maps in defining the borders and character of the fledgling United States. The map of Washington, which displays the proposed blocks and government buildings of the new capital, was selected to illustrate the complex process of creating such a map. Although the map was

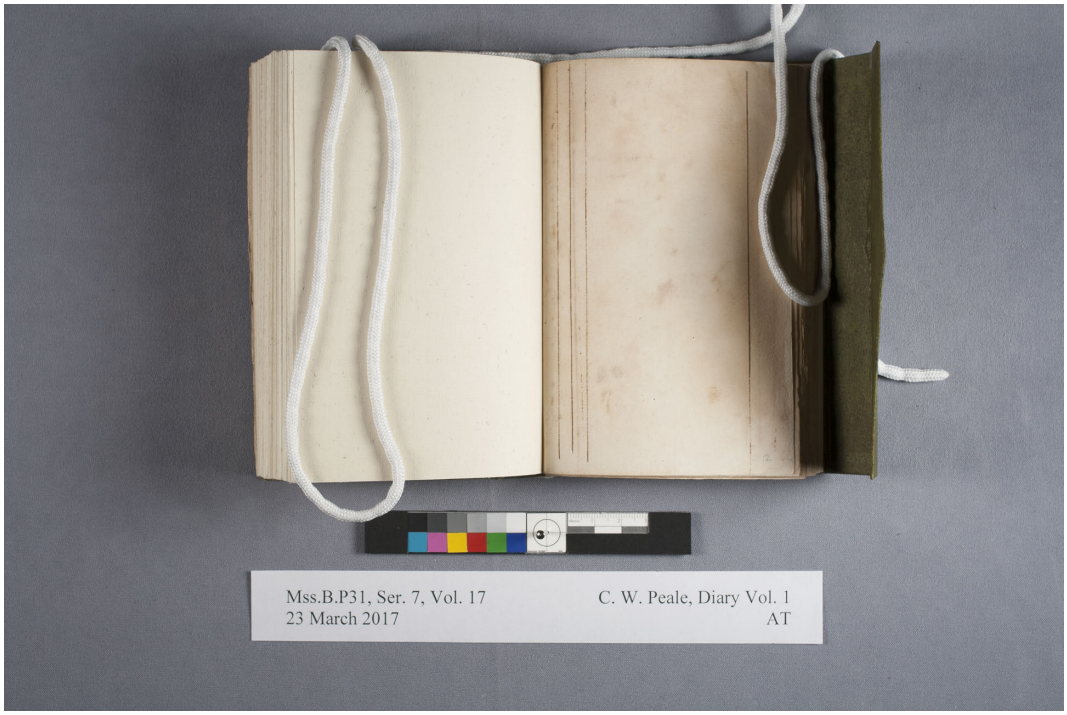


Fig. 26. Conservation treatment for Charles Willson Peale's diary included inserting new leaves of modern paper at the middle of the book to replace the leaves that have been lost. Here, the new leaves appear on the left, whereas the surviving mold-stained leaves from the back of the book are visible on the right. Mss.B.P31, Peale-Sellers Family Collection, 1686–1963, American Philosophical Society.


Fig. 27. A new back cover and fore-edge envelope flap for the diary were created using alkaline cardstock and handmade Western paper toned with acrylic paint. After conservation treatment, Charles Willson Peale's diary can be read in a binding that approximates its original format. Mss.B.P31, Peale-Sellers Family Collection, 1686–1963, American Philosophical Society.

eventually engraved by James Thackara and John Vallance of Philadelphia, Andrew Ellicott led the surveying team that compiled the information leading to the map. In 1784, Ellicott had assisted Rittenhouse in extending the survey of the Mason-Dixon line. From 1791 to 1792, he surveyed the proposed District of Columbia and Federal City for Secretary of State Thomas Jefferson, aided by free Black astronomer and surveyor Benjamin Banneker. The exhibit noted that Banneker was paid less than other team members and had to eat separately, illustrating one of the ways in which people of color were marginalized during nation building. The final map incorporates the work of all of these men, as well as the earlier work of city planner Pierre Charles L'Enfant.

The society's copy of the map was presented by David Steuart Erskine, 11th Earl of Buccan, a Scottish antiquarian and supporter of the American Revolution who had received the map from George Washington. His holograph iron gall ink inscription along the right edge of the map reinforces the white, male, Eurocentric power structure of the emerging nation:

> This Plan which was sent to me by the illustrious Washington April 22 1793, I dedicate to the memory of C. Columbus, B. de las Casas, Sir W. Raleigh, W. Penn, John Locke, Benjamin Franklin, Samuel Adams, John Hancock, Generals Warren and Montgomery, and to that of all the good and brave men who contributed to the establishment of American Happiness and I bequeath this plan to the Phil. Society of America instituted Jan: 2d. 1769.

Above Buccan's dedication is a slip of bluish paper bearing the inscription "G Washington to the Earl of Buccan." Buccan apparently cut the autograph from Washington's original letter accompanying the map, as it is densely written on the opposite side, and secured it to the map with a dot of adhesive. When the front of the map was silked overall sometime after its arrival at the APS in 1802, possibly by Rugh or Spawn, the slip was removed from the map (creating a hole in the inscription), silked separately, and re-adhered on top of the silk-laminated map.

By the time the map was selected for exhibition, it displayed multiple long cracks (perhaps the original reason for silking), losses filled with white and brown papers, and several edge tears. It was also markedly discolored, particularly at the top left edge, which was stained brown (fig. 28). The library's iron gall ink inscription marking the 1802 receipt of the map was also haloed. These condition issues were judged severe enough to warrant calcium phytate treatment to stabilize the


Fig. 28. James Thackara and John Vallance, Plan of the City of Washington, 1792, Printed Maps Collection, American Philosophical Society. Before treatment, the map was discolored overall, with significant staining at the top left corner. The 1802 iron gall ink inscription was also haloed. The map was likely silked by Carol Rugh or Willman Spawn in the 20th century. Courtesy of Anisha Gupta.

Fig. 29. James Thackara and John Vallance, Plan of the City of Washington, 1792, Printed Maps Collection, American Philosophical Society. Anisha Gupta and Anne Downey performed calcium phytate treatment on the map to stabilize the iron gall ink and reduce staining. Although removing its silk lamination was not one of the goals of treatment, the silk released readily in the bath, and its removal improves the legibility of the treated map.

inks and bathing to reduce the staining and discoloration. To prevent further damage to Washington's signature, the attached slip was detached from the map prior to bathing, using a scalpel to break the weak adhesive join. The remainder of the silk was readily removed during bathing (fig. 29). In this case, although removal of the silk lamination was not one of the goals of treatment, the previous conservation effort was reversed in hopes of improving the map's legibility.

After bathing, the map was mended again with Japanese paper and toned cast pulp. Washington's untreated signature was hinged to the map in its former location with Asian paper and wheat starch paste, with its silk lamination still in place (fig. 30). The silk from the remainder of the map was labeled with graphite and retained in the conservation laboratory as a piece of historical evidence. Although no earlier conservation records exist for this map, its previous lamination and mends are noted in the treatment report that now accompanies the object.

*Minutes of the Indian Treaty Council Held at Easton, 1757, Mss.970.5.M659.1*

From 1756 to 1758, during the French and Indian War, a series of conferences in Easton, Pennsylvania, sought to make peace between the Native peoples of the Wyoming Valley (often


Fig. 30. James Thackara and John Vallance, Plan of the City of Washington, 1792, Printed Maps Collection, American Philosophical Society. After bathing it, Anisha Gupta mended the map with Japanese paper and toned cast pulp. She also reduced the worst of the residual staining with a cosmetic overlay of translucent Japanese paper. The untreated slip bearing Washington's signature was hinged to the map in its former location. Courtesy of Anne Downey.

allied with the French and represented by Lenape leader Teedyuscung) and the colonial government. The Lenape people in particular had been at war with Pennsylvanian colonizers since the fraudulent 1737 Walking Purchase forced them from their homeland in the Lehigh Valley to the Wyoming Valley, traditionally controlled by the Iroquois. The Iroquois, who were allied with the British, subsequently sold the land upon which the Lenape had settled to Pennsylvania and Connecticut, sparking violent hostilities between the Lenape and Pennsylvanian settlers.

Teedyuscung aired Lenape grievances at the first treaty councils in 1756, and he elaborated upon them in 1757, asking for a colonial secretary to take down his words. Charles Thomson, who later became clerk of the Continental Congress, was appointed to serve in that role. The council meetings held between July 21 and August 7, 1757, concluded in a peace treaty between the Pennsylvania government and the Lenape, but the treaty did not return Lenape land or end the colony's conflict with other Native groups. A more widespread peace was struck during the final Treaty of Easton in 1758, which returned some of the land taken from the Iroquois and pledged that British settlers would not trespass on Native lands in the Ohio region west of the Allegheny Mountains. These treaties created a tenuous alliance between the British colonial government and local tribes that had previously supported the French.

The APS now holds later copies of the minutes from the 1756 Easton treaties, believed to be produced between 1780 and 1820, and these were treated by Rugh in 1935. Far more importantly, the society also preserves Thomson's original manuscript minutes from 1757, representing Lenape land claims with maps based on Teedyuscung's own sketch of the debated territories and a contemporary British map of Pennsylvania drawn by Lewis Evans. These minutes—apparently a first draft based on Thomson's rough notes—were subsequently bound in multiple oversewing campaigns. The minutes' original binding may not survive; the undated finding aid for the collection describes a "half morocco [binding],

Fig. 31. Minutes of the Indian Treaty Council Held at Easton, 1757, Mss.970.5.M659.1, American Philosophical Society. By 2004, Willman Spawn's silk-laminated guards had stiffened, causing the leaves of the minutes to crack along the edge of the silk. Courtesy of Denise Carbone.

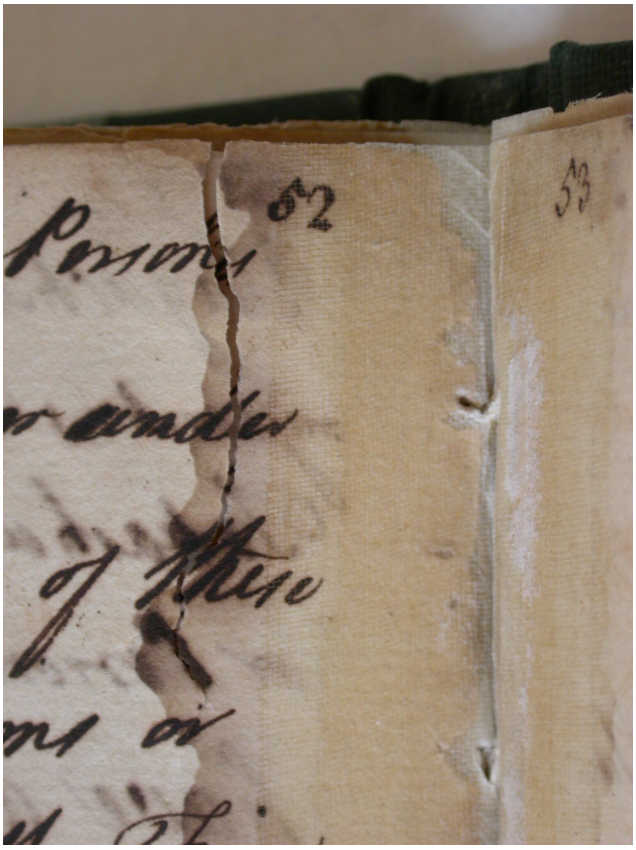

Fig. 32. Minutes of the Indian Treaty Council Held at Easton, 1757, Mss.970.5.M659.1, American Philosophical Society. In this 2004 treatment photograph, a severe tide line can be seen extending from Willman Spawn's guard and silk lamination, suggesting that his rice starch paste allowed components of the iron gall ink to move laterally within the paper. Such tide lines were common throughout the book block prior to washing. Courtesy of Denise Carbone.

covers detached, and a few leaves loose." This description may refer to a 19th-century half binding of purple embossed sheepskin with marbled paper sides, whose boards were stored with the volume throughout its complicated treatment history.

Spawn allegedly mended and guarded the minutes during his career, sometime after 1950, and rebound them in a three-piece case binding covered with green paper. This binding remained on the book until 2004, when the volume was disbound and partially treated in preparation for the society's 2005 *Treasures Revealed* exhibit. Carbone's treatment notes from disbinding, which remained with the book until treatment was completed in 2019, noted the book's single-folio endleaves of stiff paper and extraordinarily wide guards, which were apparently designed to allow the book to be oversewn without damage to the original manuscript. Treatment photographs found on the APS servers show that the paper guards (apparently of a soft bond paper) were lined with silk that extended onto the manuscript leaves for about an inch on each side. In the years since Spawn had conserved the book, the silk lamination had become stiff and brittle, and the treaty minutes were cracked throughout the book block adjacent to the silk (fig. 31). Carbone also noted extensive tide lines to the manuscript leaves, generally along the gutter edges, probably resulting from the earlier silking treatment (fig. 32). Carbone disbound the manuscript leaves, which also displayed extensive iron gall ink corrosion, with cracking and dropout (fig. 33), and turned them over to Downey for paper treatment.

To address the leaves' discoloration, brittleness, and staining, Downey bathed them in ethanol- and pH-adjusted deionized water, alkalized them with magnesium bicarbonate, and sized them with methyl cellulose to strengthen them. The silk and existing paper mends were removed in the bath. She then mended the leaves with acrylic-toned Asian paper and wheat starch paste. Although calcium phytate treatment might have been appropriate for the manuscript, the society was not yet using that technique in 2004. In 2019, when the manuscript's iron gall inks were tested with bathophenanthroline test strips, the strips remained white or turned a barely

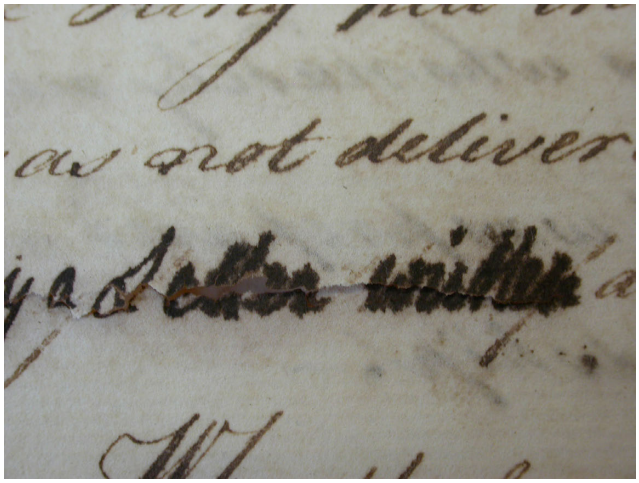

Fig. 33. Minutes of the Indian Treaty Council Held at Easton, 1757, Mss.970.5.M659.1, American Philosophical Society. The minutes displayed severe iron gall ink corrosion prior to bathing in 2014, with cracking and dropout where the ink was heavily applied. Courtesy of Denise Carbone.

perceptible pink, suggesting that most of the excess iron(II) ions contributing to strikethrough and cracking of the ink were washed away during bathing. Bathing also served to reduce the extensive tide lines and staining throughout the book.

Two leaves from the minutes were displayed separately during the 2005 exhibition, and the book was not returned to a bound format until 2019, when it was again slated for display in *Mapping a Nation*. The curators requested that the book be shown intact, as the maps for exhibition appeared on facing pages (fig. 34). To preserve the manuscript's original format to the extent possible, the author examined the leaves' watermarks to determine how they had originally been gathered. The orientations of the watermarks and countermarks showed that the leaves had not been gathered at all, but written and bound as individual folios of handmade laid paper. The leaves were guarded into their original folios, provided with new endleaves of handmade paper, and sewn through the fold over ramie ribbon supports. After discussion with the curators, they were rebound in the surviving 19th-century boards—the


Fig. 34. Minutes of the Indian Treaty Council Held at Easton, 1757, Mss.970.5.M659.1, American Philosophical Society. Maps on facing pages of the minutes—featuring Native and colonial depictions of the traditional Lenape lands—were displayed in 2019's *Mapping a Nation*, for which the book was returned to a bound format.

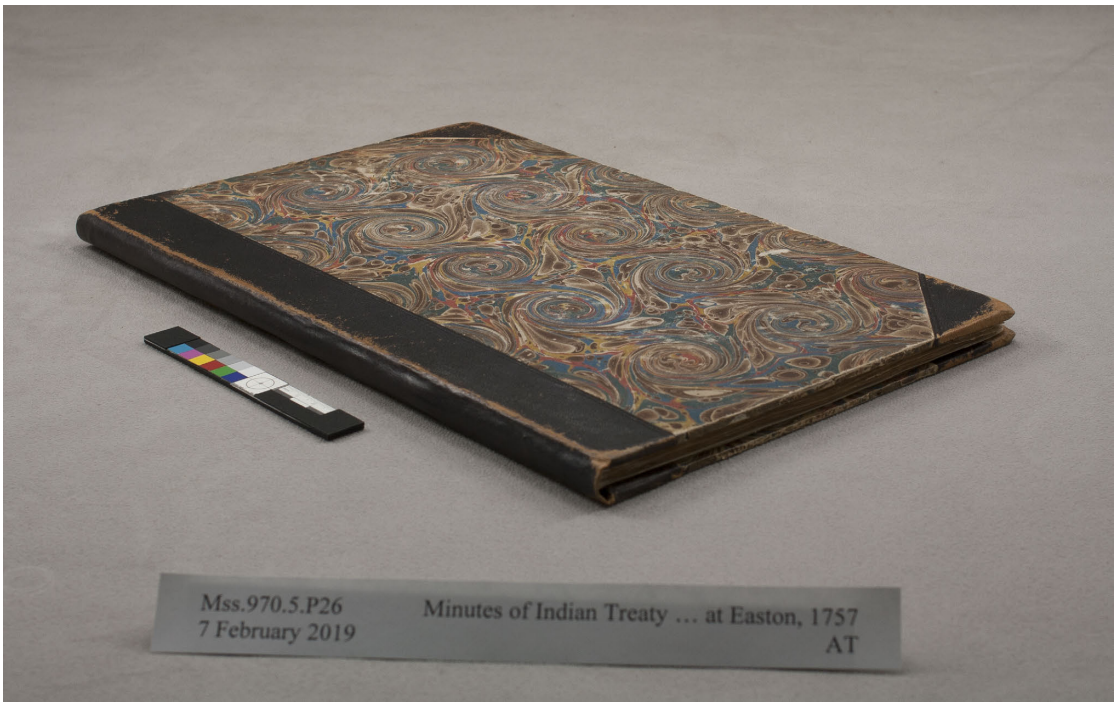


Fig. 35. Minutes of the Indian Treaty Council Held at Easton, 1757, Mss.970.5.M659.1, American Philosophical Society. The minutes were rebound in the earliest extant binding surviving to them, with 19th-century half-bound boards and a new spine of laminated cotton and paper.

earliest extant binding materials remaining to them—with a new spine of toned, laminated Asian paper and airplane cotton (fig. 35). All of the previous treatment was described in the final report, and Spawn's green paper quarter case binding was provided with a four-flap wrapper and stored in the box with the treated book. The recovered paper treatment form was also scanned as a PDF, and with the earlier treatment photos it was added to the digital conservation archive for the minutes.

*Benjamin Franklin, Ledger A and B, 1730–1740, Mss.B.F85f6.5*

In 1730, when 24-year-old Benjamin Franklin began keeping his financial records in a tall, narrow leather-bound book labeled "Leidger A" and "Leidger B," he had already moved to Philadelphia, created a discussion group of local businessmen known as the Junto (precursor to today's APS), and begun publishing *The Pennsylvania Gazette* newspaper to promote his ideas and observations. In September 1730, he began a common-law marriage with Deborah Read, and their hands are almost the only ones found in the pages of the ledger book, which contains their financial transactions over the following decade. During these years, Franklin brought his young son William into the new household, wrote the charter for the Library Company of Philadelphia, began publishing *Poor Richard's Almanack*, and established the Union Fire Company. He and Deborah also began a family but lost their son to smallpox.

Little of this personal history is directly reflected in the content of the book, which is concerned with the credits and debts of the Franklin household. As was common at a time when books and paper were costly, the couple kept two systems of accounting in the same binding: a daily journal of transactions at the front of the book and a ledger of transactions indexed by client at the back of the book. When the ledger at the back became full, they began using the remaining blank leaves in the middle of the book. The book was not strictly business, however: one of the last leaves shows Franklin's experimentation with different varieties of iron gall ink, providing evidence for his scientific bent (fig. 36).

Ledger A and B is the earliest Franklin account book known to survive and has long been recognized as one of the treasures of the APS manuscript collection. Shortly after joining the society in 1935, Rugh picked up where Berwick had left off and treated seven of Franklin's manuscript record books, including Ledger A and B. Her treatment notes for the volume state, "Loose leather cover attached. Boards stiffened where broken down. Extensive repairs to torn pages. 1 double fold covered with chiffon, hinged & replaced in book" (Rugh 1935, 9). The unsigned slip she pasted into the back of the book provides further (albeit minimal) detail: "page repairs; leather cover strengthened and repaired 6/35" (fig. 37).

Ledger A and B was not treated again until 2019, almost 85 years after Rugh's repairs were made. For many years, the volume had been handled regularly during tours featuring the

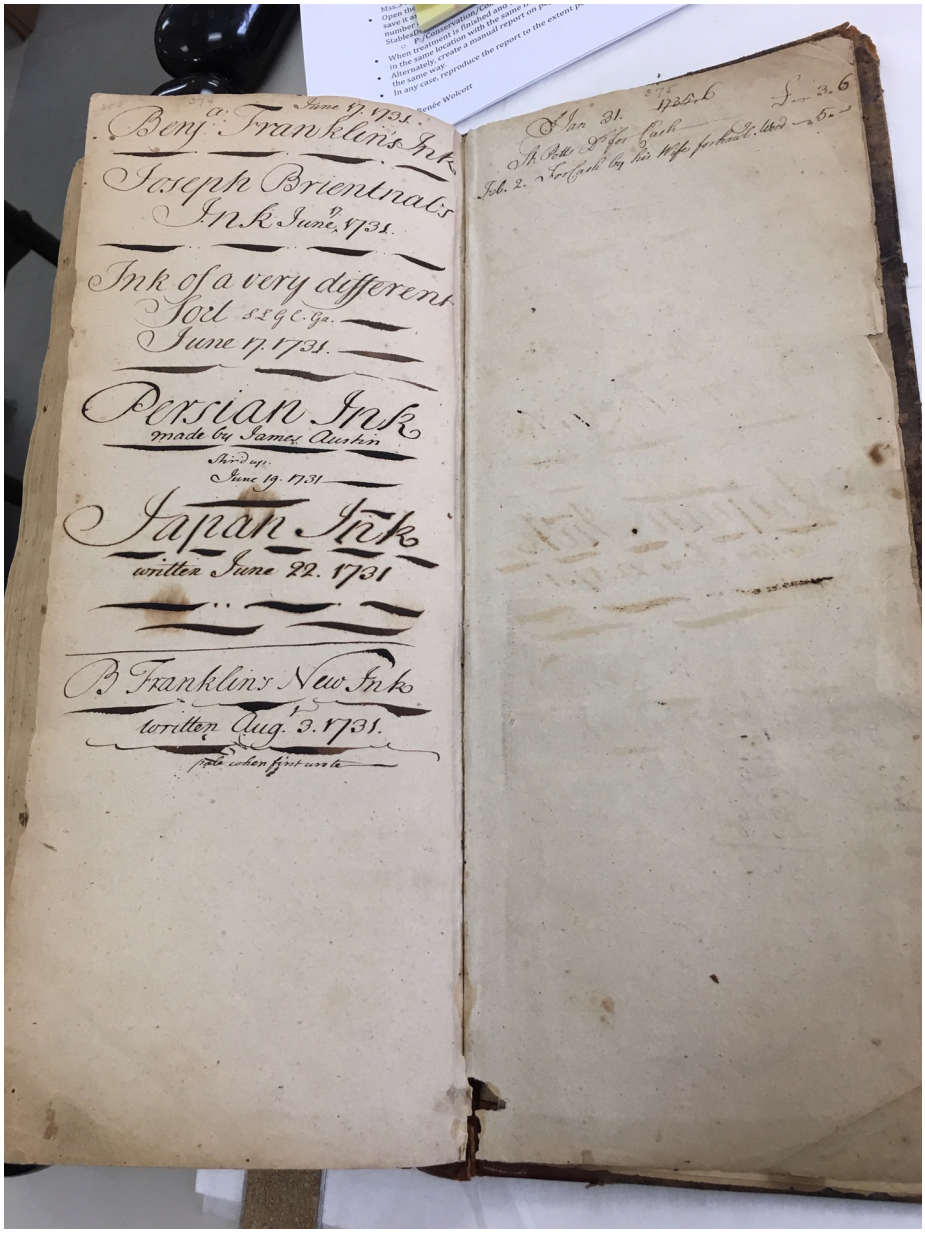


Fig. 36. Benjamin Franklin, Ledger A and B, 1730–1740, Mss.B.F85.f6.5, American Philosophical Society. One of the last leaves of the ledger book displays a dated list of different iron gall ink recipes, including Benja. Franklin's Ink, Joseph Brientnal's Ink, Ink of a very different sort, Persian Ink made by James Austin, Japan Ink, and B. Franklin's New Ink, all presumably part of an experiment on Franklin's part.

society's most noteworthy collections, and the extensive use had taken its toll. When the book was brought to conservation for treatment, Rugh's identity remained unknown, but examination revealed details about her repairs that were not included in her minimal treatment notes. In this case, she had replaced the endcaps of the book not with chrome-tanned calf but with vegetable-tanned leather turned in over the pastedowns, and by 2019 it had become red, weak, powdery, and torn (fig. 38). The endcaps were once again pulling away from the spine of the book block, and the original leather was also split or lost in many new areas: over the joints, at the center of the spine, and at the top fore edge of the front board. The corners of the cover were also severely abraded, with associated loss to the pasteboards beneath the leather.

Although Rugh's page repairs remained strong (and largely invisible), the nearly 200-year-old paper had become increasingly brittle and discolored, and routine handling had caused new edge tears, chips, and creases in the outermost leaves.

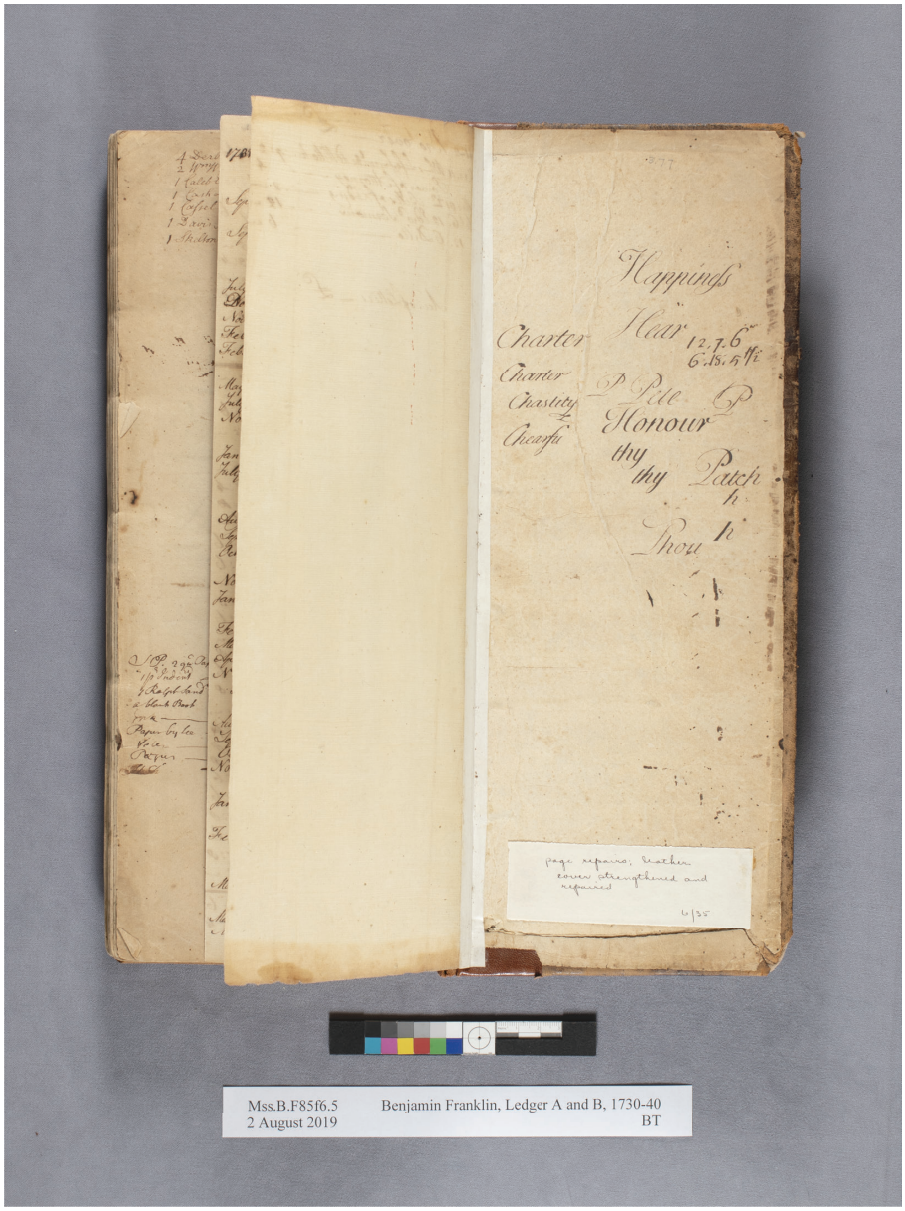


Fig. 37. Carol Rugh's 1936 treatment slip for Franklin Ledger A and B, adhered to the back pastedown, states that she made page repairs and strengthened and repaired the leather cover, but it does not specify the materials used. Benjamin Franklin, Ledger A and B, 1730–1740, Mss.B.F85. f6.5, American Philosophical Society.

The two detached leaves that Rugh had trimmed, laminated with silk, and hinged to the back pastedown with a strip of linen tape remained securely attached, but both inner hinges were split, and several of the book's fiber-cord sewing supports were broken over the joints (fig. 39).

Curators asked that the book be made intact and safe to handle, so treatment focused on mending new damage to the book block, reinforcing the tenuous board attachment, and repairing new cover damage while strengthening and reintegrating the existing restorations. The book block and inner hinges were mended with acrylic-toned Korean paper and wheat starch paste. Lascaux 498 HV, which is reversible with heat or ethanol, was used in all of the binding repairs. To reinforce board attachment at the head and tail of the spine, the leather was lifted as necessary, and strips of ramie ribbon were adhered to the spine and boards over a reversibility layer of Korean hanji (fig. 40). The deteriorated endcaps from Rugh's treatment campaign were not removed, but they were reinforced with new, chemically stable components. A loss in the headcap was filled using layers of cotton textile and cotton blotter, and both modern endcaps were faced with acrylic-toned hanji. New losses and splits in the boards and original


Fig. 38. By the time Ledger A and B was treated again in 2019, the vegetable-tanned leather Carol Rugh had used to repair its endcaps was weak, red, powdery, and torn. There was also new damage to the leather over the joints and front board. Benjamin Franklin, Ledger A and B, 1730–1740, Mss.B.F85.f6.5, American Philosophical Society.

leather were filled and mended with the same materials. After local toning of the leather mends, the binding appears intact once more and is safe to handle on tours (fig. 41). Rugh's repairs remain in place beneath the new materials, as do her exposed turn-ins and her repair slip on the back pastedown. Her role in the conservation history of the book, which was only uncovered during the research for this paper, will be added to the existing treatment report.

## CONSIDERATIONS FOR THE RE-TREATMENT OF LIBRARY MATERIALS

Although the society's long history of binding, restoration, and conservation may be unique, all libraries contain previously repaired books and documents. Sometimes the earlier binders and restorers are known to the present conservators, and sometimes the repair materials themselves are the only evidence for earlier approaches to collections care. In addition, although museums generally rely on program-trained conservators, many libraries have continued to employ binders and book artists trained in artisanal practices, whose knowledge of chemistry, materials science, and conservation ethics may lag behind those of their peers. Book owners and donors also frequently take repairs into their own hands, employing everything from pressure-sensitive tape to bathtub bathing. These complex histories of repair should be assessed whenever a previously treated artifact is slated for conservation.

It should be noted that when the preceding treatments were undertaken at the APS, the society's conservation department had no established protocol for interrogating the significance of prior repairs, documenting them, or retaining historic repair materials. In performing these treatments, the conservators approached former repairs as they would approach any other aspect of an object's history. They documented the prior treatments in their reports, but some repair materials were kept for future reference, whereas others were stored with the objects or discarded. The general approach to these treatments may be summed up as follows:

- Prior repairs were left intact unless they caused physical or chemical harm, posed a handling risk, or introduced errors that might mislead a user.
- Prior repairs that were visually distracting might also be removed or disguised prior to exhibition.
- Prior repairs might also be removed as the side effect of conservation treatment designed to stabilize new chemical or physical damage.
- Where re-treatment was necessary, all prior repairs were documented before treatment.
- Where feasible, the materials used in prior repairs were retained as a form of historical evidence.

Although these points are a laudable point of departure when developing a protocol for considering prior repairs, they do not go far enough. In addition to documenting the

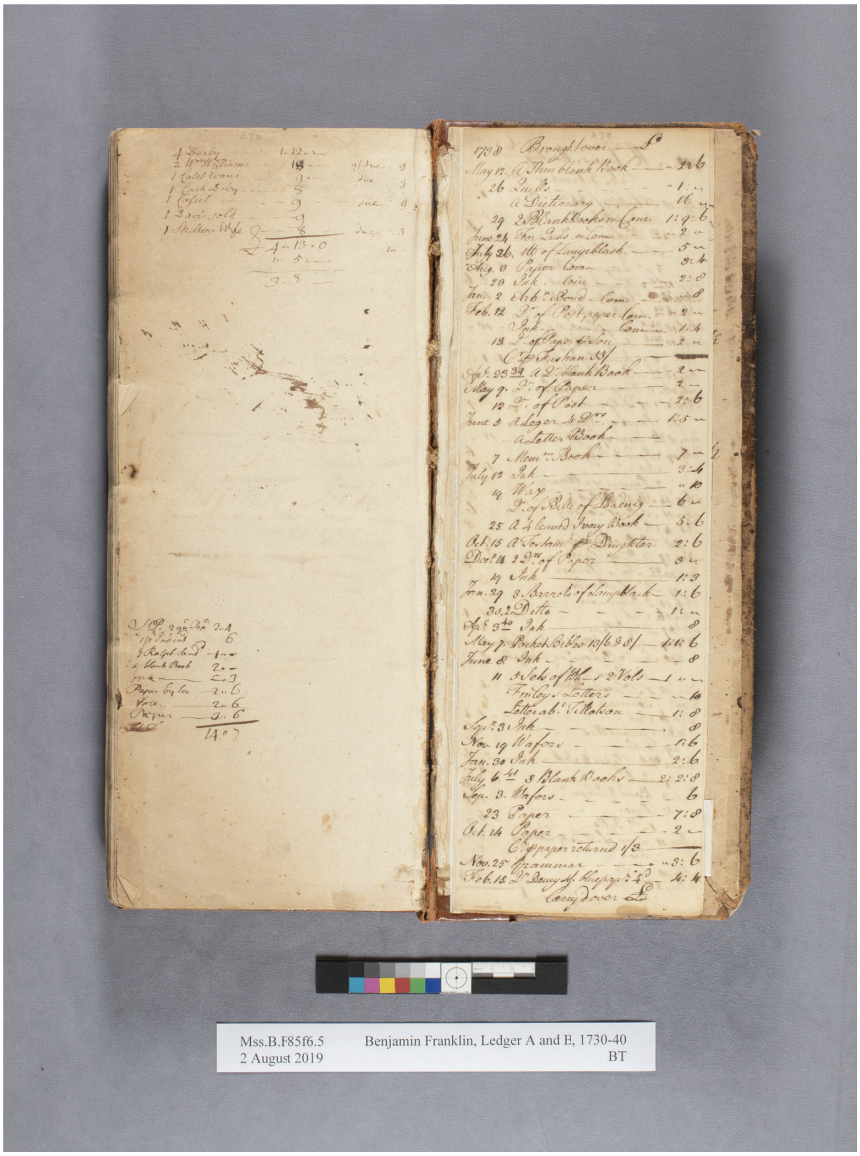


Fig. 39. Before treatment in 2019, the inner hinges of Ledger A and B were split, and several of the sewing supports were broken over the joints, making board attachment tenuous. Here, the split back hinge is shown adjacent to two detached leaves that Carol Rugh trimmed, mended, silked, and hinged to the back pastedown. Benjamin Franklin, Ledger A and B, 1730–1740, Mss.B.F85.f6.5, American Philosophical Society.

existence of prior repairs—ideally with great thoroughness—conservators must also assess their historical and cultural significance before beginning treatment. In her 2003 article on the subject, Jean Portell invited conservators to go beyond the usual assessments for prior repairs (i.e., their chemical and physical stability, their visual impact on the artifact, and the costs involved with removing them). She urged conservators to consider other, less tangible factors as well, as existing repairs may be chemically unstable but culturally significant, or may possess historical or spiritual value in their own right (often the case in collections of indigenous artifacts). Repairs may also have been made by the object's maker or prior owners, and should be considered in light of that history.[3]

Portell (2003) closes with a list of questions to consider when re-treating an artifact:

- Is the repair aesthetically unacceptable? (Who decides this?)
- Are the materials or methods used in the repair unstable, or has the repair damaged the object? (Does an unstable or hazardous condition require immediate attention?)
- Is the repair documented? (Has the old repair acquired significance as an attribute of the object, to the extent that the object is now expected to match its old description?)
- Was the repair done by a historically significant person? (If so, does this fact enhance the object's appeal or value?)

Fig. 40. During treatment in 2019, board attachment was reinforced by adhering strips of ramie ribbon across the spine and over the boards under the leather, separated from the original materials by a reversibility layer of Asian paper and wheat starch paste. Benjamin Franklin, Ledger A and B, 1730–1740, Mss.B.F85.f6.5, American Philosophical Society.


Fig. 41. Carol Rugh's existing leather repairs were not removed in the most recent conservation treatment of Ledger A and B, but they were mended and reinforced, as were new instances of leather damage. The restored book can now be safely handled on tours of the APS treasures. Benjamin Franklin, Ledger A and B, 1730–1740, Mss.B.F85.f6.5, American Philosophical Society.

- Is the repair culturally appropriate and desirable? (Would it be helpful to consult someone who is familiar with the object's culture of origin, such as a member of that group?)
- Does the object, even after repair, have sacred or ritual significance? (Should an appropriate expert be consulted before proceeding with any further treatment?)
- Was the repair done by, or supervised by, the artist? (If so, might the repair interest art historians?)
- Is the intent of the artist known? (If the artist has documented his or her preferences regarding exhibition and preservation of the artwork, where might one find this information? If the artist is living, should he or she be consulted?)
- In the case of an electronic or digital artwork, is there a record of a prior substitution or migration? (If the work was reformatted, would knowing what method was used reveal how the work may have changed, and could that information influence a decision about how the work will be treated next?)

Although Portell's questions concern works of art, they are equally pertinent to library materials, whether they are generally recognized as artworks or not. Thanks to Jefferson's interest in Native languages, for example, the society holds extensive records and some artifacts related to indigenous peoples, and these objects would ideally be stored and repaired using materials and methods that their originating tribe or nation deems appropriate. Certain authors (including 19th-century minister and novelist George MacDonald) are known to have restored their own libraries. Less famous book owners of all eras have used everything from sewing thread to straight pins to pressure-sensitive tape to keep their bindings together. The significance of these interventions can change over time and may vary from object to object. Without asking the appropriate questions, conservators may remove critical historical context while making a good-faith effort to stabilize a given book or manuscript. Pretreatment dialogue with librarians and curators is crucial, as they often know more about an object's intangible context: its prior owners, history of use, and cultural significance.

Ideally, the conservation history of APS collections would also be apparent, and the value of any prior repairs would be understood. The reality is far from ideal, however, as is likely the case at many institutions. Conservation documentation at the APS has been inconsistent, and until recently there was no organized digital or physical archive for any records produced. The history of previous treatments traveled by word of mouth from one generation of staff to the next, and each conservator apparently retained his or her own treatment notes. Without Spawn's intervention and Smith's documentation, today's conservators would still not know about Berwick's and Rugh's treatment efforts. It is hoped that more conservation records will be found in the APS Archives; however, they are currently inaccessible. Processing these collections will help, but the conservation information they contain must still be formatted in such a way that future conservators can use it.

Establishing systems that improve access to conservation records (from file-naming protocols to shared conservation databases to archival retention policies) will ensure that future conservators can put prior repairs in context. Adding previous conservation or restoration treatments to the systems as they are found will help build a history for re-treated artifacts. Historic documents may be appropriately cataloged, filed, scanned, or transcribed for ease of reference. Prior treatments may also be added to conservation databases or spreadsheets for ease of tracking. Knowing who previous binders, restorers, and conservators were—and understanding their materials and methods—can lead to improved treatment decisions in the future, including the choice of whether or not to retain existing repairs. Retaining samples of the materials used in former treatments, when feasible, will provide physical evidence for historic practices and perhaps assist in identifying the previous restorer for a given work.

Improving today's documentation practices will ensure that future conservators possess all of the data necessary to make informed choices of their own. Whenever possible, conservation documentation should name any former restorers or conservators, describe their repairs thoroughly, and provide the rationale for the current treatment approach. What papers and adhesives were used in the previous treatment? How have they aged? What has their effect been upon the original materials? How did their history impact the treatment plan? Future conservators will appreciate knowing not only why an object was treated at a given time but also which factors were considered in the decision to retain or remove existing repairs. Stating the goals of treatment and describing the reasons a given course of action was selected will help put our own choices in context when the objects we have treated need attention once more.

## ACKNOWLEDGMENTS

Mary McDonald, head of publications at the American Philosophical Society, suggested the book project that prompted this research (*Art, Science, Invention: Conservation and the Peale-Sellers Family Collection*, published in the 2019 *Transactions of the American Philosophical Society*). Madalina Veres's extensive archival research for her timeline of the American Philosophical Society provided a firm foundation for further inquiry into the history of conservation. Christine Smith was incredibly helpful in securing image permissions and providing additional information about William Berwick and his work. David Gary, associate director of collections, Anne Downey, head of conservation, and Anisha Gupta, assistant conservator, have provided endless support and encouragement. APS CEO Bob Hauser has provided wise and generous leadership during the current pandemic.

## NOTES

1. An expanded version of this paper, including more bookbinding and conservation history from the APS Archives as well as revisions for a lay audience, is scheduled for publication in the *Proceedings of the American Philosophical Society*.

2. Spawn brought the Berwick-Hays correspondence to light during Smith's first research trip to the APS, around 1998. The APS Librarians at the time did not know the papers existed, and Spawn came out of retirement to show Smith where the boxes of correspondence were kept. Many of the APS Archives remain unprocessed to this day and may reveal more details about the institution's conservation history.

3. Hanson is listed among the 1897 graduates of Drexel Institute Library School (*Library Journal* 1897, 358), and she remains the only female APS Librarian in the society's history, as well as the first of only two APS Librarians to have been trained as a librarian or archivist.

4. One of Portell's case studies involved Smith's treatment of George Washington's will, which had been previously restored by Berwick. Smith reversed prior repairs selectively, leaving Civil War–era sewing thread and Berwick's paper mends in place while removing stiffened silk and transparent paper mends that obscured the writing. Throughout the process, she worked with the will's present owners and other advisors to guide her treatment approach. Her intensive research for this re-treatment process led to the development of *Yours Respectfully, William Berwick*.

## REFERENCES


Baker, J. 2004. FAIC oral history interview with Willman Spawn and Carol Spawn, April 24, 2004. Unpublished transcript. FAIC Oral History Files. Winterthur Museum, Library, and Archives, Winterthur, Delaware.

Berwick, W. Berwick-Hays correspondence. 1900–1920. Unpublished letters and treatment samples. Archives. American Philosophical Society, Philadelphia, Pennsylvania.

Brückle, I., and J. Dambrogio. 2000. "Paper Splitting: History and Modern Technology." *Journal of the American Institute for Conservation* 39 (3): 295–325. https://cool.culturalheritage.org/jaic/articles/jaic39-03-001.html.

Committee on the Library Minutes. May 21, 1941. Archives. American Philosophical Society, Philadelphia, Pennsylvania.

Committee on the Library Minutes. February 12, 1942. Archives. American Philosophical Society, Philadelphia, Pennsylvania.

Committee on the Library Minutes. October 21, 1942. Archives. American Philosophical Society, Philadelphia, Pennsylvania.

Committee on the Library. 1965. Unprocessed Executive Committee Files. Archives. American Philosophical Society, Philadelphia, Pennsylvania.

Eldridge, B. P. 2002. Carolyn Price Horton: 1909–2001. *Abbey Newsletter* 25 (5). https://cool.culturalheritage.org/byorg/abbey/an/an25/an25-5/an25-505.html.

Kyle, H. 1993. Conservation at the American Philosophical Society: An institutional profile in 1992. In *The Changing Role of Book Repair in ARL Libraries*. Washington, DC: Association of Research Libraries. 1–5.

"Library Schools and Training Classes." 1897. *Library Journal* 22 (7): 358–59.

Metzler, V. A. 2002. "An oral history of Fritz and Trudi Eberhardt, Conducted by Valerie A. Metzler, Archivist/Historian on 6 and 7 July 1993, at the Eberhardt Home Outside Schwenksville, Pennsylvania." *Guild of Bookworkers Journal* 37 (2): 8–99.

Minutes of the American Philosophical Society. 1774–1778. Archives. https://diglib.amphilsoc.org/islandora/object/text:167524.

Minutes of the American Philosophical Society. 1787–1793. Archives. https://diglib.amphilsoc.org/islandora/object/text:161419.

Minutes of the American Philosophical Society. 1793–1798. Archives. https://diglib.amphilsoc.org/islandora/object/text:169770.

Minutes of the American Philosophical Society. 1799–1804. Archives. https://diglib.amphilsoc.org/islandora/object/text:163793.

Minutes of the American Philosophical Society. 1805–1814. Archives. https://diglib.amphilsoc.org/islandora/object/text:163794.

Minutes of the American Philosophical Society. 1815–1825. Archives. https://diglib.amphilsoc.org/islandora/object/text:163997.

Minutes of the American Philosophical Society. 1834–1839. Archives. https://diglib.amphilsoc.org/islandora/object/text:167747.

Minutes of the American Philosophical Society. 1840–1842. Archives. https://diglib.amphilsoc.org/islandora/object/text:167815.

Minutes of the American Philosophical Society. 1842–1846. Archives. https://diglib.amphilsoc.org/islandora/object/text:167816.

"Minutes of the Meetings of the American Philosophical Society During 1929." 1929. *Proceedings of the American Philosophical Society* 68 (1): ix–xix. https://www.jstor.org/stable/984394.

Portell, J. P. 2003. "Prior Repairs: When Should They Be preserved?" *Journal of the American Institute for Conservation* 42(2): 363–80. https://cool.culturalheritage.org/jaic/articles/jaic42-02-010.html.

"Report of the Committee on Library for 1964." 1965. *Proceedings of the American Philosophical Society* 109: 187–98. https://www.jstor.org/stable/985857.

Rugh, C. P. 1935. Record of work done for the American Philosophical Society by Carol Rugh, May 6, 1935, to December 31, 1935. Unpublished conservation notes. Archives. American Philosophical Society, Philadelphia, Pennsylvania.

Rugh, C. P. 1937. Summary of 6 months restoration work at the American Philosophical Society, November 1, 1936–April 30, 1937. Unpublished conservation records. Archives. American Philosophical Society, Philadelphia, Pennsylvania.

Shryock, R. H. 1960. "The Planning and Formal Opening of Library Hall." *Proceedings of the American Philosophical Society* 104 (4): 349–56.

Smith, C. 2016. *Yours Respectfully, William Berwick: Paper Conservation in the United States and Western Europe, 1800 to 1935*. Ann Arbor, MI: Legacy Press.

Woodward, E. 2017. "The Epidemic in the Archives: A Layman's Guide to Cellulose Acetate Lamination." *RBM: A Journal of Rare Books, Manuscripts, and Cultural Heritage* 18 (2): 108–22. https://rbm.acrl.org/index.php/rbm/article/view/16820/18410.

## FURTHER READING

Lindsey, A. 2002. "Conservation Experience in Working with Chrome Tanned Leather." *Book and Paper Group Annual* 21: 99–103. https://cool.culturalheritage.org/coolaic/sg/bpg/annual/v21/bpga21-21.pdf.

Lingelbach, W. E. 1946. "The Library of the American Philosophical Society." *William and Mary Quarterly* 3(1): 48–69. https://www.jstor.org/stable/1922895.

Veres, M. 2018. The American Philosophical Society: Celebrating 275 Years of Promoting Useful Knowledge. https://diglib.amphilsoc.org/labs/timeline-275-main/#event-the-american-philosophical-society-brh2celebrating-275-years-of-promoting-useful-knowledge-h2.

Veres, M. 2019. In the Heart of Philadelphia: The Story of Library Hall. https://diglib.amphilsoc.org/labs/Library-Hall/index.html.

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