Historic Deerfield

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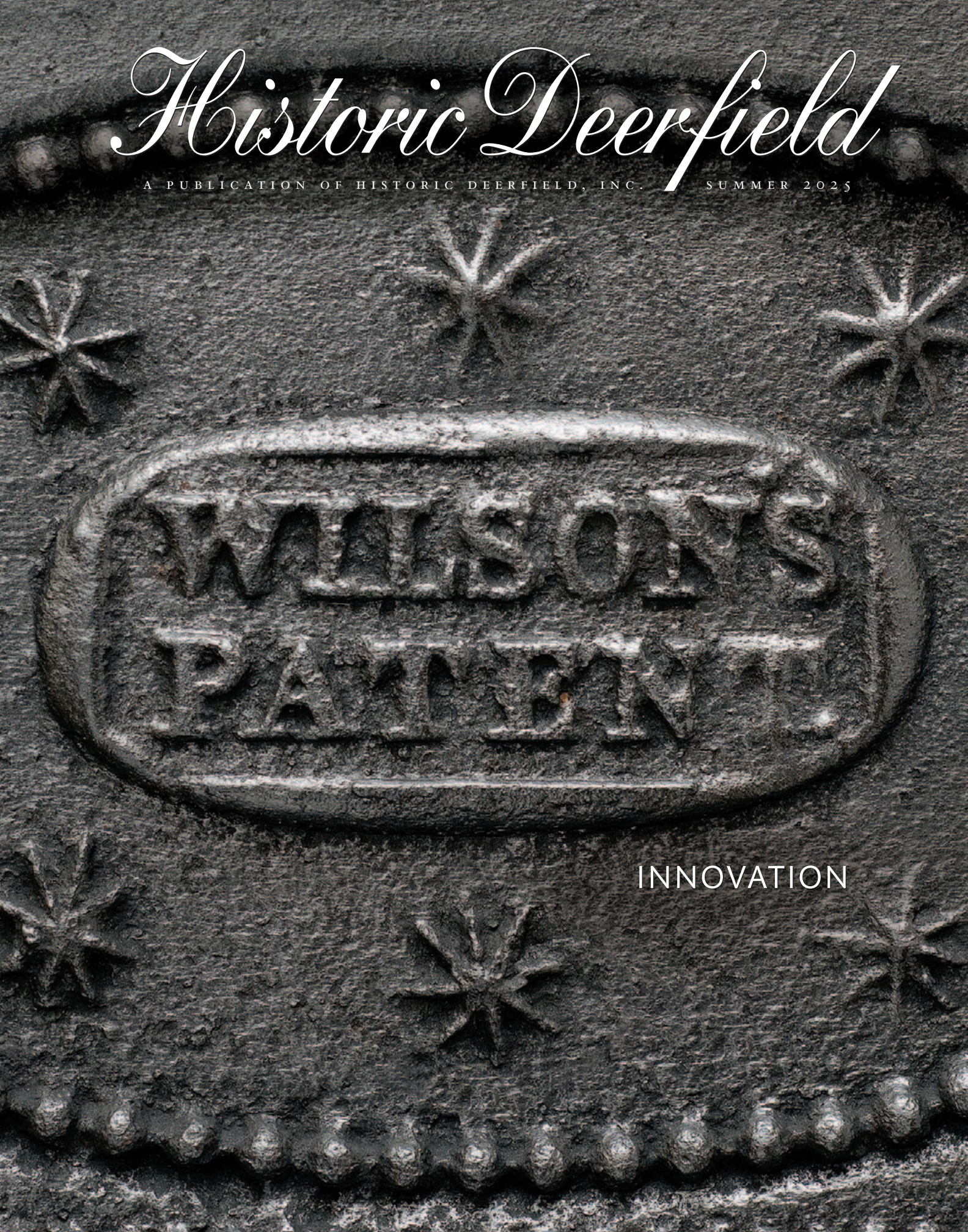

INNOVATION

From the President

ONE OF THE MORE pleasurable annual tasks at Historic Deerfield is when the Magazine Advisory Board gathers around a large table to discuss ideas for the theme of the next issue. Usually there are three or four in the running, and those topics that are not chosen are often kept on the list to consider for future issues. Sometimes a specific event is the deciding factor, such as the 350th anniversary of the establishment of the Town of Deerfield in 2023. At other times a preservation project on the Street or a series of important acquisitions provides the seed for a thematic issue.

When it came time to discuss "Innovation" as a concept, there was quite a bit of enthusiasm around the table. Colleagues pointed out that the theme of innovation encompasses both a broad history of ideas and a vast and diverse array of objects that could be featured. This observation has certainly proven true, as a glance at this issue's Table of Contents makes clear. We hope that the variety of material culture discussed in these pages will be of interest to all of our readers, no matter what their personal interests and tastes.

Architecture is one of the strengths of Historic Deerfield (we are stewards to some 55 buildings), and I am pleased that this issue includes articles on advances in building design and technology found in structures in nearby Greenfield and Leverett, as well as our own Stebbins House, located at the center of our village. This issue introduces readers to Michael Emmons, our new Director of Historic Preservation and Architectural Research, who contributes an essay on the remarkable flying staircase in the Stebbins House, currently the subject of a major restoration and reinterpretation at Historic Deerfield.

From there, we take you on a whirlwind of genius, inspiration, and invention, with fascinating looks at hoop skirts, iron stoves, brooms, globes, bandboxes, systems of measurement, silkworms, best practices in beekeeping, flying machines, murals, whips, and bentwood chairs. We are grateful to all of our authors, who include current and former staff, museum members, friends, and supporters. Special thanks to Jeanne Solensky, Historic Deerfield's Librarian, for pulling together so much interesting content and contributing no fewer than three features herself!

Innovation is a desirable quality in nearly every line of work. (As a former student journalist, I remember my editor demanding one graphic innovation in the layout of each and every page of our school newspaper.) However, in the past, innovation was perhaps less common in the work of museums. Museums were there to preserve and conserve; they were, by nature, conservative. This is no longer the case. One need only look at our current Strategic Plan *(Deerfield Unbound: Unleashing the Power of Storytelling at Historic Deerfield)* to see how much we have embraced change and innovative thinking. We do this to expand our ability to leverage the transformative power of history, make meaningful connections to the past, and deepen our understanding of the present.

–John Davis, President, Historic Deerfield

On the cover: Detail, Wilson's Patent stove, c. 1830. Historic Deerfield. Estate of Louise Billings, 2789.

Back cover: Detail, *Howe House mural with Steamship Victory* by Rufus Porter and Stephen Twombly Porter (1816–1850), Francis Howe house mural (first-floor hall), cycle signed and dated 1838. Distemper paint on plaster. Historic Deerfield, Gift of Juliene and Carl M. Lindberg and Heller Washam Antiques, 2023.8.32.1 Photo by David Bohl, courtesy Bowdoin College Museum of Art, Brunswick, ME.

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Ingenious Rufus Porter at Historic Deerfield

by Laura Fecych Sprague

Howe House mural with Steamship Victory by Rufus Porter and Stephen Twombly Porter, Francis Howe house mural (first-floor hall), cycle signed and dated 1838. Distemper paint on plaster. Historic Deerfield, Gift of Juliene and Carl M. Lindberg and Heller Washam Antiques, 2023.8.32.1. Photo by David Bohl, courtesy Bowdoin College Museum of Art, Brunswick, ME.

ONE OF ANTEBELLUM AMERICA'S most ingenious artist-inventors, Rufus Porter (1792–1884), grew up on a farm in western Maine at the foot of Pleasant Mountain—a region filled with lakes and streams with a natural beauty crowned by Mount Washington and the White Mountains 30 miles away. A polymath, Porter combined his curiosity with innate talents to pursue a multi-faceted career as a painter, inventor and designer of mechanical devices, writer and publisher, and impresario who conceived of an airship to fly gold rush prospectors from New York to California in three days. Unlike most inventors, artists, or publishers at the time, Porter's ambition was over-arching—to make art, invention, and useful knowledge widely available and thus improve the lives of ordinary Americans. This is what set him apart. Porter's *oeuvre* also expresses the cultural phenomenon known as American Fancy, where new aesthetic experiences appealed to one's emotions, stimulating the senses as well as the imagination.

Like Porter, collector extraordinaire Juliene Lindberg also found inspiration in western Maine, having summered in Porter territory (today's Bridgton) since childhood. She heard Porter's name mentioned in connection with such seemingly disparate activities as painting wall murals in New England and founding and editing *Scientific American* in New York City. An antiques dealer, Lindberg made good use of her travels and

shows to find evidence of Porter's life as an artist, inventor, and publisher. She also enlisted the expertise of art historian Deborah Child and conservator Jennifer Mass to document Porter's practice of miniature painting. When some of Porter's remarkable panoramic wall murals reappeared on the market in 2002 (having been removed from the Francis Howe house in Massachusetts in 1964), Lindberg acquired them with the laudable goal of keeping the cycle together. She and her husband, Carl M. Lindberg (1938–2009), assembled an unsurpassed collection of Porter's work, including miniatures, murals, books and periodicals, inventions, and other diverse objects. With great generosity she gave more than 150 items to Historic Deerfield in 2023; a few highlights are discussed and illustrated here. Lindberg's collection and collaborative spirit also helped make possible *Rufus Porter's Curious World: Art and Invention in America, 1815–1860* (2019). An exhibition of the same name opened that year at the Bowdoin College Museum of Art.[1]

Porter left his family farm and settled in Portland, Maine, in 1811. He found that his fluency with a paint brush could provide ready cash. While mechanical devices, such as a camera lucida or camera obscura, had long been used in portrait making, Porter's innovation was that in speeding his work and reducing time and labor, he was able to make detailed, full-color watercolor portraits affordable to the average person. His earliest documented likenesses depict people from his Maine milieu; for example, the venerable Nathaniel Porter (1744–1836), minister in Conway, New Hampshire, and a distant relation with whom Porter likely crossed paths at Fryeburg Academy where he studied and Nathaniel served as a founding trustee. In this early work Porter drew an oval in pencil on the sheet to help center the image; the brush strokes creating Nathaniel's hair, eyebrows, and the furrows in his forehead are studiously drawn. Characteristics of Porter's distinctive style that he continued to develop are evident in the sitter's direct gaze from an oval eye and a distinctive heart shape on the ear's forward edge.

Porter's proficiency advanced quickly, and his precise portraits appealed to a wide range of clients, from tradesmen to leading citizens. Fortunately, the sitters' names are known for many of the miniatures collected by Lindberg. This, combined with knowing where and when the miniatures were made, helps document Porter's artistic evolution and expanding network of patrons. Of note are the portraits of Sarah Loverin Hilliard (1780–1880) and her husband William Hilliard (1778–1836) of Cambridge, Massachusetts, painted shortly after Porter relocated there from Portland in 1819. One of early America's most successful booksellers and publishers, Hilliard conducted his literary enterprises under several partnerships between 1812 and 1832. Significantly, in 1825 Cummings, Hilliard & Co. supplied Thomas Jefferson with volumes he had selected for the University of Virginia library.[2] Porter's increased facility is evident in clothing details such as William's shirt and Sarah's ruffled collar and the white trim of her dark blue gown. Porter often tested his colors and brush's saturation on the sheets' margins; these marks survive on the Hilliard portraits. The portraits' original gilt frames also survive although unfortunately, the *églomisé* decoration has worn.

In 1821, Porter moved with his wife Eunice Twombly and

Portrait of the Reverend Nathaniel Porter (1745–1836) attributed to Rufus Porter, c. 1817. Watercolor on paper. Historic Deerfield. Gift of Juliene and Carl M. Lindberg, 2023.8.14

Portrait of Sarah Loverin Hilliard (1780–1880) attributed to Rufus Porter, c. 1820. Watercolor on paper. Historic Deerfield. Gift of Juliene and Carl M. Lindberg, 2023.8.10

Portrait of William Hilliard (1778–1836) attributed to Rufus Porter, c. 1820. Watercolor on paper. Historic Deerfield. Gift of Juliene and Carl M. Lindberg, 2023.8.11

three small children to Billerica, Massachusetts, where he lived until 1840. From this home base Porter undertook ingenious publishing and mechanical endeavors while also painting miniature portraits and wall murals. In his quest to disseminate useful knowledge, Porter created one of his earliest mechanical productions, his *Revolving Almanack,* c. 1821–1822, based on printed almanacs long available in books such as Benjamin Franklin's *Poor Richard's Almanack, The Farmers' Almanac,* or published broadsides. Notably, Porter animated it. By inserting an internal movable wheel, or revolver, he created an engaging moving picture, a significant early American *volvelle* (wheel chart). Porter signed it "Del.," as the draftsman or designer, and Abel Bowen signed the sheet "Sc.," documenting his work as the engraver. The Boston printer Henry Bowen, Abel's brother, provided the device's three sheets: the almanack, the wheel chart, and a sheet of instructions pasted on the backboard. With his delightfully clever novelty, Porter pushed the boundaries of paper engineering.

Around the same time, Porter further disseminated useful knowledge, this time with an instructional manual for the arts and sciences titled *A Select Collection of Approved, Genuine, Secret, and Modern Receipts, for the Preparation and Execution of Various Valuable and Curious Arts, As Practised by the Best Artists of the Present Age.* Short on cash, he advertised advanced subscriptions in Boston in 1820 and identified Joseph Thompson Peters of the *Middlesex Gazette* in Concord, Massachusetts, as the printer. Porter mined other printed English and American manuals for its contents as was common at the time. A slim volume of 48 pages, its design is notable for the narrow printers' borders that ornament each of the receipts or instructions. These outlines added to the typesetter's labors, and the spacing irregularities reveal the difficulties in the process. However, extra effort created fancy and visually appealing pages, unexpected in a book of this time. When the small edition sold out, Porter identified Jacob Bailey Moore in Concord, New Hampshire, to publish his next, enlarged edition in 1825. A popular title, *Curious Arts* appeared in five editions between 1825 and 1826; copies of these are also in the Lindberg collection, joining others in the Stephen Wolf collection in Historic Deerfield's library.

Revolving Almanack designed by Rufus Porter, engraved by Abel Bowen (1790–1850), c. 1821–22. Using dominical letters, a method to determine the day of the week for a particular date, the almanac served as a perpetual calendar. Hand-colored engraving, letterpress. Historic Deerfield. Gift of Juliene and Carl M. Lindberg, 2023.8.28

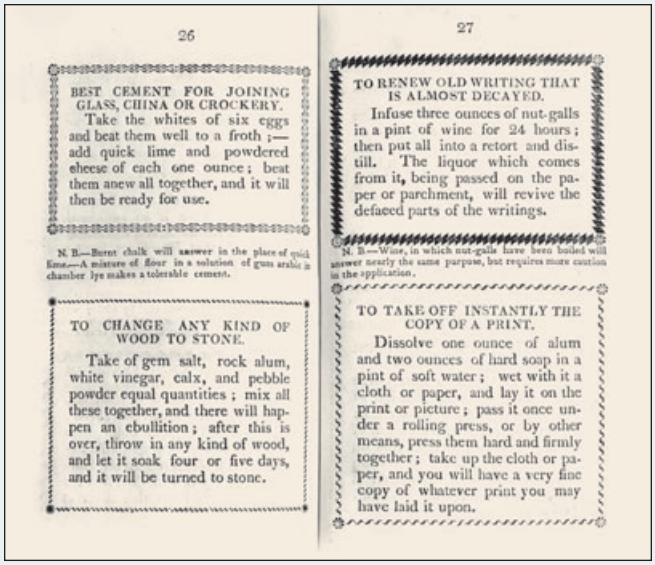
Porter's do-it-yourself manuals included instructions for all manner of decorative painting, including "landscape painting on the walls of rooms," and Porter himself added mural painting to his repertoire. This popular decoration was practiced by so many itinerant artists who either studied with Porter, such as his nephew Jonathan Poor, or followed his published instructions, that Porter has become credited with an entire school of American landscape mural painting. However, he is only known to have signed three mural cycles; all were within 30 miles of his home in Billerica. Of these, the Lindberg panoramic murals—signed and dated 1838 for the Francis Howe house in West Dedham (now Westwood), Massachusetts—are among his finest. In their original setting, the front stair hall of the two-story vernacular house, they created an immersive experience. On entering the front door, a visitor encountered a large bay with ships, islands, and a signal tower extending along one wall and, opposite, the steep

slope of the White Mountains rising along the stairs. Porter humorously dotted the mountain cliffs with dogs and foxes and precariously perched hikers on the ledge. In the second-floor hall, Porter's "American farm on a swell of land" with colorful fields presented a "gay and lively appearance."[3]

Also at this time the tireless artist submitted numerous applications to the United States Patent Office for mechanical devices, including number 912 on September 12, 1838, for a corn sheller used to strip kernels from a cob. Porter's was the first of several 19th-century designs for a corn sheller submitted to the Patent Office. The handsome gear-and-wheel mechanism in Historic Deerfield's collection, acquired by Historic Deerfield's founders in 1946, appears to have been made from Porter's design. However, no marks or inscriptions identify a maker. (Many of Porter's patent applications were, unfortunately, lost when the Patent Office burned in 1836 and 1877, and few of his patent models survive.)

For all his proficiency in the arts and sciences, the peripatetic Porter soon turned his attention to his long-held interest in writing and publishing to advance mechanical improvements and engineering in the United States. He moved in 1840 to New York City with his eldest son Stephen Twombly Porter (1816-1850), leaving this wife and now nine younger children in Billerica. Between 1841 and 1848, Porter owned and edited three different periodicals, the *New York Mechanic,* which he renamed the *American Mechanic, Scientific American,* and *Scientific Mechanic*—the last two he founded and edited. Newspaper publishing was nothing new in America, but Porter became an innovator in the field. As a historian of journalism has observed, "Porter was the first business paper editor to insist on a fresh, brief, concise style of writing."[4] His use of illustrations and interesting typography "gave his papers an appeal significant to his time." When Porter debuted *Scientific American* on August 8, 1845, his masthead included his favorite imagery: windmills, bridges, trains, steamships, and factories. In every issue, he published large illustrations of mechanical improvements, an added production expense, and freely dispensed advice on how to obtain patents on inventions. His first issue promoted aerial navigation, Porter's dream for mechanized flight.

The year 1848 marked another transition in Porter's life. His wife Eunice died, and he gave up newspaper publishing to focus his energies on developing his traveling balloon. Amid the gold rush and public clamor to reach the West Coast, Porter quickly promoted his flying machine and actively raised money through a stock company for its development. He moved to Washington, D. C., and found a production site in Maryland. However, in the end, Porter was not able to realize his quest. His lack of business acumen and management skills, bad luck,



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BEST CEMENT FOR JOINING GLASS, CHINA OR CROCKERY.

Take the whites of six eggs and beat them well to a froth;—add quick lime and powdered cheese of each one ounce; beat them anew all together, and it will then be ready for use.

N. B.—Burnt chalk will answer in the place of quick lime.—A mixture of flour in a solution of gum arabic in chamber lye makes a tolerable cement.

TO CHANGE ANY KIND OF WOOD TO STONE.

Take of gem salt, rock alum, white vinegar, calx, and pebble powder equal quantities; mix all these together, and there will happen an ebullition; after this is over, throw in any kind of wood, and let it soak four or five days, and it will be turned to stone.

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TO RENEW OLD WRITING THAT IS ALMOST DECAYED.

Infuse three ounces of nut-galls in a pint of wine for 24 hours; then put all into a retort and distill. The liquor which comes from it, being passed on the paper or parchment, will revive the defaced parts of the writings.

N. B.—Wine, in which nut-galls have been boiled will answer nearly the same purpose, but requires more caution in the application.

TO TAKE OFF INSTANTLY THE COPY OF A PRINT.

Dissolve one ounce of alum and two ounces of hard soap in a pint of soft water; wet with it a cloth or paper, and lay it on the print or picture; pass it once under a rolling press, or by other means, press them hard and firmly together; take up the cloth or paper, and you will have a very fine copy of whatever print you may have laid it upon.

A Select Collection of Approved, Genuine, Secret, and Modern Receipts, for the Preparation and Execution of Various Valuable and Curious Arts, As Practised by the Best Artists of the Present Age by Rufus Porter. Published by J.[oseph] T.[hompson] Peters, Concord, Massachusetts, [1820]. Historic Deerfield Library. Gift of Juliene and Carl M. Lindberg.

Corn Sheller by unidentified maker, probably New England, c. 1838 or later. Wood, paint, cord, base metal, iron. Historic Deerfield. Gift of Henry N. Flynt and Helen Geier Flynt, 0136

Above: *Scientific American* masthead designed by Rufus Porter, August 8, 1845. Historic Deerfield Library. Gift of Juliene and Carl M. Lindberg. Photo by David Bohl, courtesy Bowdoin College Museum of Art, Brunswick, ME.

Left: Nathaniel Currier, *The Way they Go to California*, 1849, in *Aerial Navigation: the Practicability of Traveling Pleasantly and Safely from New-York to California in Three Days* [1849] 1935 reprint edition. Historic Deerfield Library. Gift of Juliene and Carl M. Lindberg.

and the premature death of his son Stephen, who had worked with Rufus the longest and may have been a stabilizing presence, created setbacks beyond his ability to overcome. He returned to Massachusetts in 1855, living modestly in Springfield, where the census of 1850 described him as a "draftsman."

Porter did not become renowned as a titan of industry, neither a Samuel Colt with a revolver nor a Samuel F. B. Morse with a telegraph. Those inventions proved financially rewarding and created lasting name recognition. In his remarkable life and work, Porter believed he could contribute to a developing American republic and encouraged his fellow citizens to participate. With mastery and confidence, he set a high standard as a painter of miniature portraits and landscape murals. In his quest to disseminate useful knowledge, he published compelling books and newspapers, with a legacy at *Scientific American* that continues today. His mechanized traveling balloon, which came tantalizing close to realization, remains his grandest invention. In all these fields, Porter was an innovator who helped propel America toward the modern age. Historic Deerfield is fortunate to have the Lindberg collection to continue research on Rufus Porter and his significance in early America.

ENDNOTES

1. Edited by Laura Fecych Sprague and Justin Wolff, co-published by the Bowdoin College Museum of Art in association with Pennsylvania State University Press, 2019. For more information, see also https://www.bowdoin.edu/art-museum/exhibitions/2019/rufus-porter.html, and Laura Fecych Sprague, "Rufus Porter, Art, and Enterprise in Portland, Maine," in Robert Shaw, ed., *Americana Insights* (n.p.: *Americana Insights,* distributed by University of Pennsylvania Press, 2023), 49-71, also available at https://americanainsights.org/essays/rufus-porter-art-and-enterprise/

2. William Hilliard, Cummings, Hilliard & Co., Boston, letter to Thomas Jefferson, September 2, 1825. https://hdl.huntington.org/digital/collection/p16003coll21/id/6823/ Accessed January 17, 2025.

3. Rufus Porter, "Landscape Painting on Walls," *Scientific American,* March 12, 1846.

4. David Forsyth, *The Business Press in America, 1750-1850* (Philadelphia: Chilton Books, 1964), 154.

CAPTURING A FACE:

Rufus Porter's Portrait Miniatures

by Lea Stephenson

AS AN ITINERANT ARTIST traveling across New England, Rufus Porter (1792-1884) advertised his portrait skills. Among his various pursuits in science, invention, and painting, Porter completed a large number of portraiture miniatures roughly between the 1820s and 1830s, up until the advent of photography. He advertised his portrait skills in local newspapers, noting the length of his stay and when he would be painting in regional taverns.

Compared to watercolor-on-ivory portrait miniatures, Porter utilized the relatively inexpensive support of paper to complete these likenesses. Unlike larger oil-on-canvas works, portrait miniatures in early America were more readily available to clients. Miniatures had already become popular in 18th-century colonial America, especially as a small-scale format well-suited for representing a loved one. Some of Porter's miniatures in Historic Deerfield's collection showcase familial connections, such as the Greenleaf-Plummer series documenting the family across a single frame. By the 1820s, miniatures were often larger and framed for public settings.[1] During the time Porter created portraits, access and art patronage had dramatically shifted following the American Revolution. Previously in the British American colonies, those who could commission and afford a painted likeness often represented an elite, white Anglo-American clientele. As Porter created his miniatures, a greater number of Americans could commission artworks, leading to a new era of patronage in the United States.

Porter's work fit the market for rising middle-class New Englanders seeking their likenesses. Merchants, manufacturers, tavern keepers, farmers, publishers, and tradesmen formed some of his clientele.[2] Several sitters in Historic Deerfield's collection include identifiable New Englanders who belonged to this rising class of patrons accessing the arts, such as the Gages of Merri-

All portraits shown are attributed to Rufus Porter and are gifts of Juliene and Carl M. Lindberg to Historic Deerfield. Above: *Miniature Portrait of Joseph Nichols Gage*, c. 1838. Watercolor and ink with printed type. 2023.8.19. Below: *Five Miniature Portraits: Greenleaf-Plummer Family Group*, 1821. Watercolor on paper. 2023.8.17

Top left: *Miniature Portrait of Martha Swan Flagg*, c. 1830. Watercolor and ink on paper. 2023.8.4. Top right: *Miniature Portrait of John D. Flagg*, c. 1830. Watercolor and ink on paper. 2023.8.3. Above: *Miniature Portrait of Timothy Flagg*, c. 1830. Watercolor and ink on paper. 2023.8.1

mack, New Hampshire, and Lawrence, Massachusetts, and the Hilliards from Cambridge, Massachusetts. Porter's attention to minute details in his portraits incorporates distinct stylistic features and precise paint application. Sitters are often in profile, gazing forward. He captured individual eyelashes and hair strands, including detailed clothing pleats or jewelry as seen with the portraits of the Flagg children, Martha Swan Flagg and John Flagg.

This new accessibility in portraiture was largely due to Porter's artistic techniques. With his interest in science and technology, he utilized the innovative capabilities of mechanical devices to achieve meticulous renderings. Artists of the 18th and early 19th centuries had already relied upon mechanical drawing devices to accurately capture the profiles of sitters. These mechanical implements were not only used for watercolors but also cut silhouettes and profile portraits in chalk. During the early Republic era in the United States, French artist Charles Balthazar Julien Févret de Saint-Mémin (1770–1852) advertised his use of the physiognotrace, a tracing machine, in the creation of chalk profile portraits. The physiognotrace would physically trace the profile of the sitter, meticulously capturing the outline and contour of the client's face.

Porter specifically used a camera obscura to trace the profile of his sitter and rapidly produce portraits. In his publication *Curious Arts* (1820–21), he described how to use this camera obscura—the sitter's profile would be projected onto a glass surface

Above left: *Miniature Portrait of Hannah Trow Flagg*, c. 1830. Watercolor and ink on paper. 2023.8.2. Above right: *Miniature Portrait of a Man*, early 19th century. Watercolor on paper. 2023.8.20

for it to then be traced onto a piece of paper.[3] The process depended on the sitter's distance from the device. Porter built his own camera obscura and traveled around New England with the device on a handcart.[4] He used this tool to first trace the profile of his sitter, which he then painted in watercolor. Examples of these precise profiles with incorporated color are the portraits of Timothy Flagg and Hannah Trow Flagg. In these portraits, Porter outlined the face in a fine pencil and then added the washes of color to capture the skin tonalities.

Early national Americans became increasingly interested in visual perception of the outside world, aided by optical devices or illusions.[5] When artists used these mechanical drawing devices, audiences praised the accurate portraits and the precision of the likeness. Drawing upon this increasing interest in optics and appearance, Porter advertised his ability to create "correct likenesses," augmented by the use of a camera obscura.[6] By operating this device he could decrease the time required to complete portraits and thus make his watercolors affordable to a new class of patrons. Previously, only elite patrons could manage the lengthy time constraints of portrait sittings, often weeks or more. Rather, Porter likely created 20 silhouettes of profiles in a night through a profile machine, and a camera obscura could create a full view in 15 minutes, such as the *Miniature Portrait of a Man*.[7] These mechanical devices democratized the art of portraiture, enabling numerous Americans the opportunity to commission and own their likenesses.

ENDNOTES

1. Deborah M. Child, "Rufus Porter's Miniature Portraits: Practice and Patrons," in *Rufus Porter's Curious World: Art and Invention in America, 1815–1860*, edited by Laura Fecych Sprague and Justin Wolff (University Park and Brunswick: Pennsylvania State University Press and Bowdoin College Museum of Art, 2019), 57.

2. Ibid., 57.

3. Referenced in: *Rufus Porter, A Selection Collection of Approved, Genuine, Secret, and Modern Receipts, for the Preparation and Execution of Various Valuable and Curious Arts, as Practised by the Best Artists of the Present Age* (Concord, Mass.: J.T. Peters, [1820]), 41; 61.

4. Deborah M. Child, "Thank Goodness for Granny Notes: Rufus Porter and his New England Sitters," *Antiques and Fine Art*, 10, no. 4 (Summer/Autumn 2010): 190–95.

5. Wendy Bellion, *Citizen Spectator: Art, Illusion, and Visual Perception in Early National America* (Chapel Hill: Omohundro Institute of Early American History and Culture, Williamsburg, Virginia by the University of North Carolina Press, 2011), 4–5.

6. "Correct likenesses" is referenced in Rufus Porter's handbill, ca. 1818–1820. American Antiquarian Society, Worcester, Massachusetts. David Jaffee, *A New Nation of Goods: The Material Culture of Early America* (Philadelphia: University of Pennsylvania Press, 2010), 245.

7. Ibid, 246–47.

Father of American Beekeeping

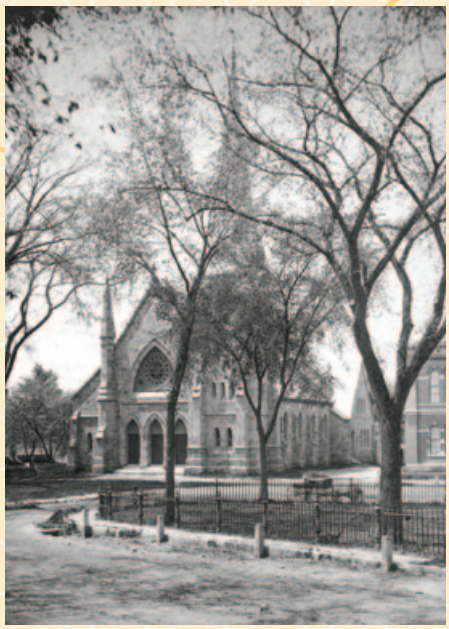
by Steven Finer

LORENZO L. LANGSTROTH'S worrisome childhood fascination with insects was the genesis for his eventual big idea about bees. Periodic, enervating bouts of mental illness did not serve to sink his enthusiasms. Still, his mother and his teacher raised obvious concerns about the boy's preoccupation with ants and flies and locusts, despite his performing well as a student.

Born in Philadelphia, in 1810—Christmas Day—Langstroth lived through the century, dying in 1895. His story is the essence of the American story: efforts of will and dedication, and eventual success, interspersed with considerable personal challenges.[1] The man is remembered today chiefly for revolutionizing the cultivation of bees as his primary achievement, but he was also a husband, father, educator, writer, and church leader.

Young Lorenzo grew up in the shadow of Independence Hall, on South Front Street, as the second of eight children. He acquitted himself proficiently in school and was, by 1827, enrolled in the freshman class at Yale. In his senior year, he fell under the sway of the Great Revival, and a focus on religious matters led him to Divinity School, from which he graduated in 1831. In a few years, he gained pastoral employment in Andover, Massachusetts, ministering to the congregation of the South Church.

This first job, although lasting only from 1836 to 1838, gave birth to a few major themes that would serve to govern his life. He was young, likely unprepared to preach to a large body of church members, and while he had been trained in pedagogical matters, different stresses emerged. He suffered from that vaguely defined, 19th-century all-purpose condition known as "nervous maladies." As a young husband, setting out to raise a family, he, like so many other Americans, faced uncertainties as a result of the economic catastrophe of 1837. The man's emotional state suffered. He tendered his resignation and was soon unemployed. Yet during that pastorate, an acquaintance had shown his friend a glass globe containing a comb of honey as well as the man's attic which had been given over to bee hives. Evidently, the experience was transformative. Suddenly, his youthful affinity for insects found direct expression in the adult's fascination with all matters pertaining to bees.



Congregational Church, court house, Commons, Greenfield, Mass. Courtesy The Miriam and Ira D. Wallach Division of Art, Prints and Photographs: Photography Collection, The New York Public Library. (1850-1930).

Before long he took up the position of Principal at Abbot Academy, in Andover. Six months later, more health issues surfaced. Again, another resignation. By the spring of 1840, he had become the Principal of the Greenfield High School for Young Ladies, located, then, in the Asher Benjamin-designed Coleman-Hollister House (now the McCarthy Funeral Home).[2] Wanting as well to follow a career in the ministry, Langstroth applied to take the pulpit in the adjacent Second Congregational Church and was duly accepted for the job by the end of 1843. However, to paraphrase Robert Browning, the man's ambitions exceeded his grasp, and he lasted at both responsibilities only to 1848, resigned from each, and moved back to Philadelphia where he opened a school for young women.

Through these various travails between 1836 and 1848, his abiding fascination with bees endured. He kept hives all the while. He read the few monographs available to him on apiculture. And he observed and studied bees and bee behaviors and their nests, seemingly always. The book learning appears to have taught him as much as it provided him with many unanswered questions. Hence, as seems true for many another genius, he reverted to experimentation, and to trial and error. In effect, he found that the conventional designs of hives were seriously lacking in reliability, protection against weather, and adequate space for the bees to carry out their own hive management.

Langstroth's great idea came from stumbling upon the significance of bee space within the frame of the hive: he intuited that this feature was critical to offering both a structurally consistent channel, or corridor, of precise measurement. This enabled the bees to move in and out of the frame and build the hive within with ease, all the while allowing the beekeeper to remove the frame to extract excess honey from the comb. He worked and re-worked his design, then applied for and received a United States patent in 1852.

The patented movable frame beehive was a success in short order, perhaps excessively so. Prior to gaining that patent he succumbed, once again, to his debilitating nervousness, which induced him to move back to Greenfield, to live with his sister Margaretta and her husband, Almon Brainard, apparently in an effort to find financial backers to help him market and sell his hive designs. But that intent soon gave way to another effort, which came out of his recent friendship with Samuel Wagner, the apiculturalist of York, Pennsylvania, who persuaded Langstroth to set about writing a serious treatise on the subject. While his wife and daughters remained in Philadelphia, he devoted himself to that book which, with the enlisted help of family members, came to completion within a few months.

Almon Brainard provided funds to have the type set and text printed in Greenfield, by C. A. Mirick, while in the spring of 1853, Hopkins, Bridgman & Company of Northampton took on its publication. *Langstroth on the Hive and the Honey-Bee* was a commercial success. By 1859, it enjoyed a third edition and in effect has never since been out of print, although revisions did appear from time to time by others.

Photo of Langstroth holding movable frame beehive, undated, F8.28.15. L. L. (Lorenzo Lorraine) Langstroth papers, 1852–1895, Mss.B.L265. American Philosophical Society, Philadelphia.


LANGSTROTH

ON THE

HIVE AND THE HONEY-BEE,

A

Bee Keeper's Manual,

BY

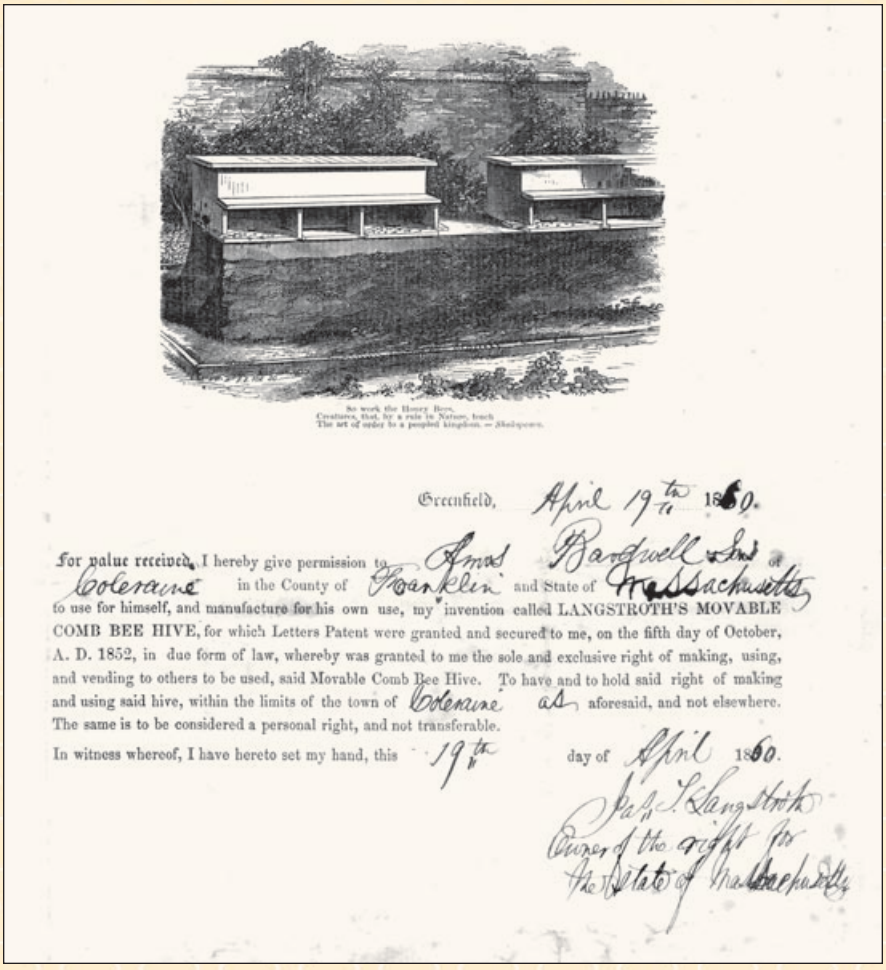
REV. L. L. LANGSTROTH.

EVERY GOOD MOTHER SHOULD BE THE

HONORED QUEEN OF A HAPPY FAMILY.

NORTHAMPTON:
HOPKINS, BRIDGMAN & COMPANY.
1853.

Title page of first edition of *Langstroth on the Hive and the Honey-Bee* (Northampton, 1853). Historic Deerfield Library.



Greenfield, April 19th 1860.

For value received, I hereby give permission to Amos Bardwell and Sons of Colerain in the County of Franklin and State of Massachusetts to use for himself, and manufacture for his own use, my invention called LANGSTROTH'S MOVABLE COMB BEE HIVE, for which Letters Patent were granted and secured to me, on the fifth day of October, A. D. 1852, in due form of law, whereby was granted to me the sole and exclusive right of making, using, and vending to others to be used, said Movable Comb Bee Hive. To have and to hold said right of making and using said hive, within the limits of the town of Colerain as aforesaid, and not elsewhere. The same is to be considered a personal right, and not transferable.

In witness whereof, I have hereto set my hand, this 19th day of April 1860.

Jas. L. Langstroth

Owner of the right for the State of Massachusetts

Above: Langstroth memorial outside the Second Congregational Church in Greenfield. Left: License granted to Amos Bardwell and Sons of Colrain to make Langstroth hives, signed by Langstroth's son James, 1860. Courtesy, Colrain Historical Society.

Nor did Langstroth abandon efforts at marketing and selling his patented beehive frame. In Greenfield, he made a business arrangement with a former parishioner, the dentist Joseph Beals, to front the costs of manufacturing, marketing, and promoting the product, a plan that involved selling territorial rights to individuals in order to enjoy all profits and privileges resulting from their own sales.

Financial profits possibly enabled Langstroth to gather his family from Philadelphia and move to Oxford, Ohio, where he lived until 1887. The decade of the 1860s witnessed happier times for the man. James, his only son, emerged as both a devoted helpmate in the beekeeping endeavors and a much respected and endearing member of the town. Langstroth maintained regular correspondences with other authorities, often enlisting his son in some of the tasks required by research and publishing. Bouts of depression arose from time to time, yet the author continued writing on the subject for bee journals and other periodicals of agricultural interest. Even so, what success he seems to have enjoyed derived from the growing, widespread adulation and appreciation other beekeepers visited upon him. The other kind of feedback—from the sale of privileges to manufacture the moveable frame—did not materialize. A savvy businessman /inventor he was not. As his friend and publisher Amos Ives Root wrote, "Langstroth never wrote about bees or did anything else because of the money that was in it...he, at times, seemed strangely oblivious of the *financial* part." Langstroth died while delivering a sermon in the Wayne Avenue United Presbyterian Church of Dayton.

Despite enduring what we would today describe as mental health challenges throughout his adult life, Langstroth's narrowly framed accomplishments were immensely important, not least, of course, to the agricultural development of the nation. His successes abide.

ENDNOTES

1. Florence Naile wrote the standard biography, *The Life of Lorenzo L. Langstroth* (Ithaca, NY: Cornell Univ. Press, 1942), republished in 1976 as *America's Master of Bee Culture. The Life of Lorenzo L. Langstroth.* Original Langstroth papers are accessioned at Cornell University and at the American Philosophical Society.

2. For information on the building, see article by Kenneth Hafertepe in this issue.

MUCH ADO ABOUT BEES

by Jeanne Solensky

THE SEMINAL WORK *Langstroth on the Hive and the Honey-Bee* is part of a collection of books, journals, pamphlets, broadsides, and ephemera on bees and beekeeping in the Historic Deerfield Library. The library acquired the collection of more than 200 items from the estate of Massachusetts beekeeper and book dealer Cheryl Needle in 2014. Predominantly American and English with a few French and German imprints dating from the 18th to the 20th century, it represents some of the most significant and popular works on the topic, as well as ephemeral items such as beekeeping equipment catalogs and receipts. Altogether, the collection encompasses much of the history that not only informed Langstroth but also demonstrates his transformative influence.

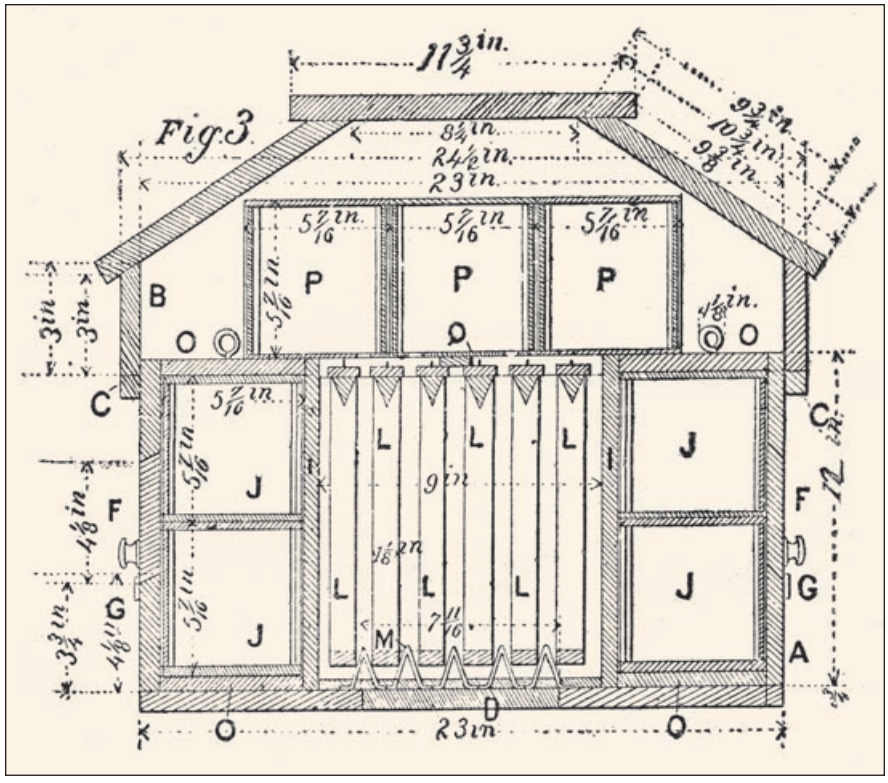
For centuries, harvesting honey was detrimental to both a hive and its bees. Beginning in the 18th century, apiarists began experimenting with wooden hive boxes with removable parts favorable to harvesting and colony health. In his 1768 *A Treatise on the Management of Bees*, Thomas Wildman offered explanations and illustrations of his wooden boxes with top bars that could be lifted individually. However, the sticky honey prevented easy removal of the sections of comb. Wildman's attempts were one of many that paved the way for Langstroth's discovery in the next century of the ideal amount of bee space (1/4 to 3/8 of an inch) between the hanging frames.

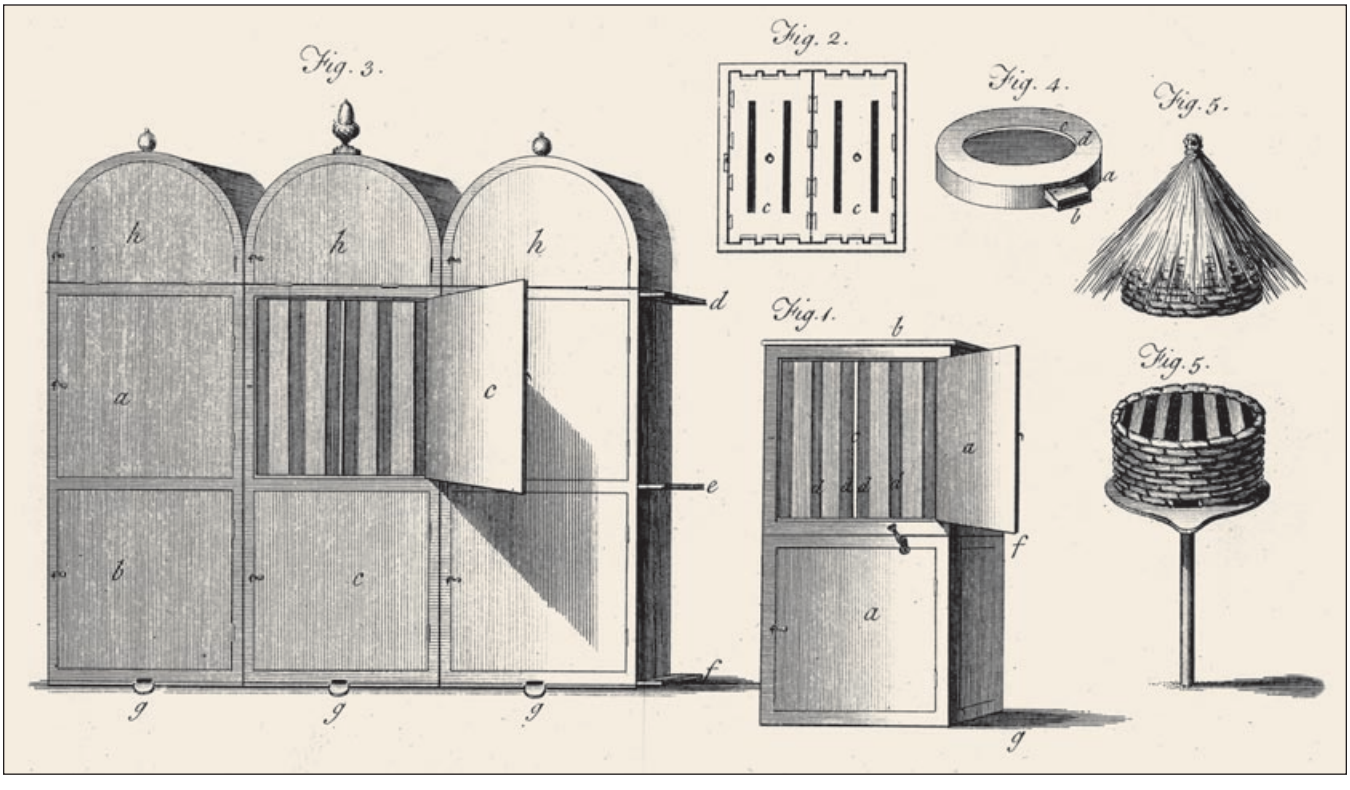
Experimentation in hive design inspired by Langstroth's breakthrough continued afterwards. Entrepreneur Lizzie Cotton's Controllable Bee Hive was a wooden box with six central moveable frames surrounded by glass boxes to store surplus honey. Benefits were twofold: extra storage reduced swarming and the loss of bees, and extra

Illustration in Maeterlinck's *The Life of the Bee* (New York, 1912). Historic Deerfield Library.

honey increased the beekeeper's profits. In the preface to the 1883 second edition of her *Bee Keeping for Profit: A New System of Bee Management*, Cotton responded to criticism of her gender by emphasizing her decades of practical experience and the efficacy of her method. Writer and beekeeper Maurice Maeterlinck's approach in his 1901 *The Life of the Bee* was more metaphysical than scientific or commercial. His intention was to highlight the "curious, profound, and intimate study" of bees and the "spirit of the hive" for their industrious and communal nature. Interwoven among descriptions of hive construction, division of labor, and the meaning of a swarm are heedings to study nature for lessons to be applied to the human race.

Whether your interests are philosophical or practical, doing research in the library's collection of bee books can expand your knowledge of this fascinating topic.





Above: Schematic of Cotton's Controllable Bee Hive from *Bee Keeping for Profit: A New System of Bee Management* (West Gorham, Maine, 1883). Historic Deerfield Library. Below: Hive designs with sliding frames and top bars by Wildman in *A Treatise on the Management of Bees* (London, 1768). Historic Deerfield Library.

"Cool, Comfortable, and Elegant": Samuel Gragg's Elastic Chair

by Daniel S. Sousa

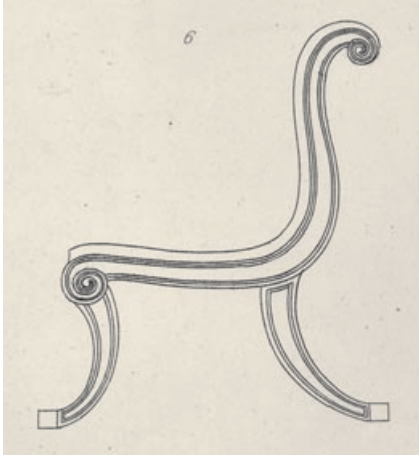
In August 1808, Samuel Gragg, a Boston chairmaker, received a patent for his innovative design of an "elastic chair," so called because of the ability of the chair's seat and back to bend and "conform exactly to his [the sitter's] body" without "ever straightening out or warping so as to disfigure the looks of the chair," Gragg praised his new chairs as,

…the most agreeable seats imaginable, & at the same time very strong & light…. They are cool, comfortable & elegant seats. Chairs & other seats made in this manner with pieces of proper wood bended so as to form the back & bottom, & the bend of some of them projecting back so as to operate as braces to the others, may be made with less expence [sic] much stronger than the common mode of making chairs.[1]

Gragg was confident that his patent chair—which he boldly had stamped "S. Gragg Boston Patent" on the underside of the seat—offered not only a new and improved design for seating furniture, but also a more economical way to construct chairs. While Gragg's chair offered buyers an innovative alternative to most standard seating furniture—in terms of its design and use of materials— his chair did not yield the financial return he had hoped for, a reminder that innovation, no matter how clever, does not always meet with immediate success.

Side chair, Samuel Gragg, Boston, Massachusetts, c. 1810. Maple, oak, paint. Historic Deerfield, Museum Collections Fund, 2015.27.

Branded marks on the underside of Gragg's 1810 chair



Gragg's chair may have been influenced by another klismos chair design illustrated in Thomas Hope's *Household Furniture and Interior Decoration,* Plate 40, no. 6 (London, 1807). Historic Deerfield Library.

Where and from whom Gragg learned the chairmaker's trade is largely unknown. Born in Peterborough, New Hampshire, in 1772, Gragg may have learned manual skills from his father who trained as a wheelwright. Twenty-one years later, Gragg moved to the Mohawk Valley where he likely worked as a wheelwright. Because of financial difficulties, he remained there for only four to five years and later moved to Boston, where he was living by 1801. Not long after moving to the city, he established a partnership with chairmaker William Hutchins. It was during this time that the idea for the "elastic chair" was born.[2]

Composed of bentwood pieces (primarily oak and beech), Gragg's elastic chair took its inspiration from the klismos chair, an ancient Greek seating form characterized by saber-shaped front and back legs. In the late-18th and early-19th centuries, neoclassicism was at its height, and many craftsmen looked to ancient design for inspiration. More specifically, Gragg's chair may have been influenced by another klismos chair design in Thomas Hope's *Household Furniture and Interior Decoration* (London, 1807). Hope's design for a klismos chair (pl. 40, no. 6), rendered in such a way as to suggest the chair's seat rail and back are continuous, is similar to one of Gragg's chair designs.[3] Comparable to the engraving in Hope's *Household Furniture,* one version of his chair was constructed so that the side seat rail and back of the chair were one continuous piece of bentwood; the separate front and back legs were socketed into the seat rail. In a second design, the front legs, side seat rail, and back formed one continuous piece, which is commonly referred to today as Gragg's "fully elastic" model.

Gragg's prevalent use of bentwood to construct a klismos form was truly innovative and set him apart from other early 19th-century American furniture makers. Rather than bend wood when constructing klismos chairs, it was far more common to cut, shape, and join several pieces of wood to give the illusion of one continuous piece.[4] Moreover Michael Podmaniczky has argued that the elastic chair also employed construction techniques more commonly found on wooden sailing vessels. Gragg's prevalent use of lap joints and slats to construct the seat and back of his chairs resembled the construction techniques found on boats' hulls rather than seating furniture. Similar to the cross section of a boat's hull, the seat and back of Gragg's chair featured compound curves (the seat and back curve in different directions) thus strengthening the overall form of the chair.[5] Gragg's unique melding of these construction techniques has led Podmaniczky to comment that he "created the elastic chair out of thin air," and that "from a technical standpoint, the elastic chair was a non sequitur."[6]

Despite the originality of the design, Gragg's chair was not perfect. First, as Podmaniczky has observed, building the chair, which involved carefully shaping each slat, was an extremely lengthy process.[7] In fact, records of Gragg's transactions reveal that he primarily sold other "fancy" furniture, which he made

and sold expeditiously through the purchasing of parts (such as seats) from other chair makers. The elastic chair appears to have represented only a small fraction of his output, perhaps beacause of the time involved in making it.[8] Moreover, despite the lengthy building process, the chair may not have been as structurally stable as described. Writing in the 1960s, Winterthur Curator Charles F. Montgomery commented that the museum's Gragg chair was "but one of a few to remain unbroken. Usually, the light, thin curved elements are unequal to the stresses demanded of them and are found to be cracked or damaged."[9]

Another factor deterring the success of the chair was its expense. Although Gragg noted in the patent schedule that "the chair is very light, durable (& not) expensive," the latter does not appear to have been entirely true. The cost of decoration contributed to the chair's cost. In 1809, Gragg hired painter John Ritto Penniman (1782-1841) to paint 12 patent chairs. Penniman charged Gragg about $55 for the work, and Gragg sold the chairs to a "Mr. Parsons" for the considerable sum of $120 ($10/chair).[10] Although he did work with other painters who charged about half of Penniman's rate, he still encountered difficulties marketing his chairs, many of which sold at prices below what Gragg had hoped.[11]

One cannot help but wonder if design aesthetics also played a role in the success of the chair. Much admired today for its modern sensibilities, was Gragg's chair viewed in a similar, positive light by his contemporaries? Even when Gragg shipped his chairs to distant markets where they sold at lower prices, that does not seem to have helped with

Above left: Side chair, Samuel Gragg, Boston, Massachusetts, 1808–1812. Birch, white oak, beech, paint. Winterthur Museum, Garden & Library, Museum Purchase, 1961.0321.

Above center: Side chair, attributed to Duncan Phyfe, New York, New York, 1810–1820. Mahogany, mahogany veneer, cherry, white oak, ash. Historic Deerfield, Gift of Mrs. J. Philip Walker, 85.014.

Above right: Side chair, Samuel Gragg, Boston, Massachusetts, 1805–1825. Pine, maple, oak, paint, gilding. Winterthur Museum, Garden & Library, Museum purchase with funds provided by the Special Fund for Collection Objects, 1993.0050.

Detail of the painted peacock feather on Gragg's 1810 chair

Above: Sofa, John Henry Belter & Co., New York, New York, 1850–1860. Rosewood, rosewood veneer, chestnut, pine. Metropolitan Museum of Art, Purchase, Friends of the American Wing Fund and Lila Acheson Wallace Gift, 1999, 1999.396.

Below: Dining chair, Charles and Ray Eames, 1946–1949. Rosewood, rubber, steel. Los Angeles County Museum of Art, Decorative Arts and Design Council Fund, M.2008.290.3. Digital image © 2024 Museum Associates/ LACMA. Licensed by Art Resource, NY.

overall sales. Gragg's patent chair was considerably different from other seating furniture available during the period, which may not have been agreeable to those with more conservative tastes. Emphasizing the novelty of Gragg's chairs, some authors have commented on how they were greatly ahead of their time, predating the craze for bentwood furniture that arose later in the 19th century with furniture makers John Henry Belter (1804–1863) and Michael Thonet (1796–1871).[12] Indeed, some historians have suggested that Gragg's chair served as the forerunner of the plastic and bent laminated wood furniture made by 20th-century furniture designers such as Charles (1907–1978) and Ray Eames (1913–1988).[13]

By 1810, with no signs of serious success in sight, Gragg sold part of his patent rights for his elastic chair. Nevertheless, he continued in the chairmaking business, successfully making and retailing standard Windsor seating furniture until perhaps 1835.[14] While Gragg's patent chair may have provided a more "cool, comfortable, and elegant" seating alternative, it fell short of his promise that it would be cheaper to construct and affordable for buyers. Gragg's inability to live up to these claims undoubtedly prevented his truly innovative chair design from attaining financial success. However, his work proved to be fruitful in other ways. Gragg's efforts to design and build the elastic chair stretched the use of wood to limits that his American colleagues in the chairmaking business had not yet fully conceived of or put into practice. His experimentation with wood and new construction methods ultimately allowed his name and his elastic chair to become synonymous with innovation in the canon of American furniture history.

ENDNOTES

1. All quotes from Gragg's 1808 patent schedule are taken from a transcription of the document available in "The Incredible Elastic Chairs of Samuel Gragg," online exhibition, Chipstone Foundation, https://chipstone.org/exhibition-frame. php/24/ The-Incredible-Elastic-Chairs-of-Samuel-Gragg/ (accessed November 12, 2024)
2. Patricia E. Kane, "Samuel Gragg: His Bentwood Fancy Chairs," *Yale University Art Gallery Bulletin* 33, no. 2 (Autumn 1971): 26–37; Michael S. Podmaniczky, "Samuel Gragg and the Elastic Chair," in *Boston Furniture, 1700–1900,* ed. Brock Jobe and Gerald W.R. Ward (Boston: Colonial Society of Massachusetts, 2016), 195-99.
3. Kane, "Samuel Gragg," 34-35; Podmaniczky, "Samuel Gragg," 197-98.
4. Podmaniczky, "Samuel Gragg," 197–98.
5. Ibid., 199–200; "The Incredible Elastic Chairs of Samuel Gragg," online exhibition, Chipstone Foundation.
6. Podmaniczky, "Samuel Gragg," 195.
7. Ibid., 200.
8. Ibid., 202–3.
9. Charles F. Montgomery, *American Furniture: The Federal Period* (New York: The Viking Press, 1966), 469, no. 491.
10. Podmaniczky, "Samuel Gragg," 203.
11. Ibid., 203–6.
12. Ibid., 195; Kane, "Samuel Gragg," 37.
13. Myrna Kaye, *There's a Bed in the Piano: The Inside Story of the American Home* (Boston: Little, Brown and Co., 1998), 77–85.
14. Kane, "Samuel Gragg," 36; Podmaniczky, "Samuel Gragg," 206.

Becoming Asher Benjamin

THE INNOVATIVE CAREER OF AN AMERICAN ARCHITECT

by Kenneth Hafertepe

IN THE UNITED STATES of the 1790s, innovation was in the air. Most notably a new constitution was ratified in 1789, and George Washington was elected as the first president. New businesses such as banks and insurance companies began their ascent to prominence, and the Industrial Revolution, already proceeding at full force in Britain, began to take shape in New England as well. Colleges began to re-build their campuses, and new colleges and schools were founded. Side by side with innovation strode geographical expansion, which in turn fueled a dramatic speculation in land. All of these developments factored into architectural innovations, as newly minted Americans asked how should our buildings and town and cities look in this new world? Answers to these questions were offered by urbane "gentleman architects" such as Charles Bulfinch (1763–1844) of Boston, but also by myriad local carpenters and joiners. And mediating between these two groups was Asher Benjamin (1773–1845), who provided novel concepts of planning and style that were relevant for anyone intending to undertake a building project.

Asher Benjamin was one of those local carpenters himself—a native of the rural town of Hartland, Connecticut. How did he attain the knowledge to promote a new way of building? Was it through books, actual buildings, or youthful experience on job sites? And what in fact were the innovative features that Benjamin provided to his clients? Benjamin was also among the earliest New England architect/builders to use drawings to communicate with his clients and his carpenters; but how did he learn to draw? And finally, as an audacious innovator in publishing the first original book on architecture in America, how did Benjamin manage to do this? He certainly did not engrave any of the illustrations for any of his books, whether published in Greenfield or Boston. How was he able to make that happen?

Portrait of Asher Benjamin by Chester Harding, c. 1830. Oil on canvas. Historic Deerfield. Mr. and Mrs. Hugh B. Vanderbilt Fund for Curatorial Acquisitions, 81.002.

Little is known of Asher Benjamin's youth in Hartland, Connecticut, about a dozen miles west of Suffield, and of his professional formation even less. His first documented work was as a joiner on the 1794–95 addition to the Oliver Phelps house in Suffield. Phelps is usually characterized as a land speculator, which he certainly was, but he also founded and served as director of the Hartford National Bank, one of those new financial institutions that arose in the 1790s. Although Benjamin's later fame has exaggerated his role on the Phelps house, the project was critical in his professional development. The fact that he was paid

Above and right: Doorway of Phelps-Hatheway House, Suffield, CT, and detail of Ionic column carved by Asher Benjamin. Photographs by Kenneth Hafertepe.

Below: Sitting room of the Phelps-Hatheway House showing the Réveil-Ion wallpaper and composition ornament. Photograph by Carl Vernlund, Image courtesy of Connecticut Landmarks.

specifically to carve the Ionic capitals on the frontispiece (that is, entrance) of the new wing shows that he had attained substantial skill by the age of 21. But it is unclear if he acquired his skill at carving at home in Hartland or in an internship in the Connecticut River Valley. The discrete payment for the Ionic capitals may acknowledge the conclusion of an apprenticeship with Thomas Hayden. Indeed, if his apprenticeship stretched the traditional seven years, he may have been working with Hayden since 1787.[1]

Lieutenant Thomas Hayden, a native of Windsor, was some 18 years older than Benjamin and a veteran of the Revolutionary War. His projects included the south wing added to the home of United States Senator Oliver Ellsworth and the three-story home of wealthy merchant John Watson. The latter would have been of particular interest to the young Benjamin, as it had a frontispiece inspired by an engraved plate in William Pain's *The Practical House Carpenter* (London, 1788). The example in Pain had only a door with a pediment above it, but no side windows; however, Hayden could find in Pain's plate 137 an altarpiece, the wings of which showed the extension of a central entablature above narrower side panels. This was the prototype for the very similar frontispiece at the Oliver Phelps house. The only significant change from the illustration was the inclusion of a pulvinated frieze, a pillow-shaped molding in the middle of the entablature. This could be found locally on many frontispieces with broken-scroll pediments, but also on many Italian Renaissance buildings and even the Pantheon in Rome.[2]

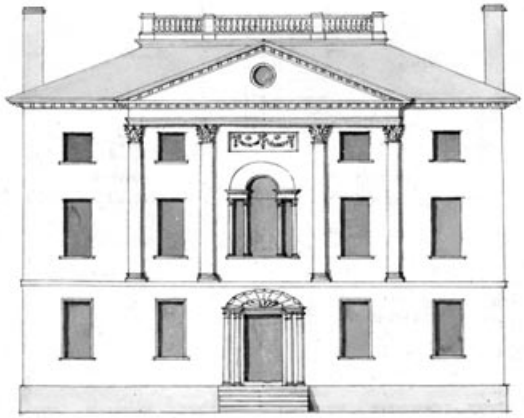
While Benjamin was in Suffield he was probably exposed to French neoclassical wallpaper and to composition ornament. The former was imported from the factory of Jean-Baptiste Réveillon, which had been taken over by Jacquemart & Bernard in 1791. The latter offered an alternate to ornament made of wood or plaster—the maker carved a mold and then could replicate ornamental features. Benjamin would have been aware that Thomas Hayden ordered composition ornament from George Andrews, an Irish immigrant then working in New York City, and, indeed, Hayden's son Horace, who sometimes worked with his father in the Valley and sometimes worked as a dentist in New York, delivered the compo to Conklin & Lloyd, merchants who shipped it to Suffield.

Finally, it seems highly likely that Benjamin learned the rudiments of architectural drawing from Hayden. The surviving drawings of Hayden in private hands focus on details of various projects, including work for Oliver Ellsworth, John Watson, and Oliver Phelps. Benjamin utilized his newfound skill at drawing in his earliest commissions, for Samuel Hinckley in Northampton, and William Coleman and Jonathan Leavitt in Greenfield.[3] The ability to draw allowed Benjamin to communicate more clearly with potential clients what he could do for them and allowed clients to specify what they liked or did not like in a proposal. Drawings also served as a reference point for local joiners who may not have been familiar with these novel ideas of planning and ornament. Benjamin was to advertise for "journeyman joiners" for his work in Greenfield and, presumably, for Deerfield.

At least one surviving drawing by Hayden (and a matching tea table) demonstrates that he was also a cabinetmaker. In addition to the frontispiece and interior finish work, Hayden may have produced furniture for Watson. One side chair that blends late Georgian minimalism with neoclassical ornament, used by Watson in his grand new house, is now in the collection of Historic Deerfield, on view in the Wells-Thorn house. However, the making of furniture was one aspect of Hayden's range of services that Benjamin did not choose to offer himself.

Benjamin learned from hands-on work with Hayden and from the architectural books owned by Hayden, but it seems almost certain that he was also learning by observing other buildings, both new and under construction, in Connecticut and Massachusetts. In 1795, soon after completing his work in Suffield, Benjamin worked on the new State House in Hartford designed by Bulfinch. Benjamin's work in Hartford was even more specialized than the Ionic capitals of the Phelps house, as he built a circular stair in the State House, most likely the first of its kind in Connecticut.

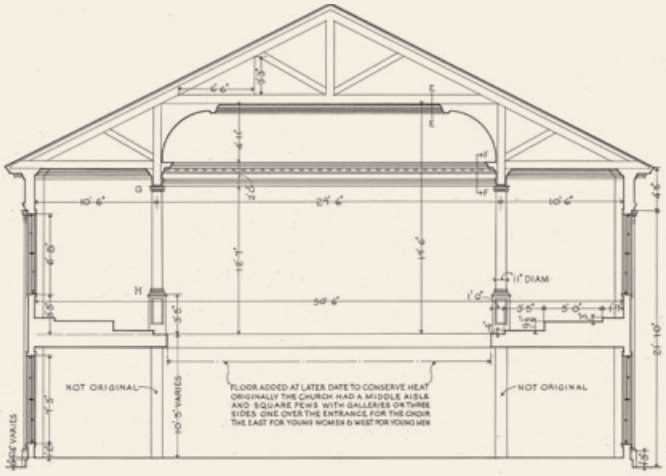
Although Benjamin claimed that he designed the stair and that it was the first of its kind in all of New England, it seems likely that he had been to Boston where a handful of circular stairs in Bulfinch-designed houses had been recently completed or were under construction. One was the home of Bulfinch himself; another, the Thomas Russell house, across the river from Boston in Charlestown—both were built in 1793. If Benjamin visited just before undertaking the Hartford circular stair, he could have observed another one in the house of Joseph Coolidge, Jr., not far from the Bulfinch house. This would be doubly important, because the



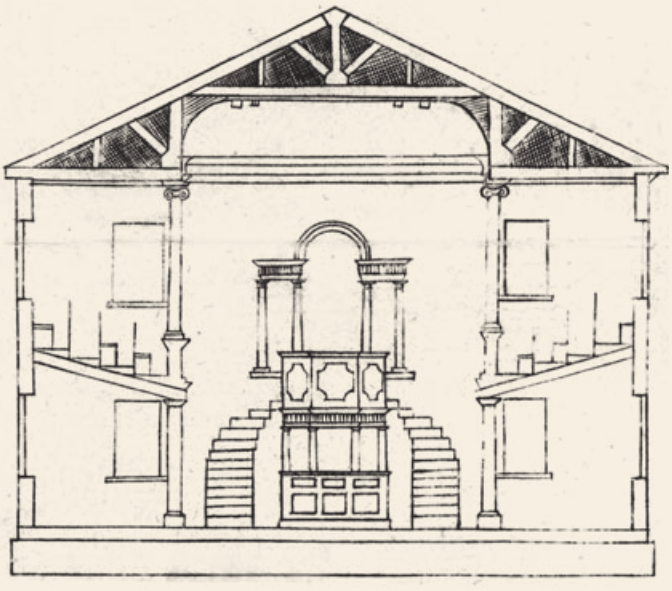
Bulfinch's drawing of the Joseph Coolidge House in Boston, c. 1793. Courtesy, New York Public Library.

Coolidge house also may have served as a prototype for Benjamin's Coleman house in Greenfield, both in its hipped roof and in its central arrangement of four Ionic pilasters with paterae, circular ornamental discs used in Roman architecture, in the frieze above.[4]

A trip to Boston would have been important for a young builder who had probably seen only a handful of brick buildings in his life. The State House in Hartford was a prominent example, but in Boston Benjamin could study any number of houses and other buildings made of brick. This would be of great importance for him, because in less than two years he would design a two-story brick building for the newly founded Deerfield Academy.



Eugene L. Morgan's sectional drawing showing roof framing of Bulfinch's First Church in Pittsfield, MA, 1790–1793. Historic American Buildings Survey, 1934. Courtesy, Library of Congress.



Above: Benjamin's sectional drawing, a detail from his design for a meetinghouse. *The Country Builder's Assistant* (Greenfield, MA, 1797). Historic Deerfield Library.

Benjamin may have traveled to Pittsfield in the Berkshires as well for an opportunity to study the First Church of Pittsfield, one of the earliest Bulfinch buildings. Scholars have noticed the similarity between the Pittsfield church and the one that Benjamin illustrated in *The Country Builder's Assistant* (Greenfield, 1797). No image of the very new building had been published, yet Benjamin's plate was extremely detailed, with front and side elevations, a floor plan, a section, and the plan and elevation of the pulpit. A comparison of Benjamin's section with a Historic American Buildings Survey drawing done in 1934, not long before the building was demolished, shows that Benjamin illustrated its framing with a high degree of accuracy. This could be attained in only one of two ways: a trip to Pittsfield, or an examination of Bulfinch's drawing, presumably kept in a desk in the Bulfinch house in Boston.

Benjamin's first known solo project was in Northampton for Samuel and Dorothy Hinckley. A native of Brookfield, Massachusetts, Hinckley served in the Revolutionary army and then attended Yale. Graduating in 1781, he studied law with the Northampton attorney Caleb Strong, the future Federalist governor of Massachusetts, and married Strong's sister, Dorothy, who went by "Dolly." (It seems certain that both Samuel and Dolly were familiar with Caleb Strong's desk and bookcase, which now sits in the North Parlor of the Wells-Thorn house in Deerfield.) After ten years of marriage Samuel and Dolly hired Benjamin to build them a new house.

The house had four rooms on each of two floors, with a central passage and a single-story kitchen ell with a gambrel roof. None of these features were cutting edge, and Benjamin apparently failed to get Samuel and Dolly to spring for a circular stair, but the hipped roof may be the first in the middle Valley. One year later, in *The Country Builder's Assistant*, Benjamin emphasized on the title page that he would provide "the best method of finding the length and backing of Hip Rafters." Benjamin also placed a pediment over the central three bays, which projected forward slightly. This arrangement did not appear in either of the houses illustrated in his first book, but it was used in the façade of the meetinghouse, though as an eight-foot projection rather than a foot or two. (The projection on the Hinckley house was so negligible that the Sanborn Fire Insurance map of June 1884 failed to note it. Sources for this slightly projecting portico could be Charles Bulfinch's Joseph Coolidge Sr., house in Boston, or William Pain's *The Practical House Carpenter* of 1788.)

Benjamin moved north once again, settling in Greenfield, Massachusetts, by February 1797. In that year he built houses for two young Greenfield attorneys, William Coleman and Jonathan Leavitt. Coleman, like Benjamin, was poor as a boy, but he found his way to the Phillips Andover Academy, which had recently opened, and then studying law in the office of Robert Treat Paine, a signer of the Declaration of Independence and Attorney General

The circular staircase and detail of a column in the Coleman House, Greenfield, MA. Photographs by Kenneth Hafertepe.

Second floor northeast room of Coleman House, Historic American Buildings Survey, 1930s. Courtesy, Library of Congress.

Right: Leavitt House, Greenfield, MA, c. 1908–1910. Courtesy Historical Society of Greenfield.

Below: First Deerfield Academy building (now Memorial Hall Museum). Original east door, converted into a window, and an original window opening. Note that the door originally had projections of four bricks alternating with four flush brick all around the opening. Photograph by Kenneth Hafertepe.

of Massachusetts. Coleman represented Hampshire County in the Massachusetts House in 1795 and 1796 and was certainly aware of the numerous houses by Charles Bulfinch either recently built or under construction.

Coleman bought a large lot at the center of town in May 1796, which also included the house of the Congregationalist minister Roger Newton. For Coleman, Benjamin devised a hipped-roof house with four Ionic pilasters, echoing their use by Charles Bulfinch on the Joseph Coolidge, Jr. house and Boston's Tontine Crescent rowhouses. Perhaps more importantly he succeeded in selling Coleman on a circular staircase. The central passage ran from front to back, and Benjamin created space for the stair by pushing the northwest room to the north. The sweeping stair rose behind a pair of Ionic columns which supported the second floor. The only drawing to survive shows a detail of the upper mantel in the second-floor northeast room. This room, the most elaborate in the house, was the first second-story drawing room in the middle Valley. In this Benjamin and Coleman were following the precedent of Harry and Sally Otis in the first of three houses that Charles Bulfinch designed for them. Presumably Benjamin was able to get Coleman's house framed, roofed, and enclosed in 1796, and he completed the interior in 1797.

Just a few blocks away was Benjamin's other Greenfield project, the Jonathan and Emilia Leavitt house. Born upriver in Walpole, New Hampshire, Jonathan was the son of Jonathan Leavitt, minister and native of Suffield, Connecticut; his mother, Sarah Hooker Leavitt, had deep roots in Farmington in northwest Hartford County and could trace her ancestry back to the Reverend Thomas Hooker, founder of Hartford. The younger Jonathan married Emilia Stiles, daughter of Ezra Stiles, minister and president of Yale, in 1796. Leavitt worked with state representative Benjamin Coleman in planning a bridge over the Connecticut River, so they knew each other fairly well.

The Leavitt house was quite unusual in that it had a five-part plan, with a central hipped-roof block and wings connected by hyphens, lower units bridging two larger elements of a building. The surviving Benjamin drawing presented the east wing and its hyphen, allowing Jonathan and Emilia to envision the delicate neo-classical pilasters that would frame the door. The main block had a central passage and four rooms heated by a pair of chimneys; it is unclear how Benjamin provided access to the hyphens and wings. The house did not inspire imitations.

When Greenfield properties were evaluated in anticipation of a Direct Tax in 1798, only seven private residences were valued at $1000 or more. At the top was the former Coleman property, which included the Newton and Coleman houses, at $2500; the Leavitt house was valued at $1200. Also in this elite group were the merchant Jerome Ripley, whose tall case clock by Daniel Clay now stands in the dining room of Historic Deerfield's Hinsdale and Anna Williams house, and Thomas Dickman, publisher of the *Greenfield Gazette* and Benjamin's *The Country Builder's Assistant*. Notably, the value of the Coleman house was a little more than double that of the Leavitt house.

Like Oliver Phelps in Suffield, Coleman had invested in western lands owned by the State of Georgia, comprising much of what is now Alabama and Mississippi. The Yazoo land scheme was the pet project of leading Federalists, but in 1796 Democratic Republicans passed the Rescinding Act throwing the entire scheme into chaos. As a good Federalist, Coleman had invested heavily and then lost heavily. On June 28, 1797, he sold his Greenfield property to Stephen Row Bradley, one of the first two Senators from Vermont, and a prominent Democratic Republican. Seeking a fresh start, Coleman moved to New York City, his wife's former home, where he practiced law and became the founding editor of the *Evening Post*, working closely with Alexander Hamilton.

In the winter of 1796-97, between the two building campaigns for the Coleman house, Benjamin was working on his drawings for his first book. Given that the book was published in August 1797, he had to have the drawings in the hands of the engraver and then the printer by the time the building season got under way in late spring. The book would feature novel designs inspired by British pattern books but scaled to be affordable in rural New England. He would draw extensively from William Pain and from his couple of years of experience and could have presumably made the drawings for the engraver to use.

There is little likelihood that Benjamin did the engravings; rather, he seemingly turned to John Russell of Greenfield. Russell was a descendant of Ensign John Sheldon, who survived the raid of 1704. As a gold and silversmith and a clock maker, Russell was certainly familiar with engraving words and images on metal. Advertisements for *The Country Builder's Assistant* stated its availability at the shop of John Russell and David Ripley in Greenfield, as well as the local bookstore. Additionally, John Russell's older brother, joiner William Russell, would work with Benjamin on the Deerfield Academy building—he was credited for work in April 1798 and again in June and September of 1801, after the building had been in use for nearly two years and after Benjamin had moved on, all suggestive of Russell's involvement with the book.

A final Benjamin project in the Valley was the two-story brick building for Deerfield Academy.[5] Benjamin and Calvin Hale seem to have undertaken the project, but their work force included joiner William Russell and master brick mason Barnabas Bates. Perhaps William Russell answered the call when Benjamin advertised in the *Greenfield Gazette* for seven or eight journeymen joiners for the summer of 1797; he certainly could have lodged with his brother, John Russell, in Greenfield. By the time he built the Deerfield Academy in 1798, Benjamin was an old hand at hipped roofs, having built them for the Hinckley, Coleman, and Leavitt houses. The rest of the building was remarkably austere; it seems that the principal ornamental statement was the pair of rusticated doors, which may seem unrelated to Benjamin's stylistic precepts but which he could find in several plates in Pain's *The Practical House Carpenter.* In both of the earliest newspaper notices the Academy

Asa Stebbins house, the first brick residence in Deerfield.

Plaster ornament
in the south parlor of the Stebbins House. Photograph by Kenneth Hafertepe.

trustees emphasized the "convenience" of the building rather than its elegance or even its commodiousness. They wished for a building on the plain side, which Benjamin delivered.

An echo of Benjamin's aesthetic was built after he decamped for Windsor, Vermont: the Asa Stebbins house. Calvin Hale has been mentioned as a possible builder of the house, but William Russell is at least as likely if not more so, given his residence in Deerfield. Moreover, the construction of a brick house required another type of specialist, whether that was Barnabas Bates, fresh from the Deerfield Academy job, or another mason whose stay was equally brief. The oldest part of the Stebbins house was one-story, brick, with a gambrel roof; the front rooms were added later, and originally had a hipped roof. Like the Academy, the building was focused more on convenience than elegance, but Asa Stebbins did approve neoclassical ornaments for his best parlor, the south front room, at the cornice and ceiling. At the cornice level the festoons of bell flowers descend from ribbons, and above each swoop is a delicate patera.

Those ornaments appear to be plaster rather than the more recently trendy composition ornament; if the latter was available, Stebbins opted for the more traditional choice, perhaps seeing it as being sufficiently stylish. Benjamin was to become much more familiar with composition ornament when he moved to Boston. Daniel Raynerd, his partner in his next publishing project and a fellow admirer of Charles Bulfinch, identified himself on the title page of *The American Builder's Companion* (Boston, 1806) as "architect and stucco worker." Raynerd had worked with Bulfinch on several projects, including the United States Bank in Boston, which he and Benjamin declared to be "very just in its proportions" and "entitled to the name of the neatest public building in the state."[6] The floor plan and section of the building made plain that it had a hipped roof and a circular staircase, and on the façade an eagle, capitals, and other ornaments made from "artificial stone."

Asher Benjamin's journey from Hartland to Suffield and then to Northampton, Greenfield, Deerfield, and ultimately Boston, took him from a remote rural area to an urban center, a true hub. His work for his clients in the Connecticut River Valley and in his two earliest books promised something new under the sun. The title page of *The Country Builder's Assistant* claimed that inside were "new and useful designs," while the sub-title of *The American Builder's Companion* promised "a new system of architecture," albeit one that was "particularly adapted to the present style of building in the United States of America." Such features as hipped roofs and circular stairs would eventually lose their novelty, but Benjamin had found a way to introduce to the Valley a new fashion suitable to a new republic.

ENDNOTES

1. Key works on Benjamin are Jack Quinan, "Asher Benjamin and American Architecture," *Journal of the Society of Architectural Historians,* vol. 38, no. 3 (October 1979): 244–62; William N. Hosley, Jr., "Architecture," in *The Great River: Art & Society of the Connecticut Valley, 1635–1820,* eds. Gerald W. R. Ward and William N. Hosley, Jr. (Hartford: Wadsworth Atheneum, 1985), 63–134; Kenneth Hafertepe, "The Country Builder's Assistant: Text and Context," in *American Architects and Their Books to 1848,* Kenneth Hafertepe and James F. O'Gorman, eds., (Amherst: Univ. of Massachusetts Press, 2001), 129–48.

2. The key source on Hayden and the Phelps house is Hosley, "Architecture," in *The Great River,* pp. 111–13, 115–18; the discussion of Conklin and Lloyd is on p. 118, note 11. For a detailed discussion of composition ornament by George Andrews, see Margaret A. Oppenheimer, "From the Collection: George Andrews' Composition Ornament, 1795-1816: Molding American Taste, in *Winterthur Portfolio,* vol. 54, no. 1 (Spring 2020): 3-64, particularly 23–24, 54–55, and 59–60.

3. Kenneth Hafertepe, "Asher Benjamin Begins: The Samuel and Dorothy Hinckley House, in *Old-Time New England,* vol. 77, no. 266 (Spring/ Summer 1999): 5–22.

4. On the Coleman house, see Hosley, "Architecture," in *The Great River,* 118–21; J. Ritchie Garrison, *Landscape and Material Life in Franklin County, Massachusetts, 1770–1860* (Knoxville, TN: Univ. of Tennessee Press, 1991), 193–200; and Hafertepe, "The Country Builder's Assistant," *American Architects and Their Books,* 137–41.

5. On Deerfield Academy, especially useful is Susan McGowan and Amelia F. Miller, *Family & Landscape: Deerfield Homelots from 1671* (Deerfield, MA: Pocumtuck Valley Memorial Association, 1996), 132–43 (Deerfield Academy) and 164–68 (Asa Stebbins house).

6. On Raynerd and Benjamin, see Jack Quinan, "Daniel Raynerd, Stucco Worker," in *Old-Time New England,* vol. 65, nos. 3–4 (Winter-Spring 1975): 1–21.

THE CIRCULAR STAIRCASE AT THE Stebbins House: A Restoration Study

by Michael Emmons

CURRENTLY AT HISTORIC DEERFIELD, we are undertaking an exciting restoration study at the Asa and Emilia Stebbins House (c. 1799). This includes a careful investigation to determine which architectural features are original and which might be a product of later alterations—some perhaps carried out by the Stebbins family during their earliest years in the house. Research into the archival documentation has so far revealed little to help answer questions about the house's construction and evolution, so we will necessarily depend on a thorough and meticulous investigation of the building's material fabric, through a process sometimes referred to as "building archaeology." The Stebbins House itself thus emerges as the most important historical document in our restoration study, an artifact that must be "read"—its stories embedded in its bricks, paint layers, nails, plaster lines, saw marks, floorboards, wear patterns, and molding profiles, all of which serve as critical evidence of the property's history. With the house closed and emptied of its collections for the restoration project, we can now take a closer look than ever before. It is an exciting process, with every new discovery hinting at the additional stories to be told. We look forward to sharing more about this investigation with visitors and supporters in the months ahead.

The circular shape of the wall surrounding the Stebbins House's "flying staircase" is more easily apparent when viewed from above. Arches and circular features were common in Federal-era architecture.

No matter our final conclusions about the exact periodization of the Stebbins House, we know that several of its early architectural features were bold and aspirational, especially considering its rural village context. The Stebbins House has long been recognized for a couple of "firsts" in Deerfield: it was the first brick house built in the area, for example, and evidence suggests it boasted the first dedicated dining room in the village. It was also novel because its architectural design signaled locally the stylistic transition occurring throughout the young United States, from Georgian architecture to a newer design mode now called Federal or Adamesque. Several design features of the house are markers of this gradual transition.

Many of the most forward-looking features at the Stebbins House reflect the increasing tendency of skilled master builders to draw upon a growing body of architectural pattern books published in England and the United States. The use of such pattern books strongly influenced architectural design across the nation, and fortunately for us, left behind valuable evidence to be studied by later historians. Comparing period pattern books with some of the unique features at the Stebbins House, such as the south parlor's elaborate ornamental plasterwork, helps us determine their possible

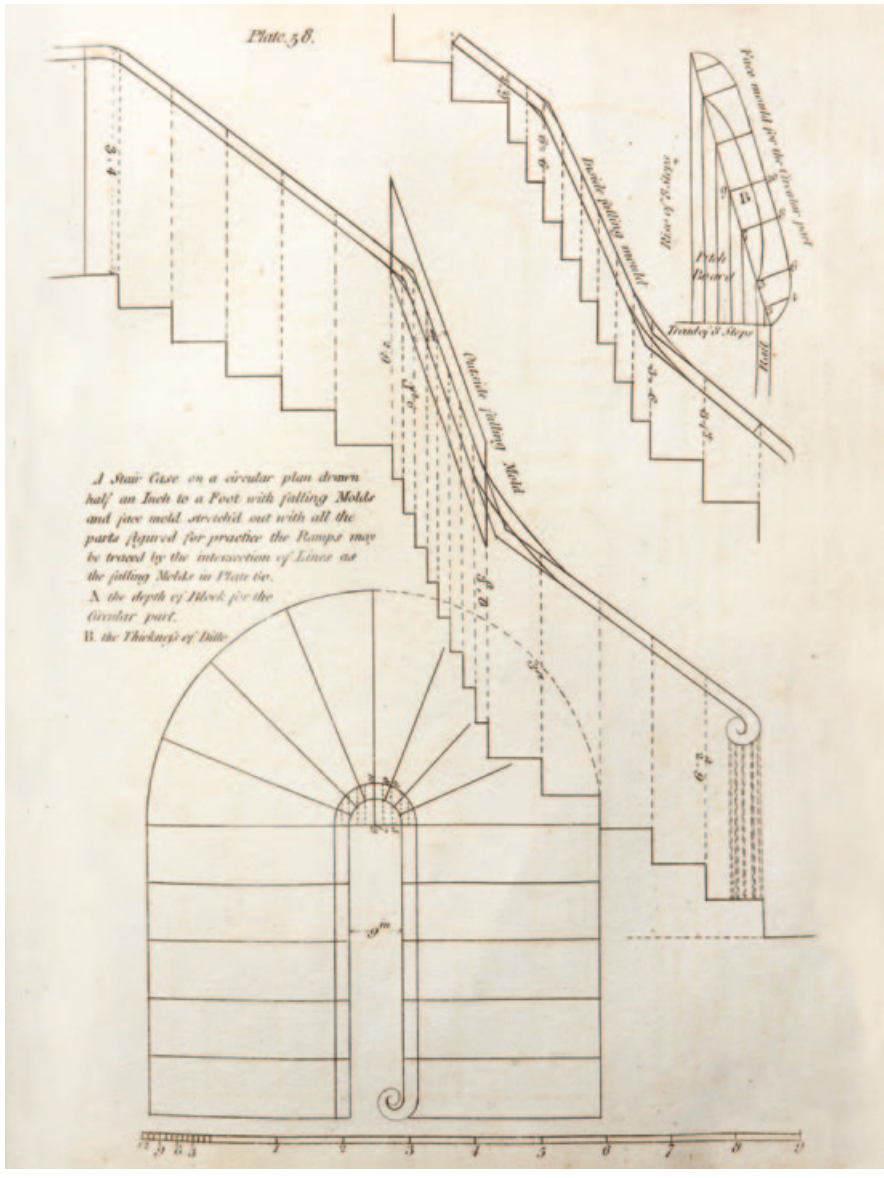
The circular "flying staircase" in the entry hallway of the Asa Stebbins House at Historic Deerfield. The wallpaper in the hallway was recently removed for the restoration work.

design origins. The fireplace in that same room features an unusual mantle with bulbous, curved legs sitting upon small spheres, possibly inspired by a couple of similar models found in architecture books of the period. That fireplace also features a unique brick firebox configuration that seems to reflect a design published just a couple years earlier in Benjamin's *The Country Builder's Assistant* (an observation made years ago by Bill Flynt, Historic Deerfield's longtime Architectural Conservator). A builder's guide may have also enabled what is arguably the most ambitious architectural feature at the Stebbins House—the circular staircase in the front hallway, a self-supporting structure sometimes called a

"flying staircase." This curving stairway is nested within a circular wall (reflecting a new Federal-era emphasis on circles and curves) and winds gracefully upwards with no visible support underneath. There are no other staircases quite like it in Deerfield.

The circular staircase at the Stebbins House is a highly complex assemblage, one that required an intricate and coordinated dance among dozens of interrelated structural and finish elements. The nature of a circular stairway, which turns laterally while also rising in elevation, made it a real challenge to design and construct. The skilled joiner who built the staircase needed to employ mathematical calculations and lots of geometrical sketches to create what is likely a one-of-a-kind architectural feature. The staircase is composed of a thick, wood-framed carriage structure, hidden from view but securely set into the thick, wood plank walls and the rear brick wall that surround it. Atop this heavy framing, stair treads, risers, balusters, stringboards, spiral-shaped moldings, a newel post, and a gradually twisting handrail all had to be shaped to fit their particular location on the stairway, with the unique contours of that location in the assemblage. At multiple points along the Stebbins circular stair, a few interruptions to the smooth "sweep" of the spiral effect—visible as sharp angles and noticeable seams in the face molding and handrail—hint at the difficulties faced by a country builder attempting an ambitious stairway design, possibly for the first time.

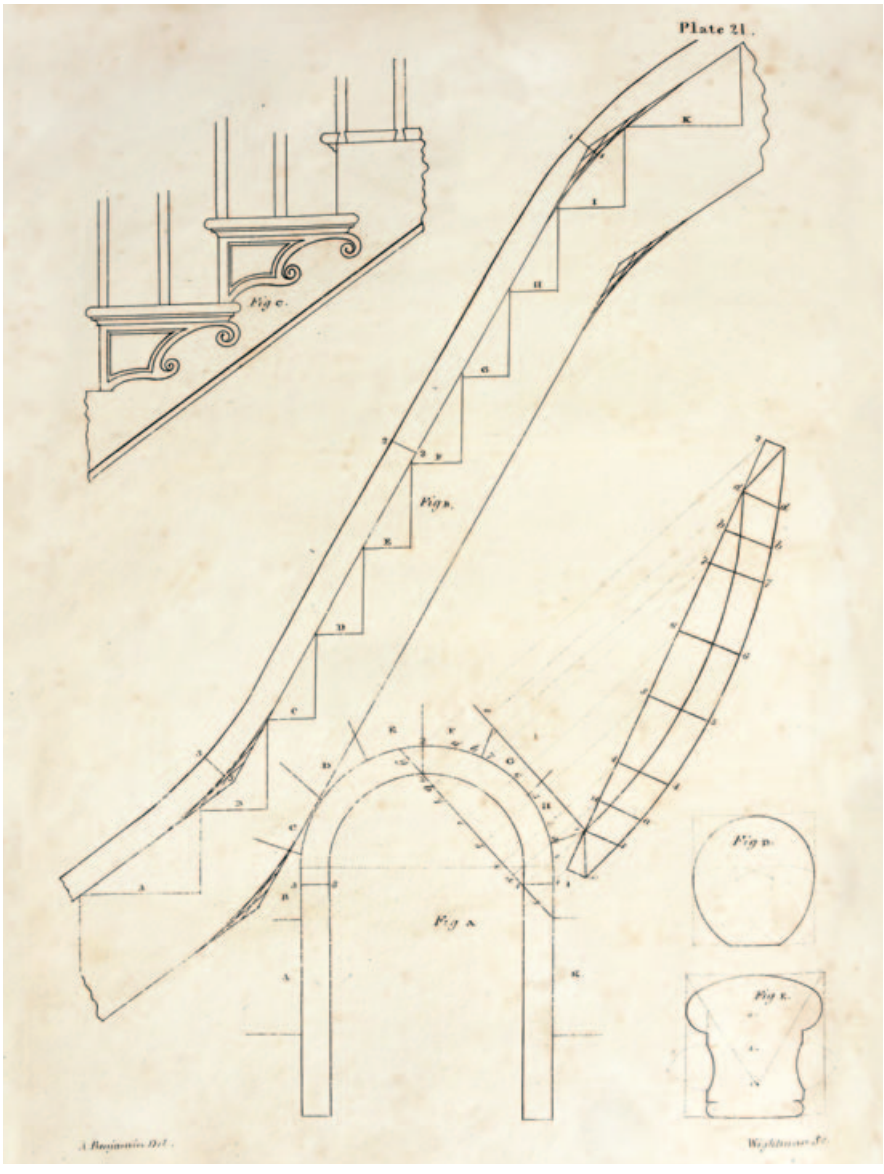
So how did the joiner at the Stebbins House work through such a challenging project? Guidance almost certainly came from a pattern book; but here in Deerfield, the design might have also been informed by direct experience with a similar staircase just a few miles away. The Coleman House in nearby



Pain's "Stair Case on a circular plan" provided a model fairly similar to the staircase built in the Stebbins House, showing the configuration and measurements for stair treads, ramps, and moldings. *The Practical House Carpenter* (London, 1792). Historic Deerfield Library.

Greenfield, with its wider, sweeping, flying staircase, was designed and built by Asher Benjamin around 1796, a few years before work began on the Stebbins House. Though there is no evidence that Asher Benjamin himself was directly involved in the Stebbins House, the joiners he employed at the Coleman House—and at the first Deerfield Academy building in 1798—may have applied Benjamin's teachings on the Stebbins staircase.

Yet the dimensions and design of the Stebbins staircase differ in significant ways from the stairs at the Coleman House, and there can be little doubt that its designers were consulting a published treatise on architectural design to work out its configuration. We are currently studying period architecture books to investigate whether a particular publication might be directly tied to the design of the Stebbins staircase, which could also help us confirm its construction



Benjamin's designs for stairs and details, similar to Pain. *The American Builder's Companion* (Boston, 1806). Historic Deerfield Library.

date. Luckily, many editions of Asher Benjamin's own publications, as well as the English books he drew upon, can be found within the impressive collection of period architectural books owned by Historic Deerfield, many of which were generously donated to the Memorial Libraries by Peter Spang, the organization's founding curator.

Asher Benjamin's first book, *The Country Builder's Assistant,* was published in Greenfield a couple of years before the Stebbins family built their house. It did not contain a full design for a circular staircase—though it did aid joiners in making "twist rails," curtail steps, and other related elements. Benjamin did not include full guidelines for creating "circular stairs" until his 1806 book, *The American Builder's Companion,* several years after the Stebbins House construction. This does not mean that the Stebbins staircase was built later than 1799. He had created the circular staircase at the Coleman House a full decade earlier and another at the state capitol building in Hartford, Connecticut, in 1795. Benjamin and his collaborator on the 1806 book, Daniel Raynerd ("architect and stucco worker") were clearly sharing designs and motifs that they had already practiced building for years in the field, noting in the book's preface that "the principal part of our designs have been executed by our own hands." Perhaps Benjamin's influence upon the Stebbins House stairway came not from direct involvement or even his own publications, but instead through his example—and also by orienting his associates towards existing books such as William Pain's *The Practical House Carpenter.* Pain's popular builders guide, which Benjamin often consulted and borrowed from, was published in many editions in London (including a 1792 version). It contained detailed illustrations of several full stairways, including a "Stair Case on a circular plan," widely distributed years before Benjamin published his own examples.

No matter where the joiner at the Stebbins House learned to design the circular stair, it obviously required significant time and deliberation to engineer such an intricate and complicated structure. The expense of the project is plainly evident in the relatively small number of circular staircases built during the Federal period. Today the Stebbins House staircase stands as a powerful testament to the aspirations of Asa Stebbins. Having survived for more than two centuries, it is also a monument to the skill and care of the craftspeople who built it. We hope our investigation of the staircase—along with dozens of other architectural features at the house—will not only help us further understand the history of the Stebbins family but also allow us to better share with Historic Deerfield's visitors the rich and complex world they experienced.

"To Enrich Themselves and Benefit Their Country":

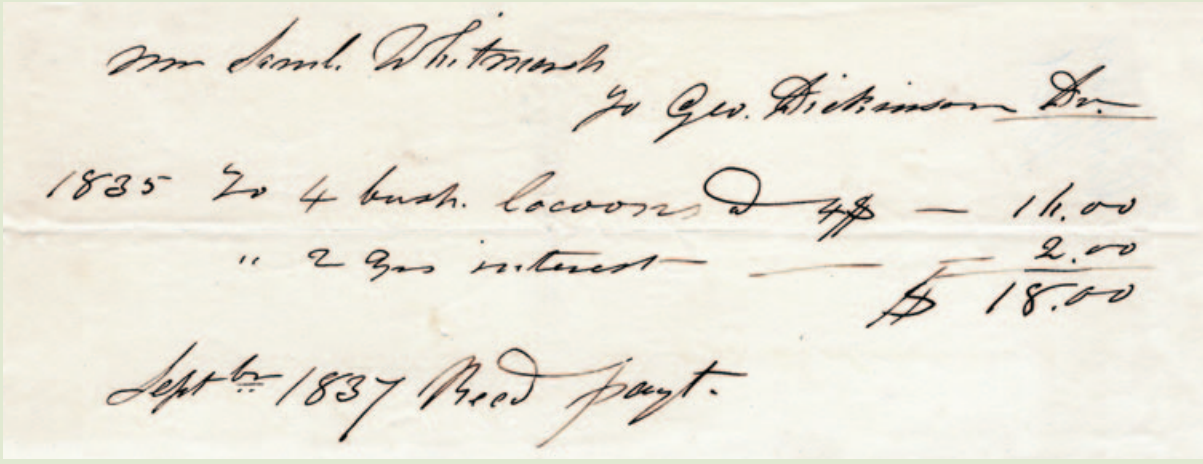
Sericulture in the Connecticut River Valley

by Jeanne Solensky

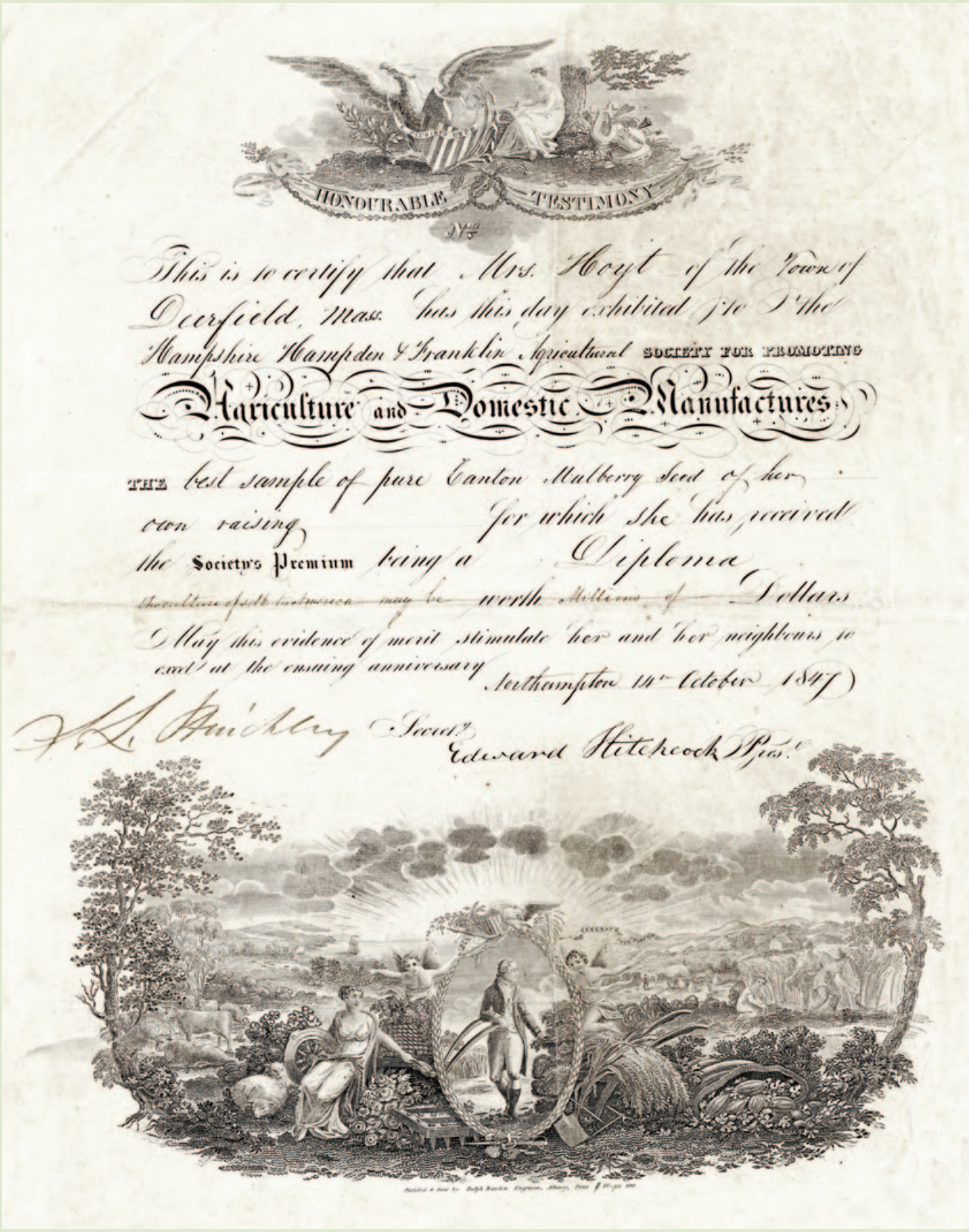
THE DREAM of establishing a profitable silk industry in America grew in the early 1800s and spread to Deerfield and neighboring towns. Domestic cultivation of silkworms and their food source, mulberry trees, was promoted as patriotic, lucrative, and a way to avoid costly importation of foreign silk. However, the practice was labor-intensive, time-consuming, and tricky, especially in New England's harsh climate. With the introduction of a new species of mulberry tree, the *Morus multicaulis,* from China in 1826, hope blossomed and even people on Deerfield's Main Street attempted silk farming. Instructional manuals and trees—either "singly or by the 100 or 1000"—could be ordered at Ansel Phelps's store in Greenfield.[1] In 1835, The Hartford County Silk Society began publishing *The Silk Culturist and Farmer's Manual,* a popular monthly publication to educate growers in all steps of production from sowing seeds to the reeling of silk to preparing it for market.

By the mid-1830s, the silk craze reached its peak. Deerfield resident George Dickinson began building a greenhouse on Lot 8 (the site of the Captain Thomas Dickinson house, now owned by Deerfield Academy) in 1835 to grow mulberry seedlings. He purchased four bushels of cocoons from silk entrepreneur and speculator Samuel Whitmarsh, whose time in Northampton was brief, albeit transformative. Whitmarsh opened that town's first silk mill on the Mill River in 1834 and was its third largest employer two years later. He published his book, *Eight Years Experience and Observation in the Culture of the Mulberry Tree, and of the Care of the Silk Worm,* in 1839 but by the end of the year went bankrupt when the mulberry tree bubble burst. Dickinson neither completed his greenhouse nor realized a profit.

Despite the market downturn in 1839, consecutive brutal winters, and a tree blight in the early 1840s, Hannah Starr Hoyt who lived on Lot 17 (site of the David Hoyt house, now owned by Deerfield Academy) persevered with her home industry. Her family also participated in the silk venture as son David Starr Hoyt recalled in 1843 assisting in the feeding of silkworms for 15 years beginning as a



Receipt for cocoons George Dickinson bought from Samuel Whitmarsh, 1835. Courtesy, Pocumtuck Valley Memorial Association Library.



Certificate awarded to Hannah Starr Hoyt for her pure Canton mulberry seed, 1847. Courtesy, Pocumtuck Valley Memorial Association Library.

young child. In 1847, the Hampshire Hampden and Franklin Agricultural Society for Promoting Agriculture and Domestic Manufactures awarded Hannah for raising the best sample of pure Canton mulberry seed. Yet challenges continued as evidenced in an 1849 letter to her son describing the loss of many trees to frost as well as her concerns about selling silkworm eggs.

Whitmarsh's sericulture experiment may have ended by 1840, but the delicate silken threads were picked up by other dreamers. Soon after he left the area, the newly formed abolitionist community, the Northampton Association of Education and Industry (NAEI), purchased Whitmarsh's estate with its acres of mulberry trees in 1842. Silk manufacturing was the community's leading industry, aided by former employees of Whitmarsh. They hoped to generate an alternative to cotton grown by enslaved labor, but the community dissolved only four years later. Samuel Hill, an NAEI leader, began producing a strong yet smooth silk thread known as machine twist, perfect for newly invented sewing machines, and with other investors incorporated the Nonotuck Silk Company in 1855. The timing was finally right, and in the 1870s the company debuted its popular Corticelli brand and became a global leader in silk thread production. Millions of visitors to Philadelphia's Centennial International Exhibition in 1876 saw a dizzying display of the company's colorful machine twist, buttonhole twist, sewing, and embroidery silks along with machinery for twisting silks and printing spools.

Success drove expansion with a growing complex on the Mill River and sales offices around the country by the end of the 1800s. While the company's future seemed bright at the turn of the 20th century, the wheel of fortune turned once again, with progress and technology then working against it. Despite the introduction of new products, changes in fashions and new fabrics like rayon caused a decrease in overall sales. The Great Depression dealt the final blow and closed the mills forever.

Advertisement showing how Corticelli silk is made, c. 1878. Courtesy, Library of Congress Prints and Photographs Division.

Detail of 1895 map of Northampton showing Nonotuck Mills. *Atlas of the City of Northampton and Town of East Hampton, Hampshire County, Massachusetts* (Philadelphia, 1895). Historic Deerfield Library.

ENDNOTE

1. "Morus Multicaulis," *Greenfield Gazette & Franklin Herald,* October 13, 1835, 3.

"THE MEASURE OF A MAN":

Genio C. Scott & James Wilson's Treatise on Cutting Garments (1841)

by Lauren Whitley

IN THE PREFACE of Genio C. Scott & James Wilson's 1841 publication, *A Treatise on Cutting Garments to Fit the Human Form: Containing Fifty Diagrams and Designs Reduced to Mathematical Principles,* the authors proclaimed their wish "to furnish an unerring system for cutting garments" for the professional tailoring trade. Written to address the author's claim of a dearth of knowledge on the subject, Scott and Wilson's manual contained a series of elaborate instructions along with diagrams that would facilitate the precise measuring and cutting of men's clothing.[1] Key to their system was the utilization of specific tools and methods that Wilson had patented years earlier. It was the repeated infringements of those copyrighted patents

by "persons of no fixed principles," that spurred Scott and Wilson to reaffirm the superiority of their system through the 1841 publication.

Scott and Wilson's system was a hybrid one, combining direct measurements with proportional scales to draft patterns. Called the Shoulder-Measure System, it relied on fixed points on the body from which distances could be calculated, illustrated in Plate 10. Scott and Wilson also claimed to have improved upon an older method known as Breast Measure, incorporating earlier methods of gauging the angles of the chest into their own system to guarantee correct results.

Measurements taken from the top of the coat to the bottom of the arm scye (armhole) and points on a line around the body parallel with the bottom of the arm scye formed an essential component. To establish these distances, one needed to use a device called the Square Rule, which Wilson had patented in 1827. Made of wood or metal and measuring two feet by one foot, it was marked out in inches on the outer edges with proportional tables, linked to fixed points on the body, placed on the inside edges. Scales, extendable strips held by springs, could be added to the square for additional measuring when required.

Drafting pattern pieces for specific garments—coats, vests, pantaloons, and capes—then required steps Scott and Wilson carefully laid out in several diagrams along with directions. To create the pattern for the man's frock coat shown in Plate 13, the length of the waist served as a starting point from which the necessary fixed points would be established using the table. Wilson's patented Square was then applied to draw lines connecting the points following a series of detailed steps. From these lines proportions could be triangulated to shape shoulders, lapels, arm scyes (front and back), and skirts.

Scott and Wilson's treatise was only one of many tailor's manuals that proliferated in the early 19th century. The flurry of new drafting techniques resulted from a confluence of influences: changing styles, new measuring instruments, and increasing economic pressure that required tailors to create more efficient, systematic methods for their own use. Traditionally, each tailor had his own highly individual way of taking direct measure of the body on a notched strip. Therefore, one tailor would not have been able to understand another's unique measure. "Taking the measure of a man" through direct measure, spatial distance, and training took years for an apprentice to master and contributed to the aura of mystery around the trade. Not only did standardized units of measurement not become available until the end of the 18th century, but illiteracy was common. When the notched inch-yardstick system finally did appear at the end of the 18th century, tailors initially rejected it, preferring to adhere to their own methods led by the powerful force of tradition.

Fashion also played a role in accelerating changes in tailoring practices. By the early 19th century, men's coats had become complicated sculptural forms created with sophisticated cutting and manipulation of wool fabrics. A man's silhouette was now reliant on a tailor to curve, pad, and steam, rather than drape wool. These closely cut new styles required skilled tailors, some of whom were finding traditional cutting methods inadequate. At the same time, a growing middle class of men desired respectable clothing, but without custom-made prices. New attempts were made to produce methods to facilitate tailoring. However, the widescale adoption of a standardized inch-yardstick measure ultimately allowed innovators to communicate their new drafting systems in terms that could finally be understood by all.

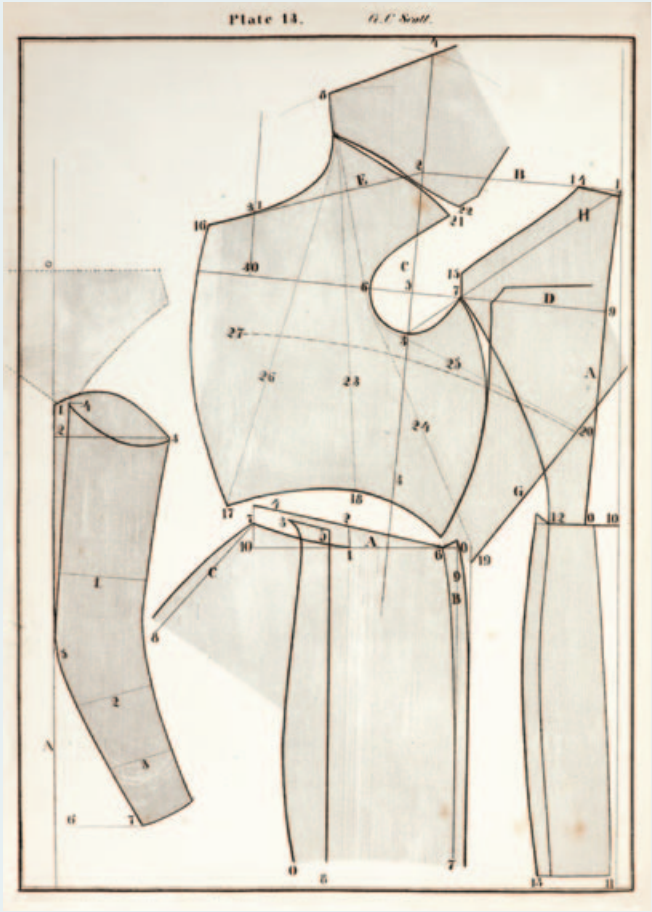
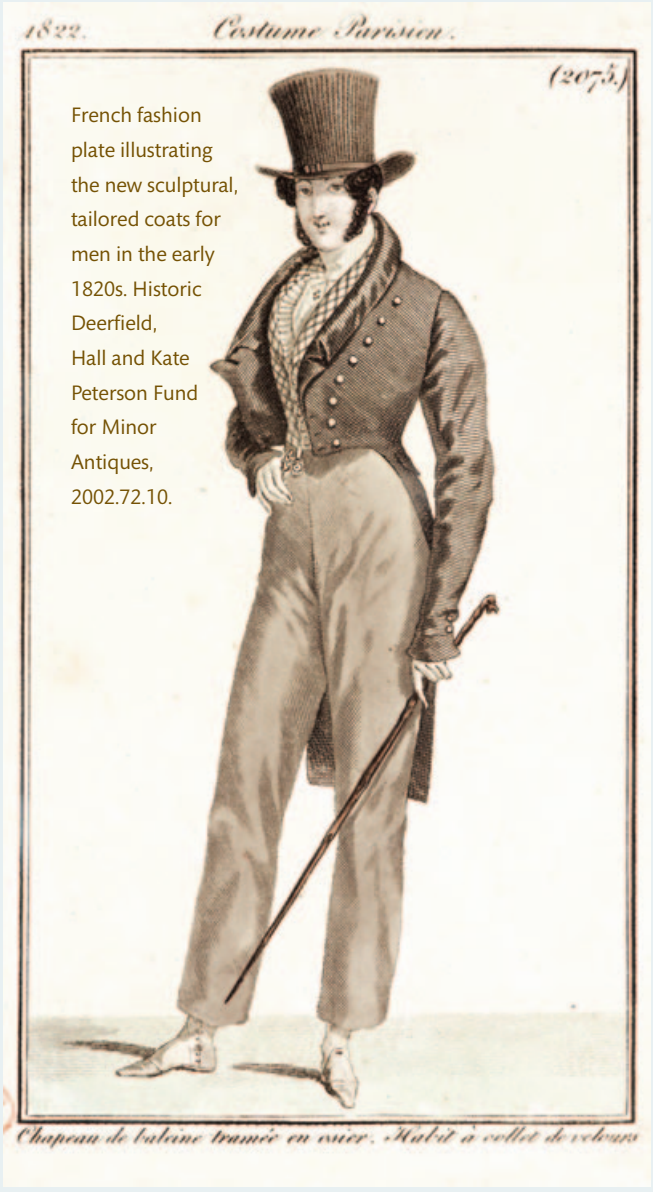


Plate 13 illustrating the various points and lines drawn to connect them to achieve correct proportions and fit through Scott and Wilson's hybrid system. Historic Deerfield, Museum Collections Fund, 2014.1.

Opposite: Plate 10 of Scott and Wilson's treatise showing the fixed points on the body for measuring. Historic Deerfield, Museum Collections Fund, 2014.1.



French fashion plate illustrating the new sculptural, tailored coats for men in the early 1820s. Historic Deerfield, Hall and Kate Peterson Fund for Minor Antiques, 2002.72.10.

The earliest drafting systems tended to illustrate the "proportional scales" system. Based upon the assumption that from a few critical measurements (usually the circumference of the chest) all other dimensions could be predicted, the proportional scales system led to a bevy of published methods that proffered either novel measuring tools, new theories on the "right proportions," or a different set of critical points on the body. Despite the proportional system's earlier association with cheap, ready-made clothing (known as "slops"), it gained momentum as a tailoring technique in the early 19th century. Some scholars have suggested that Neoclassicism and its renewed interest in geometric theories on human proportion might have played a role, as well.[2]

Since human bodies do not always express predictable shapes, the proportional system could not always provide for a good fit. To combat this, hybrid systems that added direct measurements to the proportional scales soon appeared. In the 1820s in the United States, all three systems were in play: traditional direct measure, proportional, and hybrid. It was in this market that J. G. Wilson created, and received, his first patent (4687) for his Square measuring tool. While Wilson's was one of the earliest patents related to tailoring techniques, it was not the first. Seven other tailoring systems, starting in 1790, had been filed in the U.S. Patent Office.[3]

After publishing another tailoring manual with 40 diagrams in 1833, Wilson began his collaboration with Genio C. Scott, a successful New York fashion illustrator and publisher. They published the *Tailor's Complete Guide* in 1840 and, a year later, *A Treatise on Cutting Garments to Fit the Human Form: Containing Fifty Diagrams and Designs Reduced to Mathematical Principles*.[4] They dedicated the latter to the tailoring trade with the promise of providing a reliable system. Yet like all the other tailoring manuals published in the early 19th century, it had unintended results that challenged traditional tailoring practices. Standardized drafting systems became the basis for the sizing systems of the paper pattern industry, which led to a revolution in clothes production and, ultimately, to the ready-to-wear industry. Scott and Wilson's treatise remains part of a movement to create more affordable and fashionable clothing for middle-class men that resulted in the democratization in menswear and, ironically, a smaller role for custom tailors in America.[5]

ENDNOTES

1. The term "cutting" appears frequently in Scott and Wilson's manual. "Cutting" embodied both the mental process of creating pattern pieces and the act of cutting cloth. The craftsman with the most skill at this was historically the *tailleur,* Old French for "one who cuts."

2. Claudia B. Kidwell, *Cutting a Fashionable Fit: Dressmakers' Drafting Systems in the United States* (Washington, DC: Smithsonian Institution Press, 1979), 7.

3. Earlier drafting method patents included Allen Ward (1821), Charles Kendrick (1822) , Otis Madison (1823), Ethan Campbell (1823), Stephen Severnor (1826), Grenberry Ross (1826), and N.B. Starr (1826). A fire in 1836 destroyed all the patents. J.G. Wilson's 1827 Square Rule patent was among the first to be rewritten and resubmitted in 1837.

4. Little personal information exists on James G. Wilson. Only one reference was found for a James G. Wilson in the New York census records for 1840.

5. Kidwell, *Cutting a Fashionable Fit,* 1.

"The Whip City"

by Bruce W. Cortis

WESTFIELD, MASSACHUSETTS, has been known by the well-earned nickname of "The Whip City" since the 1800s. Much has been written about Westfield's whip industry in newspaper articles, historical accounts, and unpublished papers during the last 150 years. However, as time marches on, the understanding of the impact of Westfield's whip industry to both the city and the overall industry in the United States has diminished.

It cannot be overstated that the success of Westfield's whip industry was a direct result of the constant change and introduction of innovative improvements to both its products and infrastructure. Westfield's whip industry can be divided into three distinct eras: an Early Era, 1800–1855; Middle Era, 1855–1892; and Modern Era 1893–Present.

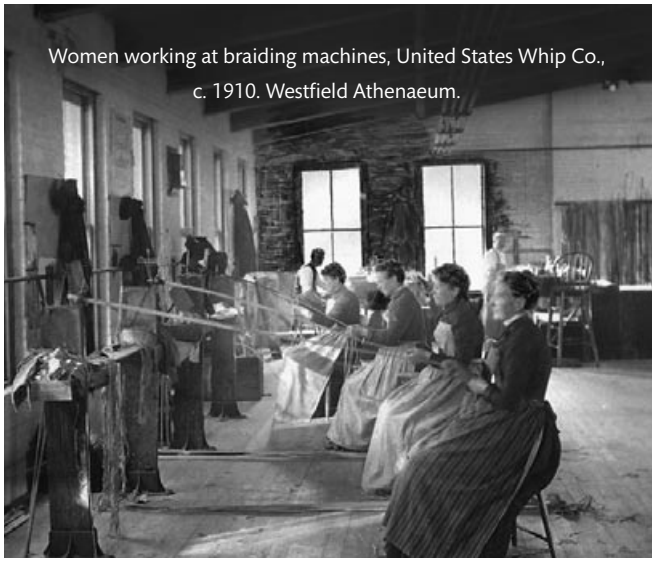
Early Era, 1800–1855

Prior to the early 1800s, whip making in Westfield resembled that of many other locales. Typically made by farmers for themselves and neighbors, the early whips were often simple, hardwood handles with an attached leather thong of whatever available hide. The earliest whip makers were located in the Little River, West Farms/Wyben, and Mundale sections of town. These makers included Titus Pease, Thomas Rose, Franklin Arthur, and Salmon and Edwin Phelps.

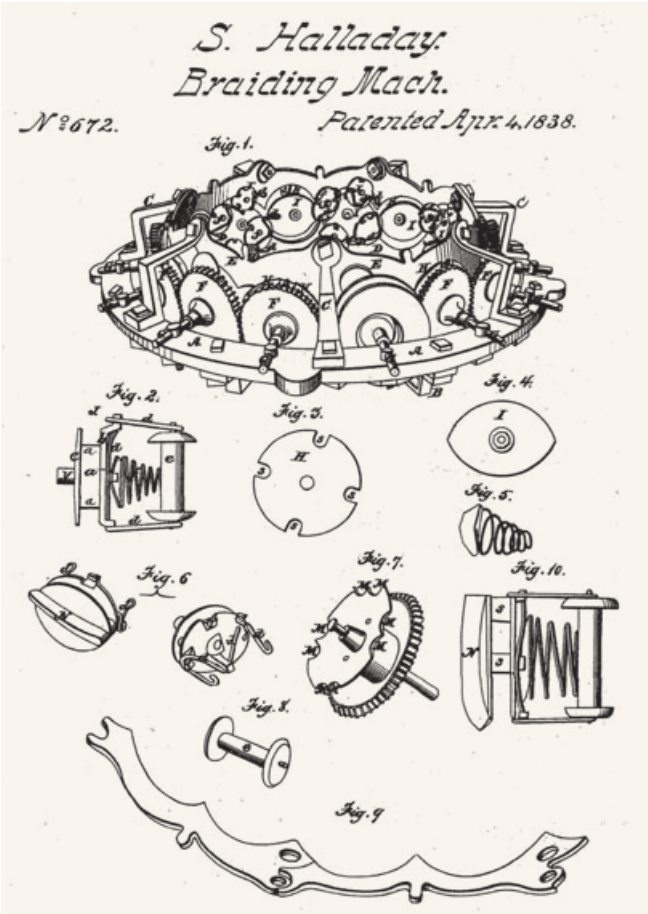
Beginning in 1810, the first change to the whip infrastructure was the establishment of dedicated whip shops of Samuel Lindsey (also spelled Lindsay) and Joel Farnum in the heart of Westfield. Deeds from the Hampden County Court of Records confirm the location of Samuel Lindsey's shop on the corner of Broad and Silver Streets, with Joel Farnham's on Elm Street "near the green." Establishment of these shops began the industrialization of whip making.

It is widely accepted that the original whip plaiting (braiding) machine was a crude "barrel-like" device, but credit for introducing that machine has been disputed. From a historical perspective, whoever introduced the older plaiting device is not as noteworthy as Hiram Hull and his 1822 acquisition of the patent for John Thorp's braiding machine (U.S. patent No. x3361). The implementation of that machine launched the success of Westfield's whip industry.

It is currently unknown how Hiram Hull became acquainted with John Thorpe of Providence, Rhode Island, the inventor of the new braiding machine. Unfortunately, a fire at the United States



Women working at braiding machines, United States Whip Co., c. 1910. Westfield Athenaeum.



Seymour Halladay's braiding machine patent, 1838. United States Patent Office.

Employees photographed outside of the American Whip Co., c. 1860. Westfield Athenaeum.

patent office in 1836 destroyed as many as 10,000 patent records. However, the written description of Thorpe's device gives insight into its design. One portion states, "This machine consists of racers, the number of which is in proportion to the kind of braid or the number of strands that it forms. These wheels are placed in a circular frame, so that the carriers will have a direction pointing to the center where the braid is formed." A later section concludes, "Said machine is capable of making nearly all kinds of braids, such as whip thongs both single and twilled also the flat braids, single and twilled cords...."

While an image of the Thorpe machine is unavailable, the patent (No. 672) of Westfield's Seymour Halladay gives insight into the structure of the Thorpe machine. Halladay's description clearly stated it was submitted as an improvement to Thorpe's machine. It is also important to note that Hiram Hull did not acquire exclusive rights to Thorpe's patent; the agreement for use of the machine solely pertained to making whips. Thorpe's machine was also used to make ropes, shoelaces, and a variety of other braided or woven articles.

In addition to moving production away from farms and outlying shops, the establishment of whip shops and factories changed the industry from whip makers to whip manufacturers. Unlike the farmers and tradesmen who first made whips, the new whip manufacturers frequently consisted of businessmen and financial investors. Many became officers and directors of Westfield banks, and almost without exception they had investments in other businesses in Westfield such as cigars.

By the early 1830s, the rapid growth of Westfield's whip industry positioned it as a major player in Hampden County's economy. A February 15, 1832, newspaper article in the *Hampden Whig* of Springfield, Massachusetts, included a report titled, "Statistical View of the Arts and Industry of Hampden County." The report documented that in the relatively short span of ten years since the Hull machines were introduced, whip production, valued at $100,000 in Westfield, had already become the fifth largest industry in Hampden County, following firearms (primarily the Springfield Armory), paper (primarily the D. & J. Ames Co., Springfield), and manufactured leather and woolen goods.

Modernization vastly improved the manufacture of a high volume of quality whips. Over the long term it created a widening gap between the 'haves' and the 'have nots' among the whip companies. The larger firms, having ample financial resources, built factories capable of covering the full range of machinery needed for a complete manufactory. For those whip makers unable to afford the cost required for a complete manufactory, there were several choices for survival. Many smaller shops merged to establish the required resources. Still others specialized, making individual components such as stocks (handles), lashes and snaps, or buttons.

As the larger shops continued to grow, many of the smaller whip makers either faded from the scene or became minor players over the following decades.

Graphics for American Whip Co., c. 1895.

Middle Era (1855–1892)

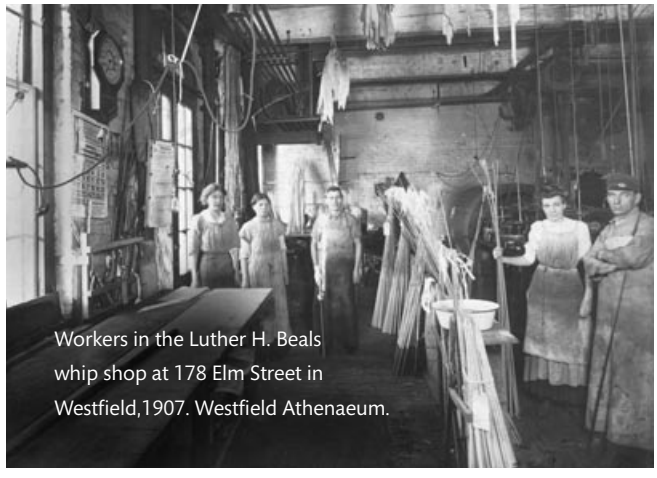
The year 1855 was significant for the industry with the establishment of the American Whip Company after a merger of the companies of Hiram Hull, Hiram Harrison, and Samuel Dow. The creation of American Whip marked the first whip concern established as a corporation. American Whip continued as the dominant whip company in the industry for the next four decades.

According to compiled manufacturing census statistics, the merger of the three firms employed at least 215 people (70 male/145 female). With production of 120,000 whips and 144,000 lashes per year, American Whip accounted for almost 35 percent of the whips and more than 20 percent of the lashes and thongs produced in Westfield at that time.

View of Elm Street, Westfield, center of the town's whip production. From *Western New England,* February 1911. Author's Collection.

By 1855, the whip industry had grown to be the preeminent manufacturing industry in Westfield. The 1855 State report, *Statistics of Massachusetts Industry,* summarized the industries of each town in the commonwealth. Manufacturing statistics for Westfield listed the value of produced goods for the whip industry as $420,000 per year. The combined total for other industries and agricultural goods in Westfield totaled $459,000. Thus, the whip industry accounted for 48 percent of Westfield's overall economy.

Unfortunately, the unstable economy of the United States after the Civil War created problems for the smaller shops with limited resources. A number of individuals and companies chose to merge or establish partnerships in an attempt to survive. Because of the volatility of the economy, fewer than 25 percent of the companies in this era existed under a single name or operated for ten years or more. The many short-lived smaller shops helped account for the more than 275 different whip manufacturers operating between 1810 and 1900. At its peak in the 1870s–1880s, the Westfield city directory listed 25 to 30 manufacturers.

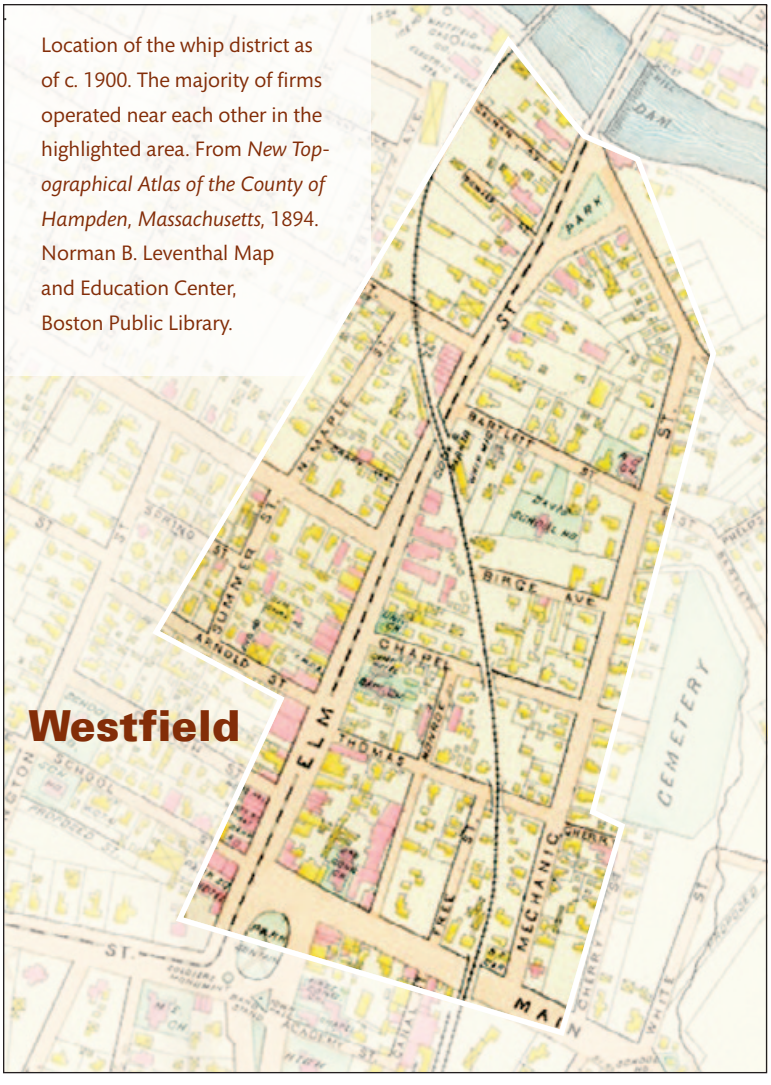


Workers in the Luther H. Beals whip shop at 178 Elm Street in Westfield,1907. Westfield Athenaeum.

Another industry that sprung up was that of machine shops focusing on building and maintaining the multitude of machines needed by the factories. These shops became the precursor to the strong machine shop manufacturing base existing in Westfield to this day.

These innovations aided Westfield's control of the the whip industry, a dominance illustrated by the large number of patents for inventions by Westfield men. Between 1808 and 1920, 349 whip-related patents were granted, 203 relating to core manufacturing processes and associated machines. Of these, 121 patents—more than 60 percent—originated in Westfield.[1]

While Westfield became the center of the whip industry, very little of the materials used in the construction of whips were native to the area. Whalebone was obtained from the whaling fleets of New England and other areas. Rawhide came from water buffalo imported from Asia, and other hides were sourced from South America. Rattan was imported from Indonesia and the Philippines. Initially, even the cotton thread for the final braiding of the whip



Location of the whip district as of c. 1900. The majority of firms operated near each other in the highlighted area. From *New Topographical Atlas of the County of Hampden, Massachusetts,* 1894. Norman B. Leventhal Map and Education Center, Boston Public Library.

stock came from other locales until the William Warren Threadworks was established in Westfield in 1880.

By the 1840s, Westfield's interaction with whip companies across the country had solidified. External companies came to Westfield to buy whip-making machinery, and there are multiple instances of men leaving Westfield to establish or work for whip companies in other states. Likewise, throughout the 1800s men who began their careers elsewhere relocated to Westfield. Many had established connections to Westfield via their interactions in New York City's leather district, where several whip companies also had offices.

Beginning in the 1860s, Westfield held weeklong, annual meetings of all the major whip factories across the country. The owners of whip shops from Windsor and Rochester, New York; Baltimore, Maryland; Wellsville, Pennsylvania; Moundsville, West Virginia; Hudson, Michigan; Sydney and Wooster, Ohio, and other locations converged on Westfield. The yearly conferences and social events culminated with a Whip Makers' Ball.

The vast majority of Westfield whips were buggy whips, riding crops and associated whips for general use by the public. Additionally, many higher quality whips were made as presentation gifts. These whips had special adornments such as carved ivory handles, engraving, silver ferrules, and other features. Luminaries who received specially crafted whips included Presidents Abraham Lincoln, John Tyler, and Ulyssess S. Grant, and Senators Henry Clay and Daniel Webster.

Whip shops employed traveling salesman, often referred to as "drummers," to sell their whips. These drummers traveled across the U.S. and as far as Mexico. Their trips were documented in newspaper accounts as being as long as three to four months in duration. In the earliest years the mode of transportation was primarily horse and buggy. The advent of the railroads in the mid-1800s significantly assisted these salesmen.

Postcard image of United States Whip Company, c. 1910. Author's collection.

Modern Era (1893–Present)

The modern era was impacted by two significant events. In the 1890s, as the whip industry peaked, it saw a transformation with the creation of the United States Whip Corporation. This coincided with the introduction of the automobile, which greatly reduced the need for whips as horse-driven carriages and similar vehicles dwindled over time.

After years of rumors regarding consolidation of the industry, the great merger was finally consummated with the incorporation of United States Whip in December 1892. In its first year of existence the corporation acquired nine of the larger Westfield-based companies, four smaller ones, and five of its largest competitors outside of Westfield. As new companies were brought into the fold, the former presidents or managers of the larger firms typically became members of the board of directors. United States Whip would retain its position of domination until halting its whip production in the early 1920s.

Several established Westfield firms survived the establishment of United States Whip Corporation, remaining independent, including: Cargill & Cook Co., New England Whip, L.H. Beals & Son, Pomeroy & Van Deusen, Steimer & Moore, Standard Whip, C.C. Pratt, Cook & Parker, A.C. Barnes, Searle Whip Co., and William Provin.

While the above companies survived the initial consolidation, most of them would eventually be consumed by United States Whip or slowly disappear from the landscape. By 1930, Cargill, Cleveland and Co. (formerly Cargill, Cook and Co.) remained the only significant whip company still in operation, but in 1952 it was purchased by the Westfield Whip Manufacturing Co. Westfield Whip continued operations in the former Cargill and Cleveland Co. building until 2018, when it began operating on a part-time basis with reduced production.[2]

Advertisement for United States Whip Co. products, *Western New England*, February 1911. Author's collection.

Summary

It cannot be overstated that without the whip industry, Westfield, Massachusetts, would not be the city it is today. In the mid- to late-1800s the whip industry amounted to 50 percent or more of Westfield's overall economy and provided the financial base to fuel the growth of Westfield's retail enterprises, hotels, and the overall prosperity of the growing town.

The companies attracted to Westfield due to the financial base created by the whip industry included William Warren Thread Co., Foster Machine Co., Lozier Manufacturing (later becoming Columbia Bicycle), Old Colony Envelope Co., Robinson Reminders Inc., and Kellogg Brush Co. All were major employers in Westfield in the first half of the 20th century, and the loss of even half of them would have had a significant impact on Westfield's growth and prosperity.

While most of the aforementioned industries have disappeared from Westfield's landscape, they illustrate how the city has been in a state of transition for more than 125 years. The ability to evolve from one industry to another has enabled Westfield to avoid the severe economic decay encountered by many cities and towns in New England whose base industries such as textiles, paper manufacturing, and shoes declined or transferred to other locations.

ENDNOTES

1. For a more detailed discussion on the whip patents, the Westfield men with the most patents, and a full listing of patents held by Westfield area men, see Bruce W. Cortis, *Whips of Westfield, the Rise and Decline of an American Industry* (Amherst, MA: Off the Common Books, 2018).

2. Ibid. Additional details can be found in whip company profiles.

Remembering Hannah Davis,

Enterprising Bandbox Maker

by Jeanne Solensky

HANNAH DAVIS (1784–1863) of Jaffrey, New Hampshire, may not be a household name today, but she was known during her lifetime and remains a prominent figure in her town's history. Forced by necessity to earn a living, she leveraged an inherited facility with wood to capitalize on the popularity of bandboxes, a common object owned by many women in the early 1800s. To assist with production, she invented a slicing machine that cut thin pieces of wood she then shaped into lightweight, durable boxes highly collectible in today's antiques market. Details of Davis's life have been shrouded in mystery by conflicting and undocumented stories, yet extant bandboxes and posthumous reminiscences help to illuminate the story of this early American female entrepreneur.

Above: Carte-de-visite photograph of Davis, c. 1860. Courtesy of the New Hampshire Historical Society.
Top: Hannah Davis bandbox covered in wallpaper, c. 1848. Historic Deerfield, Gift of Henry N. Flynt and Helen Geier Flynt, 2243.

Beginnings

"If there is a single possession in which Jaffrey can take pride as something all its own it is the memory of Aunt Hannah Davis."[1]

The town of Jaffrey, incorporated in 1773, is situated at the base of Mount Monadnock along the Contoocook River in Cheshire County in the southwest corner of New Hampshire. The population of this young town was barely 350 when Massachusetts native John Eaton arrived in late 1774, possibly lured by opportunity for him and his family.[2] Eaton, a carpenter, turner, and all-around handyman, quickly became invaluable to his community by making and repairing plows, flax wheels, window sashes, tubs, and cheese presses; plastering chimneys; building coffins; and digging graves. He also purchased shares in a grist and sawmill, the latter purportedly supplying balusters for the town meetinghouse. According to town lore, the meetinghouse went up on June 17, 1775, the same day as the Battle of Bunker Hill, with sounds of cannon fire in the distance. Eaton, who of course participated in the raising, celebrated completion of the frame by standing on his head on the ridge pole.

Eaton's daughter Hannah married clockmaker Peter Davis, another Massachusetts native, in 1783, and their first child, Hannah, was born a year later. Peter Davis remains a shadowy figure, only appearing in town tax lists between 1803 and 1808 and not at all in census records, with a still unknown death date. In all likelihood an itinerant artisan, he was frequently absent from his family as his wife Hannah appeared as head of household in the 1800 census.[3] Histo-

rians have assumed that Davis fell ill or died in or around 1808 when a tax abatement for the two previous years was granted;[4] however, he did outlive his father-in-law whose probate record from the same year enumerated Eaton's debts to him for cleaning a watch and mending a gun.[5]

Davis presumably predeceased his wife who died in 1818, leaving daughter Hannah single at age 34 with her three siblings no longer in Jaffrey. Her younger sister, Mary, moved to New Ipswich, 12 miles away in Hillsborough County, upon her marriage to a farmer. Her two brothers, Jonas and Peter, are nearly as elusive as their father with unknown birth and death dates, seemingly inheriting their father's wanderlust. A few clues surface in newspaper notices, beginning with an 1805 runaway advertisement placed by Jaffrey carpenter David Gilmore for his apprentice Jonas, who inexplicably went by the name "Bonaparte."[6] Four years later another newspaper reported that both brothers, then residing in nearby Peterborough, deserted their posts as light dragoons at the United States garrison in New Bedford, Massachusetts.[7] Shortly after, Peter may have lived in the adjacent town of Rindge in 1813 and 1814, but their common names make them impossible to track definitively after that point.[8] Whether by choice or circumstance, Hannah was alone and in need of a livelihood to support herself.

Yankee Ingenuity

Davis's solution was brilliant. Using the skills and knowledge of wood inherited from her father and grandfather, she decided to improve upon the popular bandbox, in existence since the 17th century when men in England stored their neckbands in a special box. The boxes expanded in size and versatility by the early 19th century to accommodate

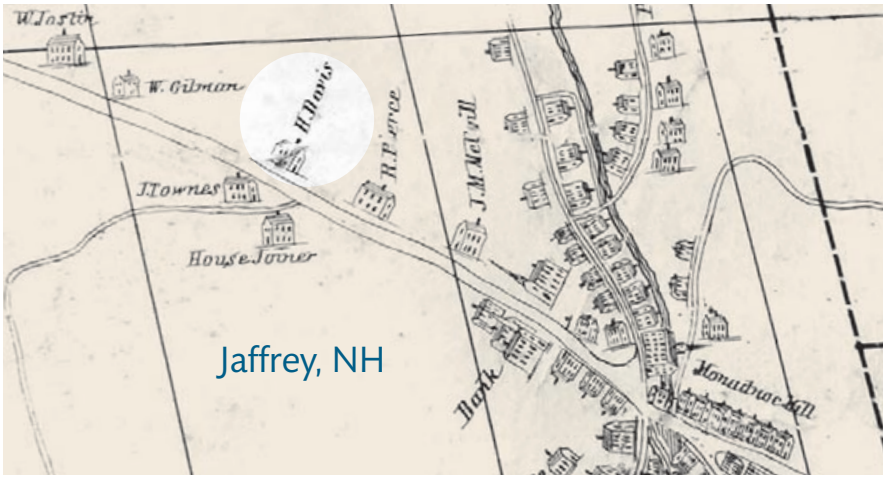
Davis's label inside bandbox. Historic Deerfield, Gift of Henry N. Flynt and Helen Geier Flynt, 2243.

Top: Detail from John Lewis Krimmel's "The Happy Family" print, 1834, showing a woman holding a bandbox as luggage aboard a horse-drawn carriage. Winterthur Museum, Garden & Library, Museum purchase, 1960.0318.
Above: Hannah Davis bandbox covered in wallpaper, c. 1832. Historic Deerfield, Lucius D. Potter Memorial Collection, P117.

storage of larger objects, conveniently doubling as luggage for stagecoach travel. These boxes were typically constructed of cheap pasteboard or wood covered with paper and sometimes sported handles to enhance portability. Numerous newspaper notices about missing bandboxes attest to their capacity, with an 1834 advertisement for one lost on a stage between Deerfield, New Hampshire, and Lowell, Massachusetts, itemizing the following in the owner's "second sized" bandbox: books, a white muslin dress, a wrought muslin robe, a cambric robe, a black lace veil, a merino shawl, a crape shawl, a fancy and two muslin handkerchiefs, a pair of prunella shoes, and even more uninventoried articles![9] A curious twist on its utility appeared in an 1816 story of a New York City woman who burgled more than 30 houses by stashing clothing, silverware, tea sets, jewelry, and other portable goods in her bandbox, for the sight of a woman carrying one was so commonplace as not to cause suspicion.[10]

Davis's venture into bandbox production probably began in the mid-1820s. After her mother's death in 1818 and the 1823 sale of inherited property, she had few resources to draw upon. She was involved in the entire manufacturing process from the choice of spruce, a lightweight, elastic, but strong wood for the body of her boxes, to the final decoration. She first searched nearby woods for spruce trees, negotiated with property owners to purchase the trees, and hired men to cut and haul them to her house. Davis even invented her own foot-powered machine with a sharp blade that cut slices as thin as 1/8 inch wide. She then bent the still flexible wood into elliptical shapes, finished the boxes by nailing slighter thicker pine pieces for bottoms and lids, and affixed a trade label, her only known form of advertising, on the inside lids. Newspaper scraps lining the interior now provide an approximate date range for the boxes, and wallpaper scraps cover the outside. Davis typically decorated with floral, fruit, and foliate patterns—and occasionally figural and landscape designs—to visually entice a wide female audience. A few boxes feature political scenes, like two in Shelburne Museum's collection, one showing Napoleon holding his son and another with trophies of war and eagles festooned with ribbons stating, "E Pluribus Unum." Even though Davis recycled scraps from her neighbors in a cost-saving measure, she had to strategically choose patterns to compete with the new specialty papers that decorated more professionally made boxes.

Davis's client base at first consisted of local barter with neighbors and merchants in exchange for goods and services. In her memories of Hannah Davis, Mary Fox recollected: "My grandfather was the town doctor and had evidently received pay for his visits to her in band-

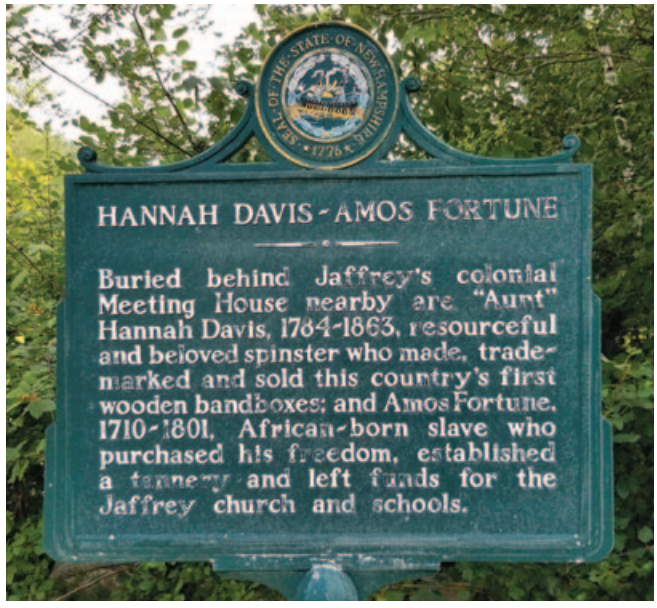


Top: Detail of 1850 map showing location of Davis's house on Main Street in Jaffrey, NH. Courtesy, Jaffrey Historical Society.
Left: Detail from postcard of Marion Poole impersonating Davis in the town's sesquicentennial parade, 1923. Courtesy, Jaffrey Historical Society.

boxes, judging from the quantity in our attic…I think every house in town had several…."[11] When the local market was saturated, Davis hit upon another ingenious solution—selling directly to young female recruits from rural areas and farms working in factories sprouting up throughout New England in the early decades of the 1800s. Reminiscences state that she traveled to the textile mills in Nashua and Manchester, New Hampshire, and Lowell, Massachusetts, a strategy Davis may have first used closer to home with employees of Jaffrey's own textile mill, in operation since 1813. Hitching a rented horse to her covered wagon, Davis rode hours to these mills between 35 and 60 miles away to coincide with the noon lunch break. For the first time in their lives, female workers were earning a regular salary—not just unpaid housekeeping or seasonal teaching wages—of $2 to $3 weekly. While less than men's wages, it afforded them disposable income even after paying rent and sending money home. Davis, in competition with milliners, stationers, paper hangers, and specialty manufacturers advertising bandboxes, offered both convenience, by bringing the product to her clientele, and reasonable prices, between 12 and 50 cents based on size. Harriet Robinson, who worked in a Lowell textile mill for 13 years beginning at age ten in 1835, recalled in her book, *Loom and Spindle: Or, Life Among the Early Mill Girls,* the continuing parade of new recruits: "when the large covered baggage wagon arrived in front of a block on the corporation, they would descend from it, dressed in various and outlandish fashions, and with their arms brimful of bandboxes containing all their worldly goods."[12] The average stay of a female textile employee was four years, providing Davis with a rotating cast of customers for several decades.

End of Life

Towards the end of her life, apparently in the mid-1850s, Davis broke her hip, effectively ending her business enterprise. The timing coincided with the waning popularity of bandboxes as more spacious trains superseded stagecoach travel, resulting in them fading from view by 1860. Factory clientele had also changed by the 1850s with worsening conditions, labor unrest, and increased immigrant labor. While bandboxes afforded Davis a modest living, she never accumulated much wealth; without a revenue stream she needed assistance. Townspeople and members of the Baptist Church, which she attended since its establishment in 1814, brought food, chopped firewood, and sent their children to run her errands. The youngsters later remembered her as the kindly "Aunt Hannah" who entertained them with stories of early Jaffrey. She died in 1863 and was interred in the Old Burying Ground behind the meetinghouse her grandfather helped to erect. Her will left her possessions to her sister Mary and her house and land to the Baptist Church, which were soon sold to cover her debts, leaving proceeds of $44.92.[13]



Jaffrey's historical marker for Davis and Amos Fortune.

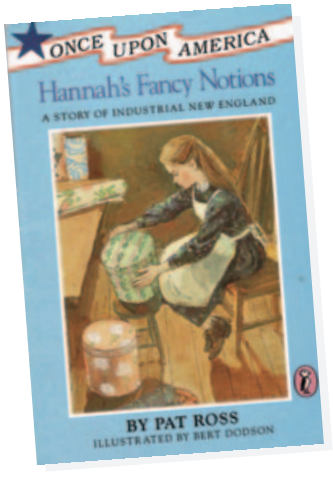
Remembering Aunt Hannah

Hannah Davis certainly never considered her legacy, for she left behind neither business nor personal papers. And she most likely disbanded her slicing machine invention upon halting production, as it has not survived. The town of Jaffrey has hailed her as a local hero, beginning in 1920 when Melville Academy, once the town's first school, opened as a museum under the auspices of the Jaffrey Center Village Improvement Society (JCVIS), founded in 1906 to preserve and celebrate its community and environment. The museum showcased an exhibit of Davis bandboxes—and still does today—and invited speakers, including cofounder Mary Fox, to share reminiscences of "Aunt Hannah" in a public program. The following year local historian Albert Annett regaled listeners on the town common with stories of John Eaton and Hannah Davis in his address, "Old Days in Jaffrey," before a motor trip to local historic sites, including a stop at Davis's house on Main Street. Davis was brought to life by an impersonator driving a covered wagon filled with bandboxes in the town's sesquicentennial parade in the summer of 1923. A speech by JCVIS president Margaret C. Robinson at the museum the next year was published as "Hannah Davis, A Pioneer Maker of Bandboxes," with additional recollections that still serves as the main source for Davis's history. Memorial signs and markers now dot the town's landscape: a plaque posted on her house, and a state historical

Memorial window to Davis. Courtesy, Jaffrey Historical Society.

marker installed on Main Street in 1963 for both Davis and Amos Fortune, a free Black tanner in Jaffrey in the late 1700s. In the 1890s, members of the Mission Band, known as the "Gold Gatherers," installed a stained-glass window in her honor in the Baptist Church; the window was saved when the church was razed in 1968 to make way for a post office and is now in the Jaffrey Historical Society's collection.

Outside the town of Jaffrey her story has appeared occasionally in newspaper articles throughout the 1900s, and more recently in blog posts. Most repeat information from the Robinson essay or embellish with fanciful, undocumented stories such as her father either inventing the slicing machine or abandoning his family. In 1988, a charming book, *Hannah's Fancy Notions: A Story of Industrial New England,* written by Pat Ross was published as part of Viking Penguin's "Once Upon America" series for young readers ages 7-11. The adult Hannah is here transformed into an enterprising ten-year-old girl whose widowed father cannot support his five daughters with his paperhanging trade. Her older sister is forced to find employment in a Lowell textile mill and travels home on weekends in a stagecoach. Hannah, seeing her sister's drab bandbox, is inspired by her father's unused wallpaper scraps to decorate it as a birthday present. When other mill workers see the new design, they send purchase orders to Hannah and her father who, reinvigorated by the new revenue stream, invents a machine to speed up box production.



Cover of *Hannah's Fancy Notions: A Story of Industrial New England.* Private collection.

In addition to the town of Jaffrey keeping her memory alive, Davis is best remembered for her creations: her prodigious output, their sturdy construction, and the definitive attribution by her trade labels. Her bandboxes have regularly appeared in auctions in the past decade selling for hundreds of dollars; one sold in October 2024 for $1,000, a far cry from her maximum charge of 50 cents. Besides the two examples in Historic Deerfield's collection, Davis bandboxes are represented in Boston's Museum of Fine Arts, Cooper-Hewitt, Smithsonian Design Museum in New York City, and Shelburne Museum in Vermont, each a testament to this woman's entrepreneurship and ingenuity.

The author thanks Bruce Hill of the Jaffrey Historical Society, Mary Jo Marvin and Robert Stephenson for sharing their knowledge and collections of Hannah Davis and Jaffrey history.

ENDNOTES

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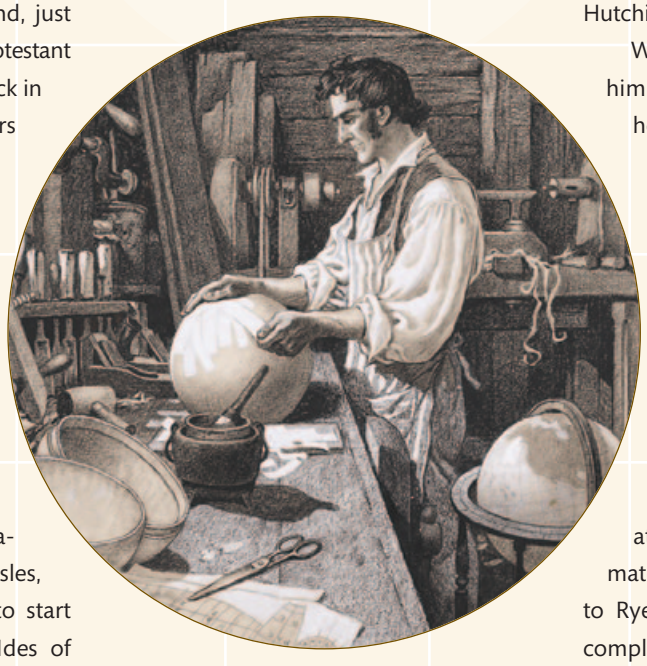
Finding His Place in the World: America's Globe Maker, James Wilson

by Matthew W. Jones

JAMES WILSON'S ancestors, devoted Scottish Protestants, came to New England in 1719 from Londonderry, Ireland, just 100 years after another group of Protestant Separatists landed at Plymouth Rock in 1620. Five shiploads of Reformers had survived the siege of Londonderry, ultimately coming to the future United States to escape despotic persecution and Europe's ongoing religious wars. One of these settled in a newly formed community within the boundaries of New Hampshire, established a parish and a charter, and called it Londonderry.[1] Like so many colonists surviving generations of hardship in the British Isles, they came for the opportunity to start a new life and thrive. On the Ides of March in 1763, the Wilsons celebrated the birth of their son, James.[2] Named for his father and grandfather, the boy became an avid reader, a farmer, blacksmith, woodworker, machinist, artist-engraver, and cartographer. Encouraged by his family, he sought knowledge, learning to collaborate and innovate. As a young man he explored New England looking for resources and inspiration, ultimately settling in Vermont. From his new workshop Wilson crafted the very first commercially available terrestrial globe made in America.

The years after the American Revolution brought hardship and change but also opportunity to northern New England. The upper Connecticut River Valley experienced commercial and cultural development with the founding of academies and libraries and the growth of newspaper and other printing establishments. Increased geographical literacy—with a nationalistic perspective—was part of these trends.[3] Far from the centers of American publishing, small Valley towns produced a remarkable number of individuals who figured in the expansion of American cartography, including James Whitelaw, Lewis Robinson, Isaac Eddy, and Ebenezer Hutchinson. And of course, James Wilson.



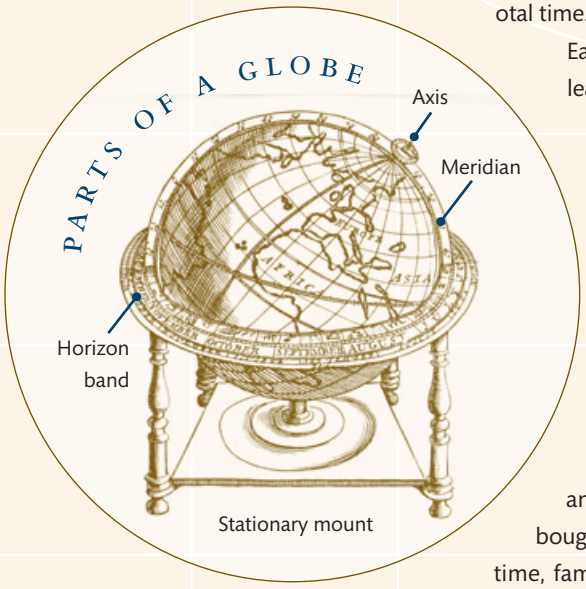
Early 20th-century crayon and wash drawing of Wilson by Roy Frederic Heinrich. Pictured in his Bradford, Vermont, workshop, the globemaker is surrounded by the tools and machinery of his craft. Uncut printed globe gores can be seen on the workbench in the foreground. Cabinet of American Illustration, Library of Congress.

Wilson's travels would eventually lead him to Bradford, Vermont, his future home. On the road he stopped at Dartmouth College in Hanover, New Hampshire, to examine the growing cartographic collection in their library. He was curious about globes but was only granted limited access to see the materials residing there. This inspired rather than discouraged him, and he doubled down on his efforts, striving to improve his situation and raise money for reference materials. During this time, he traveled to Ryegate, Vermont, and purchased a complete set of the *Encyclopedia Britannica* for $130 from Hugh Somers, another Scottish immigrant.[4] Wilson had earned the money in one year from farming, selling livestock, and blacksmithing. The investment of nearly $2400 in today's money demonstrates what an amazing mind it took to make that financial and intellectual decision. The *Encyclopedia* expanded Wilson's knowledge of art, nature, industry, agriculture, history, astronomy, and especially geography. Eventually he built a desk and bookcase, now at the Bennington Museum, to house the set. Ryegate was also the home of James Whitelaw, mapmaker and Surveyor General of the State of Vermont, with whom Wilson would collaborate on two maps. Wilson possibly met Whitelaw there.

Wilson left New Hampshire in 1795 and purchased nearly 100 acres of farmland in Vermont. One of the attractions that may have drawn him to the recently founded state was the town of Bradford, where his friend and fellow blacksmith apprentice from Londonderry, James McDuffee, lived. Situated near the Connecticut River, Bradford had two new churches and by 1796 had chartered Vermont's first public library. The Connecticut River Valley unified the growing towns between Vermont and New Hampshire, continuing through to Deerfield and Springfield, Massachusetts, and on to Hartford, Connecticut. Bradford, set in the midst of it all, made a perfect place for Wilson's interests to grow.

Around the same time, it is believed that Wilson began the creation of his first globe. The sphere was cut from a block of wood and covered with paper showing a map of the world, drawn by his own hand. The basics of wood turning and fabrication had likely been learned in the old blacksmith shop in Londonderry, before he went north. Between 1796 and 1809, he began experimenting with the other elements of globemaking, including hemispherical plaster-over-papier-mâché construction

Detail from German geographer Daniel Friedrich Sotzmann's 1796 map of Vermont, published in Hamburg. The map shows Bradford, VT, with its earlier name, Moretown, and Ryegate, where Wilson purchased an encyclopedia. Norman B. Leventhal Map and Education Center, Boston Public Library.

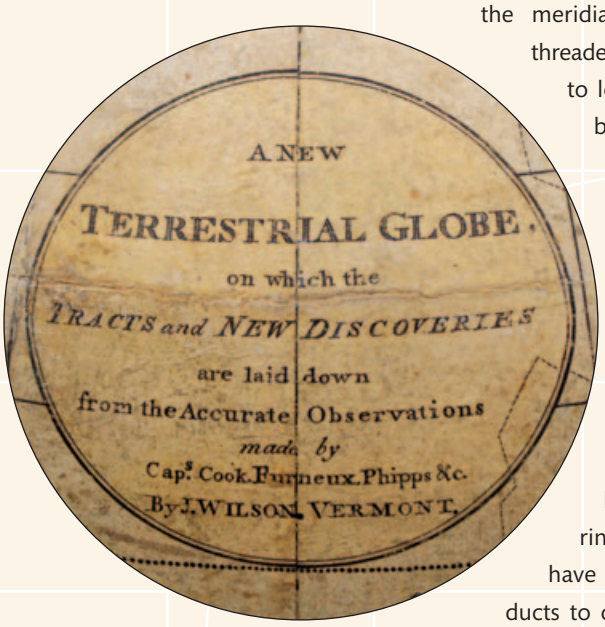


to lighten the globe and maintain his ability to cover it with an accurate paper map.[5] He designed and turned hardwood stands and machined brass hardware to mount the globe, providing a scaled meridian for observing position, axis, and distances. The skill of accurate mapmaking was another hurdle Wilson addressed during this pivotal time.

Early on he decided that he must learn to engrave so that he could more precisely inscribe cartographic details and duplicate them. Wilson wanted to sell globes to Americans as a business venture. He also wanted to keep the costs below the price of imported English globes and provide new details on his globe, tailored to the hearts and minds of the Americans who bought and used them. Around this time, family legends say that he spent some time with a local printer learning more about the process, and the papers and inks best suited to his goal. He purchased his first large copperplate to try his hand at engraving. Fashioning his own set of engraving tools, he practiced cutting images into the plate. Nearly a year later he reputedly showed the plate he had struggled with to Jedidiah Morse, "Father of American Geography," in Boston. They agreed that the lines and meridians would not line up and that the scale and proportion would be incorrect.

Crestfallen, he scrapped the plate but raised enough money to purchase another one and to consult Amos Doolittle, one of America's principal engravers. Doolittle had engraved some of the plates for the 1784 edition of *Morse's Geography Made Easy*. Wilson studied with him as an engraver in New Haven, Connecticut.[6] Wilson devised a mathematical solution to drafting and aligning the sections of map on a scaled spherical surface. When he designed the globe's sections (slices of paper called gores) for his terrestrial globe, he scaled them to 13 inches in diameter, rather than the traditional 12 inches. His reasons for breaking with tradition could have been to spite the English standard, or just to be different. Possibly he chose to give himself a bit more space to put additional cartographic detail on a slightly larger globe. To this day, only Wilson table globes made between 1810 and 1855 are scaled to 13 inches.

The year 1810 was busy for Wilson; he engraved updated cartographic details on the second edition of James Whitelaw's 1796 wall map of the State of Vermont, originally engraved by his mentor, Amos Doolittle. He also released his first production batch of terrestrial globes. Early family records indicate that he sold them in pine boxes for $25 each. Adjusted for inflation, that is well over $600 dollars today. His



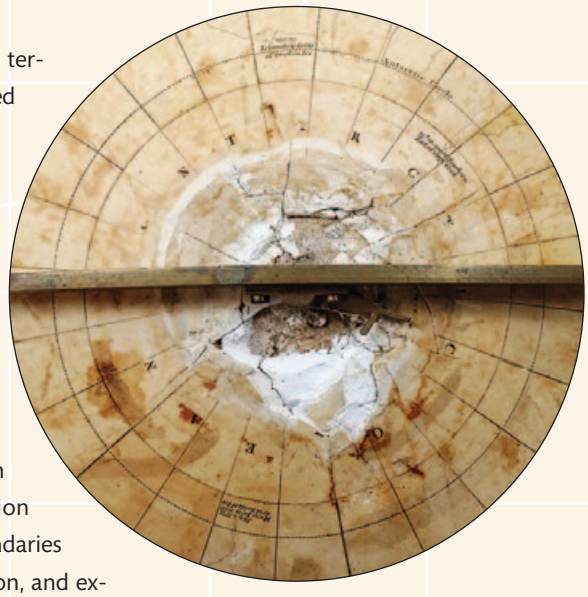
Title cartouche of James Wilson's first terrestrial globe, 1809–1810. Vermont Historical Society, 1921.16.

new globes cost less than exports from England yet equaled their accuracy and craftsmanship. Creating the furniture for his very first globes, Wilson was inspired by the same design sources as John Senex and George Adams of London, as well as from fellow Scotsman, James Ferguson. Ultimately, he developed his own distinct style, a blend of Londoner William Cary's table stands and others, but featuring local woods. The first horizon paper, printed for the 1810 terrestrial, showed highly detailed zodiacal characters. This layout resembles the early horizon paper designs that British instrument maker Richard Cushee engraved on his 12-inch terrestrial and celestial pair issued in 1730. Wilson beautifully engraved the horizon paper, choosing to simplify the design on the 1811 terrestrial globe in favor of smaller symbols, perhaps to emphasize the scientific use of the globe over mere decoration.

Machined brass parts were another Wilson development. His 1810 terrestrial globe had a clever wood and brass foot, requiring only deft file work to make and to hold the meridian ring in position within the stand. By 1811, he was using rough cast brass cores and turning them down on a lathe to form the finial-like base in which the meridian rests. He also turned, threaded, and knurled a thumbscrew to lock it into place within the base. Brass was an expensive raw material which the English were still reluctant to supply at the beginning of the 19th century. American surveyor's compasses from just before and after the Revolution were all wood with minimal brass. The necessary brass parts, such as chapter rings or indicators, seemed to have been sold as finished products to colonial instrument makers. The first Wilson brass meridian, a custom size, was well made and finely engraved with an accurate rule of degrees from zero to 90. His globe also showed the American states, their borders delineated and colored individually, rather than as a territorial mass in red or green, an innovation followed by English and European globes after 1840.

The 1811 Wilson 13-inch terrestrial globe, offered in a turned curly birch or curly maple stand, sold well. Word got around, and New Englanders of means and private institutions purchased them. Accurate maps and globes were highly desirable in the new American Republic. As the Napoleonic wars raged in Europe, English globes were in constant revision to account for changes in boundaries and borders, colonial expansion, and exploration. The voyages of Captain James Cook and other explorers brought noticeable changes to globes issued between 1783 and 1810. James Wilson had been preparing for this moment in a small shop in Vermont for more than 15 years. At the age of 49, his globes became a hit with Americans.

Ultimately, with the help of his three talented sons, Wilson set up a larger workshop for the fabrication of his globes in Albany, New York. Production demands had increased, and by 1815 family records suggest that he had established the next location. Undoubtedly, he traveled back and forth in the beginning, but he maintained his property and small workshop in Bradford until his death. During this time he secured higher quality paper and finer pigments for hand coloring each new cartographic detail, and choice hardwoods for the stands. Wilson diversified the range of sizes offered, adding a three-inch pair and a nine-inch pair to the original 13-inch offering. At various stages, Wilson's sons John, Samuel, and David, continued making globes in Albany between 1815 and 1833. Sadly, all of his sons had died by 1833; his son-in-law, Cyrus Lancaster, assumed responsibility for the firm and continued until 1855.[7]



Detail of damage to *New American Terrestrial Globe* at the southern pole before treatment. Historic Deerfield. Museum Purchase with funds provided by Anne K. Groves, 2022.4.

Top: White spots, surface wear, and damage to Wilson's globe. Historic Deerfield. Museum Purchase with funds provided by Anne K. Groves, 2022.4.

Above: Fitting that holds the brass meridian in position within the globe's table stand.

Right: Detail of the globe's engraved circular brass meridian. The format of Wilson's globes closely followed the trend in English globes with the exception that he increased the table globe diameter from 12 to 13 inches. The brass yoke at either pole holds the globe within the meridian on steel axle stubs, allowing it to spin safely. To hand cut and thread the screws required a small lathe and a screw-plate. Historic Deerfield. Museum Purchase with funds provided by Anne K. Groves, 2022.4.

In 2022, Historic Deerfield contacted me about conserving the original 1811 James Wilson terrestrial globe in their collection. In that same year I visited Amanda Kay Gustin, Curator at the Vermont Historical Society in Montpelier, consulting with her on the 1809-1810 Wilson globe in their collection, one of the earliest known examples to survive. I was allowed hands-on access to this treasure, and we shared insights and understanding on the nature of this early example of Wilson's genius. Over the years as a globe conservator I have restored multiple 1811 examples, an 1812 celestial, and a transitional 1811 globe made in the time between Bradford and Albany. More than 20 Wilson globes have come across my bench in the last 25 years, varying in size, style of mounting, and years of manufacture from 1811 to 1855.

I took on the project to repair the Deerfield globe, planning a slow, careful restoration. The globe and stand had been treated reasonably well by time, and the quality of materials and construction made a proper restoration possible. The original varnish was mostly worn off or had badly weakened. In addition to soiling there were white spots, abrasion of some paper surfaces, and damage at the Southern Pole around the axle stub. The stand also needed attention, and the globe lacked the original brass thumbscrew. After my initial evaluation of the globe and the condition of the stand, I disassembled the components.

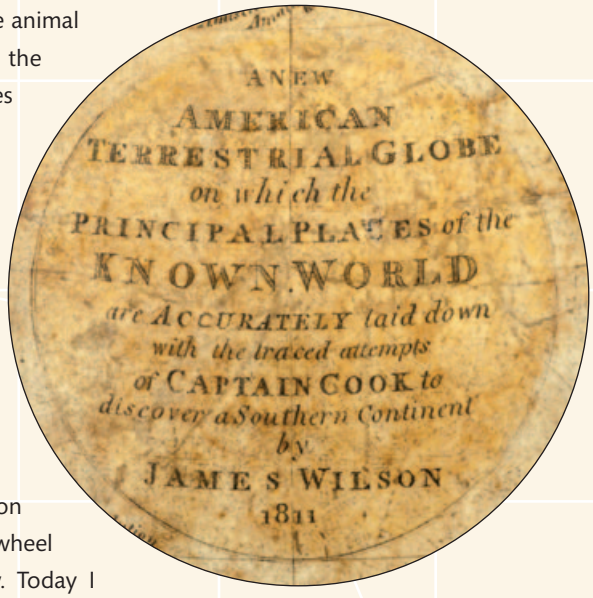
One of the riskier aspects of this process is loosening the four small, hand-cut brass screws that hold the axle in place within the meridian. Oxidation forms and binds the screws to the hardware making it easy to damage their heads. Penetrating lubricants need to be fed into the locations with a pinpoint oiler and left to sit. Using one of more than 50 specially cut instrument screwdrivers to perfectly fit into the screw head's hand-cut slot, careful bracing and gentle but firm pressure released the four screws. They were checked, cleaned, and numbered for later re-fit. The screw holes in the meridian and the two yokes that hold the axle stub in place got a similar cleaning and stabilization. The meridian ring was slightly out of round; the globe's soft brass stock and more than 200 years of use make this fairly common. I built a special jig to check and incrementally true the ring safely. I also determined that the simple locking screw on the base was likely a home-spun replacement.

The turned legs of the stand had become loose and needed to be disassembled and re-glued with hide glue. This was done with cloth straps on a level surface with weights to keep it in position while drying. Basic observation indicated that this example had been turned from curly birch or a similar soft wood. Later, Wilson made stands from hard maple or mahogany. The horizon surface, with the varnished paper ring, needed cleaning, stabilizing with sizing, and an application of new varnish. This is when the cotton

swabs came out. Into the ventilation hood, mask on, and many hours later, the ring was clean and stable. The sphere got a similar treatment, sitting in a padded ring, with a methodical cleaning of the old varnish and grime on the paper surface with solvents and cotton wool.

The cleaned surface was neutralized and consolidated with a conservation grade sizing gel, dried, and made ready for any required touch ups. Thankfully this example had only minor structural damage to the sphere. A small collapsed fracture at the Southern Pole needed to be repaired and patched with matching paper. Later I refinished the paper surfaces with a blend of varnishes to give them the required protection and a hint of their old patina.

I have had to work toward a better understanding of the plaster shaping necessary to form a perfectly scaled sphere, as well as the difficult task of applying the damp paper sections to that sphere with a wheat paste adhesive. I learned to source the best replacements for the animal hide glues used to construct the stands and the old varnishes used to finish them. Understanding how to fabricate any lost metal hardware using raw brass stock, shaping it with a file, and refining it on a small lathe was a major challenge. Using an antique clockmaker's adjustable screw-plate, I learned to hand-cut the non-standard threading on the screws and to knurl the wheel on the locking thumbscrew. Today I have access to unimaginable resources and information. Even so, traditional globe making is still a daunting craft to duplicate.



Title cartouche of the restored globe. Historic Deerfield. Museum Purchase with funds provided by Anne K. Groves, 2022.4.

James Wilson certainly had encouragement from his peers—men like Amos Doolittle, Jedidiah Morse, and James Whitelaw—who undoubtedly wanted to see him succeed in his dream to make the first American globes. Handling, studying, conserving, and restoring Wilson's globes has given me a unique perspective on the ingenuity and quality of his work. It has been an honor to be entrusted with the conservation of his creations and to study his role in the history of globe making. Wilson, a genuine polymath, mastered a staggering number of artistic skills, mechanical and hand crafts, and scientific concepts to make his *New American Globe* from scratch, all the while keeping a farm, raising a family, and being part of a community in the Connecticut River Valley. Despite a lack of education and with limited opportunity, Wilson's determination and ambition put him at the forefront of American globe making.

Wilson's globe after conservation by Matt Jones. Historic Deerfield. Museum Purchase with funds provided by Anne K. Groves, 2022.4.

ENDNOTES

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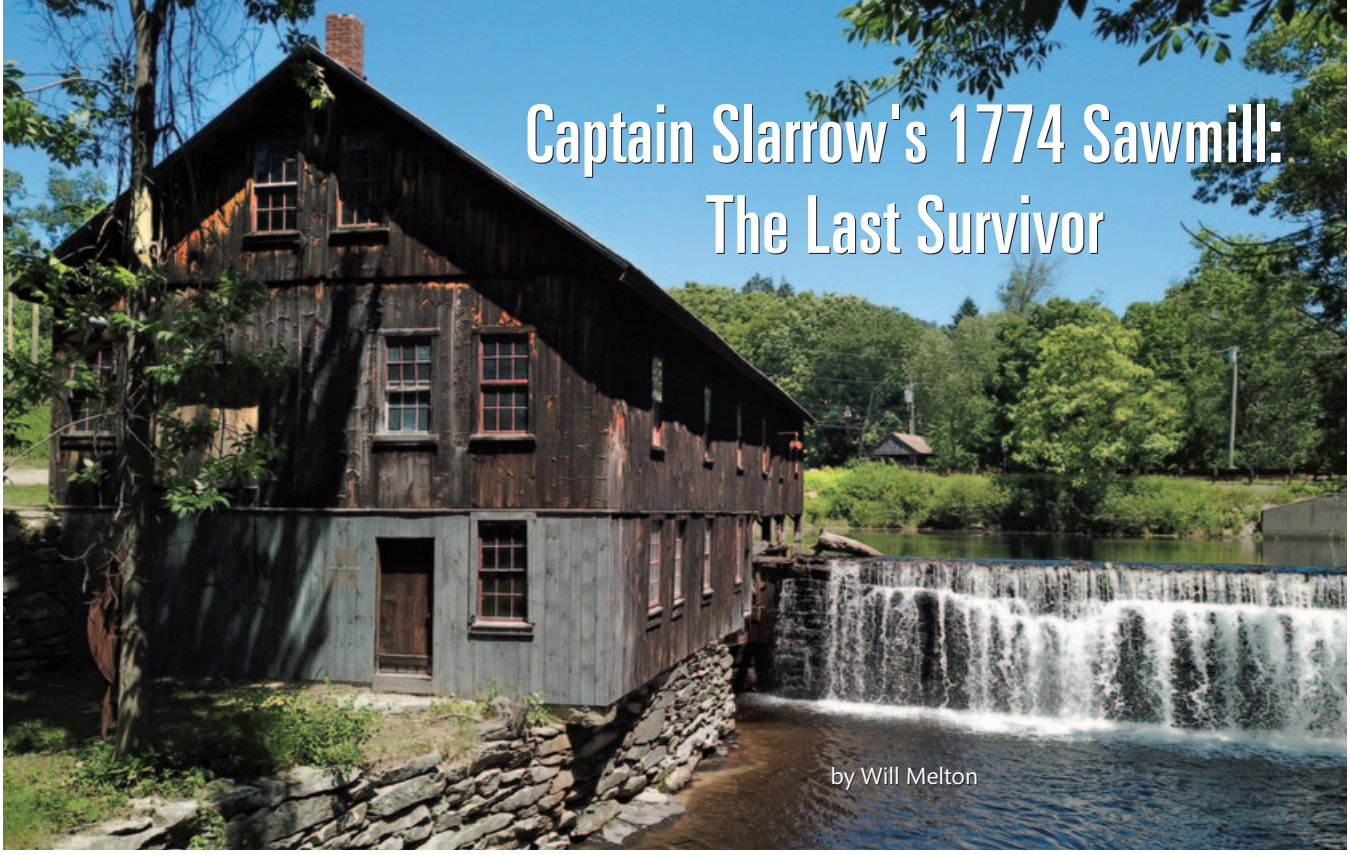


Captain Slarrow's 1774 Sawmill: The Last Survivor

by Will Melton

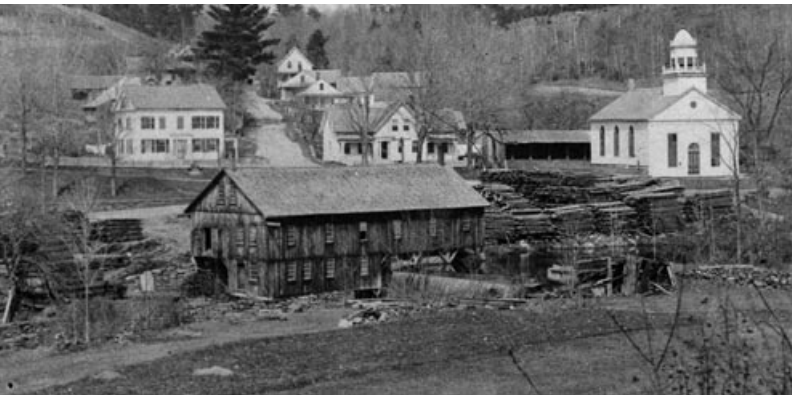
MODERN ENTREPRENEURS understand that technological innovation is a team sport. So it was in early America. When mechanical talent and fresh ideas combined with a dependable source of power—usually along a descending waterway—settlers on the American frontier could prosper. In the small western Massachusetts town of Leverett, an industrial corridor formed along the seven-mile-long Sawmill River in the years following the American Revolution. At its core was a sawmill venture formed by two men, military and religious leaders of the town. The river they harnessed flows from its source at Lake Wyola and empties into the Connecticut River. The sawmill's construction in 1774 coincided with Leverett's breakaway from its mother town when landowners in the eastern half of Sunderland successfully petitioned the General Court of the Massachusetts Bay Colony to form a new town to be named for John Leverett (1616–1679), an early governor. It was a tumultuous time as the colony began a nearly decade-long struggle for independence from Great Britain.

Built by Joseph Slarrow (1731–1784), the mill is the only recognizable survivor from what became Leverett's 19th-century cluster of mills and workshops along the river. The old mill has long carried his name, even though he owned it for just five eventful years. At first, Slarrow bought land for a farm and dwelling in North Leverett from Richard Montague (1729–1794). Then, probably with Montague's help, he secured a grant of four acres from the town for a mill yard. In the years leading up to the Revolution, towns offered tax exemptions, land, and other incentives to attract sawyers and millers. Montague probably assisted Slarrow in negotiating a town grant adjacent to the land he bought from Richard Montague. A careful tracking of the deeds to the sawmill and its yard shows that ownership was structured in eight shares with Slarrow owning five while other partners, including Richard Montague, held the rest. In addition to owning farms adjacent to the sawmill, Slarrow and Montague had other shared interests including religion. Each was a dissenter, skeptical of the Congregational (Puritan) church that dominated the Massachusetts Bay Colony.[1]

Leverett's Forest Economy

Sunderland was an agricultural economy thanks to the fertile Connecticut River flood plain along the town's western edge, with ferry crossings linking the town to Deerfield. In contrast, Leverett's uplands featured thick forests covering the rocky slopes of Mount Toby, still some of the wildest land in Massachusetts along the Connecticut. The cleared fields available for Leverett farmers were often a thin layer of topsoil dotted with deposits of glacial outwash.

Whereas much of Sunderland could be ditched and drained to yield rich bottomland, Leverett would never become an exporter of grain and produce. Leverett's abundant forests instead made the new town ripe for small mills and workshops



1880s photograph taken from the site of Richard Montague's North Leverett dwelling and tavern. The sawmill's level bottomland offered an ideal site for drilling recruits, firearms training, and bivouac. Leverett Historical Commission photograph.

that tapped its wood resources. This would continue to be the primary economic driver for the town well into the 20th century.[2] Slarrow's mill employed the most advanced sawmill technology of the time, a water-driven wheel to power a reciprocal (up-and-down) saw. Such saws automated the manual pit system of a man at either end of a long saw, one in a ditch below the other on grade above. Working a pitsaw by hand could produce barely 100 board feet per day. When sufficient water force could be tapped, a sawyer could mount up to three blades on a single reciprocal saw frame and saw multiple boards from a log in one pass. Wooden-geared wheels both powered the blade and advanced the log toward the cut.

The Saw and the Sword

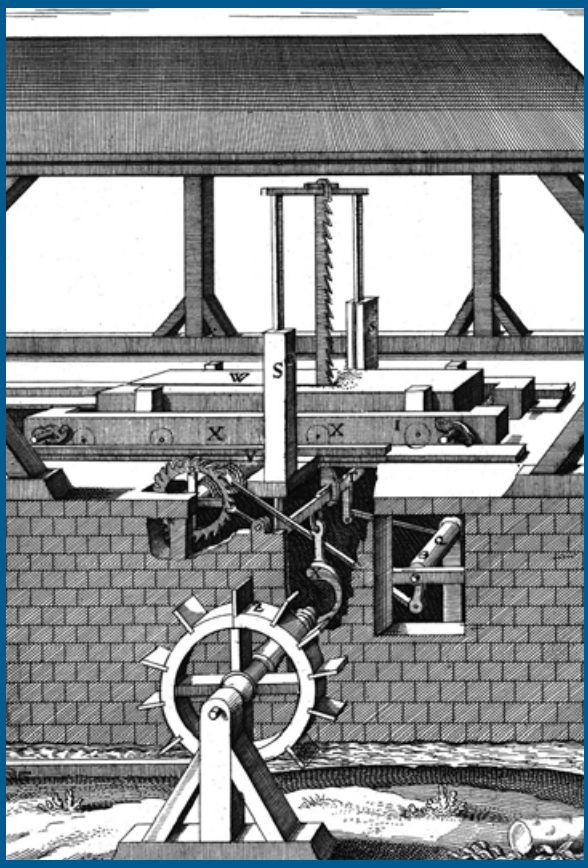
The military collaboration of Slarrow and Montague began soon after the 1775 alarms of Lexington and Concord. Montague recruited a company of soldiers, which he led to join General George Washington in the 11-month-long siege of British-occupied Boston. During this time he was appointed a major and adjutant on the general's staff. Having earlier served with British colonial troops in the French and Indian Wars, he had to explain to his wife Lucy his change of loyalties: "If the Lord will forgive me for fighting seven years for the King, I will fight against him the rest of my life."[3]

Slarrow organized Leverett's only militia company and was appointed its captain. His double role as sawyer (lumber miller) and militia commander was unusual, for millers were exempt from military service.[4] Montague and Slarrow must have been inspiring men, for they led the town meeting in January 1777 that "voted unanimously to risque our lives & fortunes in defence of our rights & liberties wherewith God & nature hath made us free." Through the campaigns of 1777–1778, Slarrow's men responded to alarms in New York at Fort Ticonderoga, Saratoga, and White Plains, and at Warwick, Rhode Island.[5]

It seems likely that Slarrow's men trained on the mill yard. As level bottomland (always the first ground to be cleared for planting) it made an ideal setting for drilling and camping in the hilly countryside. On behalf of his sawmill, Captain Slarrow must have welcomed the help of strong young men for stacking lumber and other chores in exchange for wages or meals during the regular musters. A decade earlier, Montague had established a tavern on property nearby. During its operation recruits could gather there to smoke their pipes, sample the major's "strong spirits," and boast of their exploits, as soldiers have always done.[6]

At a critical juncture of the war in 1779, Slarrow gave up his five-eighths share in the mill, his militia command, and the rest of his real estate in Leverett. The land he had bought from Richard Montague for £240 in 1772 and developed into a farm and sawmill business was sold back to Richard for £2,500, an unprecedented profit for the times. Montague kept Slarrow's farmhouse and cropland while selling the sawmill operation to a wealthy young neighbor.[7]

What triggered Slarrow's change of heart and his abrupt departure? Was it the price offered by Montague, poor health caused by months of military campaigning, or simply the call of his own Presbyterian faith? Did the partners have a falling out or find their Christian beliefs at odds with one another? In early America, the smallest of religious disputes could lead to bitterness and anger. After the sawmill's sale, Captain Slarrow moved to Salem, New York, to join family members and fellow Presbyterians in establishing a religious community near the Vermont border. He died there five years later at the age of 54.[8]



Technology for water-driven up-and-down (sash-type) sawmills like this 1662 example evolved little until gang saws with multiple blades and rocker systems to advance the log were devised in the 18th century. Plate 60 from Georg Andreas Bockler, *Theatrum Machinarum Novum,* (Nuremberg, 1662). Courtesy, Hagley Museum and Library.

The last Yard-class minesweeper launched during World War II. National Museum of the U.S. Navy.

New Generations of Lumbermen

The return of peace and the challenge of building a new nation called for more technicians—carpenters and masons, but also loggers, sawyers, millwrights, and blacksmiths—to open the more than 15 mills and workshops along the Sawmill River in North Leverett. Just 50 yards downriver from the sawmill arose an iron foundry with a trip-hammer for stamping scythe blades and other farm implements. Next door to the foundry was a shop for turning lumber into snaths, the shafts and curved handles for manual tools. Other shops made wooden shingles, clapboards, boxes, tubs, sash and blinds, rakes, pails, furniture, and sap buckets. One account claims that an armory and gunpowder production operated farther up along one of the Sawmill River's feeder streams. Perhaps a dozen gristmills also dotted the industrial district, some of them powered by crude flutter wheels operating along low-flow streams.

Advanced technology upgrades were introduced to Slarrow's sawmill during a surge of innovation following the Civil War. By extending the sawmill 15 feet downriver, owner Gilman Watson installed a very long log bed, capable of sawing timber beams measuring up to 20 inches thick and 30 to 46 feet long for large barns and commercial buildings in the area. Visual evidence shows that the dam was raised to boost the drop needed for driving the turbine that replaced the original external water wheel. These improvements increased both the sawmill's power and the number of months it could operate each year in drier weather that limited the river's flow.[9]

By 1870, Watson could report a 15-horsepower mill with four saws that cut 100,000 board feet each of chestnut and pine, and 40,000 of oak that year. The mill's capital value stood at $2,500. It is likely the mill shed was extended upriver to shelter the turbine-driven shafts and belts rotating the new-style circular blades. The turbine was likely produced either by Rodney Hunt Company or J.D. Chase Manufacturing, two turbine builders with machine shops and foundries in Orange, Massachusetts, on the Millers River east of Leverett. Although a rugged 20-mile wagon ride over the Pelham Hills, Orange was newly accessible by railroad. Chase also fabricated circular saws, so other machinery may have come from its shops. Perhaps more than any other factor, these improved technologies ensured that the sawmill operated well into the 20th century.[10]

The Sawmill Joins the Navy

The long log carriage, rare in western New England, led to a historic contract during World War II when the Glazier family of Leverett attracted the interest of the U.S. Navy. In a letter written some years later, Arnold Glazier, grandson of the saw-

mill's wartime owner wrote, "We sawed logs 45' long to make keels for mine sweepers during World War II. This was the only mill in the area with a carriage long enough to do this." The Navy's Yard-class Minesweeper (YMS) prototype was launched in 1942. Ultimately nearly 450 of them were commissioned, the single largest class of ships built by the Navy during the war.[11]

In an early version of "stealth" military technology, the vessels' wooden hulls were less susceptible to the most dangerous mines with magnetic sensors that set off 6,000 pounds of TNT when metal ships passed nearby. Nazi Germany produced more than 200,000 of these mines. Minesweepers often dragged long cables with cutters to snag contact mines laid along shorelines. By breaking the anchor chains, the mines rose to the surface where gun crews could detonate them when they were far enough away to destroy safely.[12]

Back to the Land

In 1972, the brothers Hugh and Lloyd Kirley gave Slarrow's sawmill a new lease on life by using it to revive long-forgotten building skills in post-and-beam construction. The brothers, trained as landscape architects, designed old-style heavy-frame structures assembled from timbers not seen in the market for decades. The logs for the frames could be sawn on the sawmill's long log carriage, utilizing the only commercial water-powered sawmill in Massachusetts. Despite its nostalgic charm, the technology had its limits. On a good day, the mill could produce 2,000 board feet of lumber compared with modern mills of the era that turned out 4,000 to 6,000 board feet day after day. Water flow remained a problem; diesel power was added to supplement the water-powered turbine. But the Kirleys' product was unique for the times: green wood—unplaned without trim or finish—for big-timber construction of custom houses that remain appealing today.[13]

Disaster Strikes the North Leverett Sawmill

The mill's aging frame finally succumbed to New England's winter weather during an especially heavy snowfall in 2003. The snow load collapsed the roof and much of the mill's center section, probably the oldest part of the structure. Led by the Kirleys, volunteer members of the Leverett Historical Society raised funds and convinced town leaders to devote Community Preservation Act funds to rebuild the lost section.

In 2021, a nonprofit group formed to acquire Slarrow's mill and to find ways to save it as one of the oldest surviving sawmills in New England. Three years later the Friends of the North Leverett Sawmill (FONLS) were awarded a grant of $683,500, one of only 19 National Park Service historic preservation awards in the country. The grant will make possible the preservation of the mill for another generation, with the building's interior serving as a seasonal event and historical museum facility.[14]

Decoding the Legacy of North Leverett's Sawmill District

Thanks to other grants from the Town of Leverett and Commonwealth of Massachusetts, and gifts from the Kirley family, a 3.1 acre industrial history park is open to visitors.[15] It high-

This c. 2005 photograph shows the extent of the sawmill's broken frame. The Kirley brothers and many others believed the building could not survive. Leverett Historical Commission photograph.

1998 photograph shows the sawmill interior open to the weather with the 42' log carriage and circular blade operating as Sawmill River Post and Beam, Inc. Photo by Eric Gradoia.

lights what is known about the riverside workshops and mills that grew up around the sawmill during the 19th century. Archaeological investigations planned for the site will uncover more stories about this local chapter in America's economic development. FONLS board members and Leverett historians plan to probe deeper into the site's industrial history using laser-based tools like LiDAR (light imaging and ranging) sensors and "total station" surveying tools to establish a 3-D base map for archaeological studies yet to come.

For Leverett townsfolk and visitors, the mill, its pond, and historical trail will show the labors and inventions of generations past. Exhibits inside the old mill will bring to life its stories from long ago. As in Leverett, the ruins of hundreds of small-scale technology centers are scattered throughout virtually every town in New England, lying in wait for amateur archaeologists and public historians to uncover and celebrate. The story of the Sawmill River industrial corridor may encourage other rural manufacturing sites to reveal their own long-hidden histories.

Over the past 18 months, the story of Joseph Slarrow and his collaborations with Richard Montague in technology, town affairs, army life, and religious doctrine have become better understood than at any time over the past two centuries. It is tempting to think that more documentary clues can still be found. One century-old account mentions a wartime diary Montague kept that has long been missing. As America begins the celebration of 250 years of independence, new interest in the sawmill's role in the Revolution may turn up that diary and other revelations about its early owners.

ENDNOTES

1. Slarrow's parents were struggling Irish immigrants from Presbyterian Ulster. Before founding North Leverett's Baptist Church, Richard Montague was raised in the established church of Sunderland. His dissent arose when he refused to pay taxes for the salary of the town's Congregational minister. John Montague Smith, *History of Sunderland, Massachusetts* (Greenfield, MA, 1899), 454.

2. A 1932 newspaper roundup of the area's sawmill activity claimed that "a certain territory some five miles square lying partly in Shutesbury, Wendell, Leverett and Montague, at one time claimed more sawmills than any other tract of like size in all New England." J.A. Taggart, "Saw Mills of Long Ago," *Gazette & Courier,* Greenfield, April 8, 1932.

3. "The Montagues in America," address of Major Montague's great-grandson and namesake of the Rev. Richard Montague in *Meeting of the Montague Family at Hadley, Mass. August 2, 1882* (Boston, 1882).

4. Little is known about Joseph Slarrow's military experience or his skills as a sawyer and builder, but his first occupation as a cordwainer (shoemaker) in the nearby town of New Salem shows that he was good with his hands. He also had leadership experience, elected in 1772 as a selectman in the Worcester County town of Hubbardston. Although a newcomer, the town selected him constable and deer reeve (game warden), and he served as moderator for at least one town meeting. Town of Leverett Records, 1773; "Quakers, surgeons, ministers, Negroes, Indians, and Molatoes," were also exempt. *The Militia Act; Together with the Rules and Regulations for the Militia* (Boston, 1777). https://play.google.com/books/reader?id=coQ2AQAAMAAJ&pg=GBS.PA18&hl=en

5. Town of Leverett Records, 1777; Declaration of war service of Caleb Hubbard, Slarrow militiaman and later Sunderland tavern landlord. Smith, *History of Sunderland,*143–45.

6. "...strong spirits...." Ibid., 195. Three surviving payroll musters of Slarrow's company, and town genealogies identify 31 men who served under Slarrow, a close-knit collection of fathers, sons, brothers, cousins, and neighbors.

7. The original 1779 sawmill deed (Slarrow to Montague) is archived in the Pocumtuck Valley Memorial Association Library, Deerfield.

8. Crisfield Johnson, *History of Washington County New York, Some of Its Prominent Men and Pioneers* (Philadelphia, 1878). Capt. Slarrow is buried in the Revolutionary Cemetery of Salem, NY.

9. The Watson/Glazier family operated the sawmill for nearly a century. Pleun Bouricius, *Slarrow Mill Narrative Storyboard.pdf. A Sense of Where You Are: Slarrow/North Leverett Mill.* Virtual presentation October 22, 2012. https://www.youtube.com/watch?v=ovvEIvecuwY.

10. Ibid.

11. Arnold Glazier to John Foster, December 18, 2001. Leverett Historical Commission records. A nautical museum on City Island, New York, preserves the wartime story of the minesweepers. From City Island, yacht builder Henry B. Nevins (1878-1950) directed the construction of all YMS minesweepers at 12 yards on the East Coast, 19 on the West Coast, and 4 on the Great Lakes. https://www.cityislandmuseum.org .

12. "The Story of a WWII Wooden Minesweeper, USS YMS 339, and Her Skipper and Crew in the Pacific," 2009, Navy League of the United States, Connecticut Council. https://www.navyleaguewestct.org/minesweeper.html .

13. Unidentified clipping from Leverett Historical Commission files: pages 102–103 from article "Business #8" by Nancy Frazier and Pat Reilly *(Yankee Magazine* 1975). Lance Kirley today operates the company founded by his late father Lloyd, in Florence, MA. In 2022, the Kirleys and a family trust donated the sawmill and 3.1 acres surrounding it to Friends of North Leverett Sawmill to establish the new industrial park and museum. https://classiccolonialhomes.com.

14. Scott Merzbach, "Historic Sawmill Secures Federal Grant" *Daily Hampshire Gazette,* Northampton, MA, September 2, 2024. https://www.gazettenet.com/Nearly-700-000-grant-to-North-Leverett-Sawmill-from-National-Park-Service-56755061

15. https://leverettsawmill.org/

A Stove by any Other Name

by David Bosse

WHEN DANIEL WEBSTER spoke of the comfort of sitting in the approval of friends and neighbors, one wonders if a warm stove played a part in his contentment? The struggle to stay warm—even to achieve comfort—has vexed much of humankind for eons. In New England, our forbearers relieved the chill of long winters with warm clothing, blankets, and most importantly, fire.

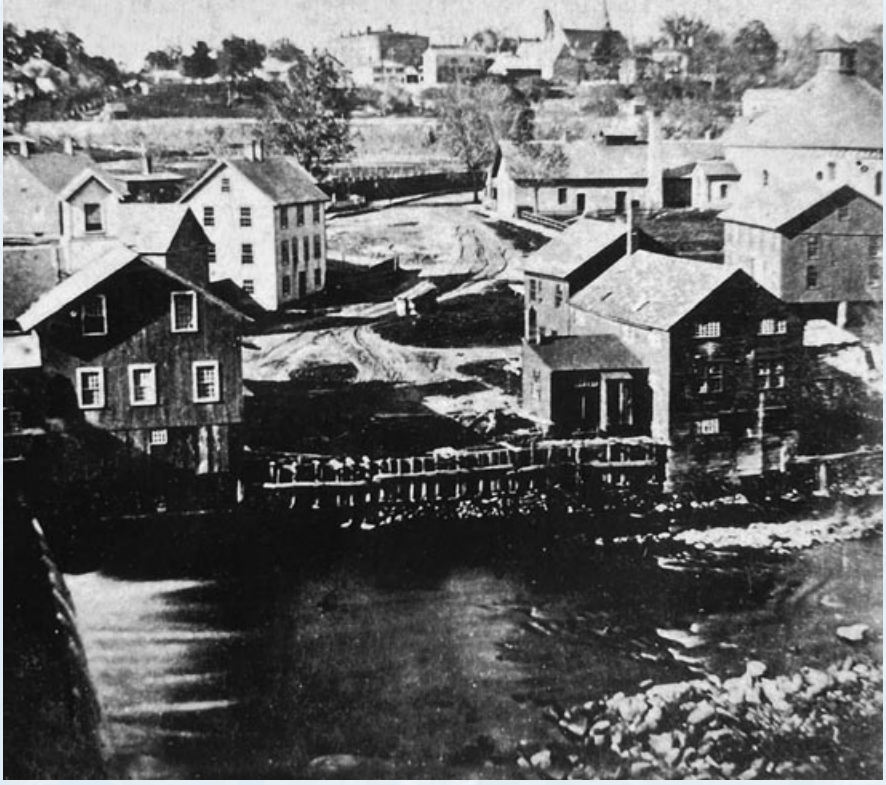
Several improvements to the open-fire hearth occurred in the 18th century. The most significant innovation served as a transition from the hearth to the stove: the "Pennsylvania fireplace." Later renamed for its inventor, Benjamin Franklin (1706–1790), it achieved great popularity in the colonies and early republic. While representing a technological step forward by inclusion of a heat exchanger and external cold air feed that resulted in an important saving in fuel over a typical hearth, as much as 60% of a Franklin stove's heat still went up the chimney.[1]

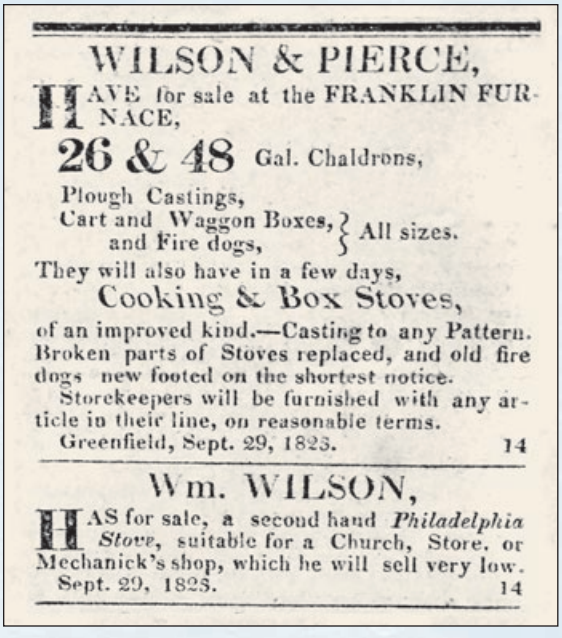
Although cast-iron heating stoves had been made as early as 1642 at the Saugus Iron Works near Lynn, Massachusetts, improvements were slow in coming. Franklin stoves dominated the American market[2] and retained consumer appeal long after more efficient stoves had come on the market. Near Deerfield the first cast-iron foundries began operating in the late 18th century in Bernardston. According to Francis Thompson's *History of Greenfield* (Greenfield, 1904), William Wilson (1787–1868) and John J. Pierce (1793–1878) started the Franklin Furnace, the first in Greenfield, on the Green River next to a complex of grist mills begun in 1714. Wilson, younger brother of John Wilson (1782–1869), whose printing office is owned by Historic Deerfield, ran a blacksmith shop at the corner of Federal and Main Streets in Greenfield until a fire destroyed it in June 1822. Pierce, son of metal worker Samuel Pierce (1767–1840), whose pewtering tools also are owned by Historic Deerfield, had followed his father into the business.[3]

Wilson's Patent stove, c. 1830. Historic Deerfield. Estate of Louise Billings, 2789.

With bog iron deposits available in the neighboring town of Bernardston, the Franklin Furnace had access to raw materials for making plows, axe heads, and andirons.[4] An advertisement for Wilson and Pierce in the September 29, 1823, *Franklin Herald & Public Advertiser* mentions chaldrons (cauldrons), plows, and firedogs (andirons) and states that cooking and box stoves would arrive in a few days. This

Stereograph of the mill complex on the Greenfield River, c. 1870-1880. The earliest mill dates from the 18th century. From the *American Scenery* series. Museum of Our Industrial Heritage, Greenfield.





WILSON & PIERCE,

HAVE for sale at the FRANKLIN FURNACE,

26 & 48 Gal. Chaldrons,

Plough Castings,
Cart and Waggon Boxes, and Fire dogs, } All sizes.

They will also have in a few days,

Cooking & Box Stoves,

of an improved kind.—Casting to any Pattern. Broken parts of Stoves replaced, and old fire dogs new footed on the shortest notice.

Storekeepers will be furnished with any article in their line, on reasonable terms.

Greenfield, Sept. 29, 1823. 14

Wm. WILSON,

HAS for sale, a second hand *Philadelphia Stove*, suitable for a Church, Store, or Mechanick's shop, which he will sell very low.

Sept. 29, 1823. 14

Advertisement, *Franklin Herald & Public Advertiser,* Sept. 29, 1823. The "Philadelphia Stove" sold by Wilson referenced Benjamin Franklin's Pennsylvanian-style parlor stove. Historical Society of Greenfield.

seemingly implies that they did not manufacture stoves at that time; eventually they would.

Historic Deerfield acquired such a stove in 1949 when Henry and Helen Flynt purchased the Dr. Thomas Williams house (Lot 9) on Deerfield's Main Street. The fixtures inside included a cast iron parlor stove with a large, pointed dome finished with an urn-shaped brass finial. Two fluted pilasters topped with brass ball-shaped finials on the front corners, cast starburst and tree-like patterns, neoclassical figures adjacent to the inner grate, and a patera with the words "Wilson's Patent" within a beaded oval complete the low-relief decoration. The stoves had been advertised in March 1835 as "elegant brass mounted Parlour Fire Frames," for sale at the Wilson & Pierce showroom in the former Pierce Building on Main Street near the town common.

The stove, thought to be patented by William Wilson when initially cataloged as part of the collection, is in fact a copy of one made by James Wilson (no discernible relation) of Poughkeepsie, New York. That Wilson stove, patented in 1816, sold widely and became a prototype for many other "Franklin-type" imitations such as the Greenfield stove.[5] After relocating to Manhattan, James Wilson advertised his stove in the *New York Daily Advertiser* of January 11, 1820, stating "For beauty and economy not to be equaled, in giving a beautiful open fire, the same passing several times in the stove, ascending and descending through the urn or cupola on the top without the least danger of smoke."

One may reasonably question whether Historic Deerfield's stove was made in Greenfield. When comparing the Wilson and Pierce stove with Old Sturbridge Village's James Wilson stove, the overall fire box and slightly extended hearth piece are similar. Obvious distinctions appear in the differently shaped domes and the choice and execution of decoration, with the crisp casting of the New York stove contrasting with the local effort. With "Wilson's Patent" appearing prominently on the front of both stoves, confusion seems inevitable. Although no provenance information exists for Historic Deerfield's stove beyond the name of its final owner, the availability of a Greenfield-made stove some three miles away argues in favor of its manufacture by Wilson and Pierce.

Dating the stove is also problematic. Based on circumstantial evidence, manufacture sometime between 1823 and 1838 appears probable, with the 1830s most likely. James Wilson's stove patent expired in 1830, 14 years after

the date of issue. The Patent Office fire of 1836 destroyed any evidence of his renewal, if indeed that happened, and imitations began to appear early on. Lacking any business records to consult, the dates and extent of local production of the Franklin-style stove remain unknown, but the dissolution of the partnership of Wilson and Pierce, following a rebranding as the Greenfield Furnace, as announced in the *Greenfield Gazette* in January 1838, may signal a terminal date.

As Howell John Harris has noted, owners enjoyed the view of the fire afforded by a Franklin stove long after stove makers had begun to produce air-tight stoves. There was, in his view, a nostalgia among consumers about the stove whose period of innovation had been eclipsed by others. To capitalize on this enduring appeal, metal workers William Wilson and John J. Pierce, with no previous experience making stoves, ventured into this area of large-scale casting and produced a durable and somewhat fashionable product for their clientele that recalled the past but used the eye-catching heating domes to combine modern classicism with the powerful connotation of a heating machine.

Wilson's Patent stove, c. 1820. Old Sturbridge Village, 2.77.94

The author thanks Tom Kelleher, Curator of Mechanical Arts at Old Sturbridge Village, for sharing his knowledge of heating stoves.

ENDNOTES

1. Marcus Bull, *Experiments to Determine the Comparative Value of the Principal Varieties of Fuel Used in the United States, and Also in Europe* (Philadelphia: Judah Dobson, 1827), 102. Internet Archive.org.

2. Howell Harris, "The Stove Trade Needs Change Continually": Designing the First Mass–Market Consumer Durable, ca. 1810–1930," *Winterthur Portfolio* Vol. 43 (Winter 2009): 368.

3. Philip Zea, "An Alloy of Trades: The Career of Samuel Pierce, Whitesmith," *The Bulletin,* Pewter Collectors' Club of America 12, no. 2 (Winter 1999): 51-74.

4. Lucy Cutler Kellog, *History of the Town of Bernardston, Franklin County Massachusetts* (Greenfield: E.A. Hall, 1902), 63; 248.

5. Howell Harris, "A Collection of Stoves from American Museums, Part II: Franklins." https://stovehistory.blogspot.com/2013/12/ (Dec. 18, 2013).

Details of the nameplate and decoration. Historic Deerfield. Estate of Louise Billings, 2789.

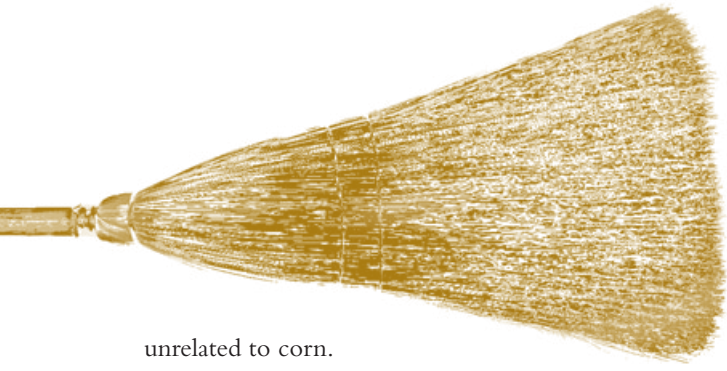
Innovations in Broom Making

by Faith Deering

Broom corn
(Sorghum vulgare)

HOLDING THE HANDLE of the broom comfortably in my hands I sweep the kitchen floor—a necessary task and the way I end each day. The long, flexible fibers of the broom catch the dust, crumbs, lint, and all the tiny bits of leaves and dirt I have tracked into the house. Before long, a satisfying pile has accumulated on the floor. I set the broom aside and kneel to whisk the debris into a dustpan. With the evening ritual over, I put the broom on a peg where it hangs neatly from a leather loop on its handle. A broom is such a common, utilitarian tool, so easy to use, yet with a remarkable history. There have been many innovations that have changed the broom. Some very significant ones were set in motion in the Connecticut River Valley, not far from Deerfield, in the town of Hadley, Massachusetts.

The first innovator in this broom history is Levi Dickinson (1755-1843), a Hadley farmer. In 1797, Dickinson obtained a small amount of broom corn seed and planted it on his land. The seed he planted was actually sorghum, a tall, grass-like plant indigenous to Africa. The particular variety he planted, *Sorghum vulgare,* acquired the name "broom corn" because it looks similar to the edible corn, *Zea mays*. However, sorghum is in a completely different botanical family



unrelated to corn.

As sorghum grows, it produces one thick, long, main stem, topped with seed-covered tassels called panicles that are used for broom making.

Where and how Levi Dickinson obtained the seeds is difficult to document. Although not the direct source of the seeds Dickinson planted, Benjamin Franklin is often identified as the first person to introduce broom corn to North America. The following letter, written to Samuel Ward on March 24, 1757, is cited as proof of Franklin's role in promoting broom corn as a crop and using it for making brooms:

I inclose you some of the Grain called Whisk Corn, or Broom Corn. It must be planted in Hills like Indian Corn, 3 or 4 Grains in a Hill. It looks like Indian Corn when growing, till the Top comes out, of which they make the Whisk Brushes for Velvet, and excellent Brooms. The Grain is good for Bread, and for Fowls, Horses, &c. being a kind of Millet, and of great Increase. The Stalks &c. make excellent Thatch. It grows 10 foot high, and I believe must have a little more room than you commonly give your Indian Corn; but plant it at the same time.[1]

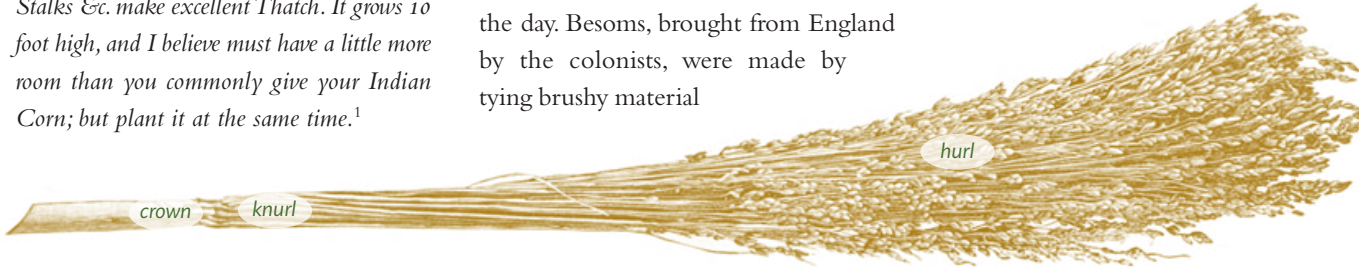
Further research in ethnobotanical sources makes it appear more likely that sorghum seeds were first brought from Africa by kidnapped and enslaved people who carried the seeds and knowledge of broom making with them. They knew the value of the seeds as a source of food and the inedible fiber, the panicles, as useful for making brooms. These were the first people to plant broom corn and make brooms with it in North America.[2] Thus, Levi Dickinson can be credited as the first person to conceive of the idea of raising broom corn with the purpose of supplying the country with brooms, not the first to make a broom from *Sorghum vulgare.*

Throughout the summer of 1797 Dickinson tended his plants. He carefully hoed, weeded, harvested, then dried the long panicles. Dickinson made his first broom from this harvest by tying about a pound of the dry panicles to one end of a long handle. He scraped the seeds from the panicles and finished the broom by cutting the panicles evenly to make a neat sweeping edge. When Dickinson gave the broom to his wife Bethia, she was pleased with the way it swept. Soon Bethia preferred the new broom to her "besom," the common broom of the day. Besoms, brought from England by the colonists, were made by tying brushy material such as reeds, grasses, or thin twigs, to one end of a hand-carved, wooden handle. Bethia proudly showed her new broom to neighbors who found it superior to their besoms. The difference, they discovered, was in the quality of the fibrous broom corn panicle. Household dirt, dust, and ashes adhered to the natural bends and twists in the tough fiber, making floor cleaning much easier. With more requests, Dickinson made 30 brooms from the few hills of broom corn he planted in 1797.

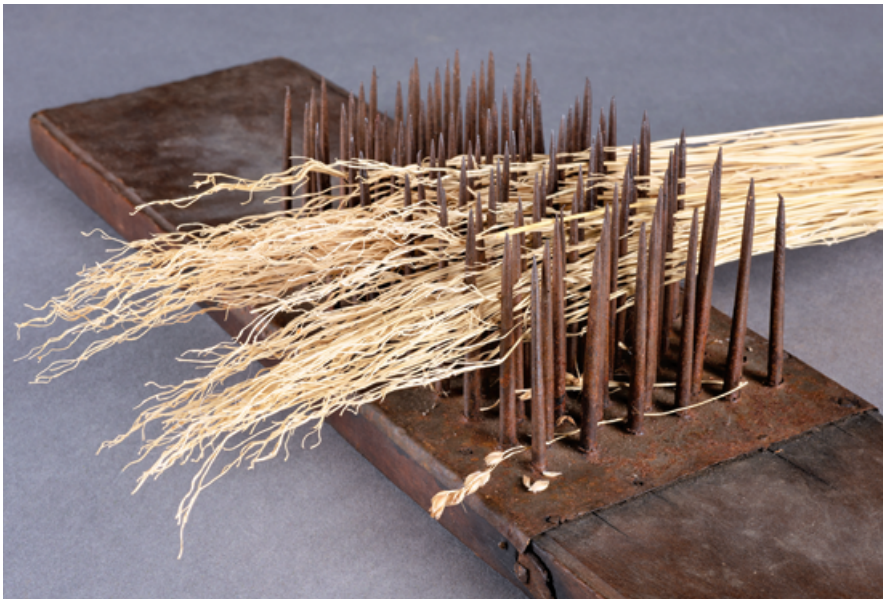
The following spring Dickinson and his sons planted half an acre of broom corn and made 200 brooms. While the demand for Levi Dickinson's brooms increased, some Hadley townspeople "thought his projects fanciful, and sneers and sarcasms were frequent." They told Dickinson "The Indians here abouts make brooms" as a way to denigrate his efforts.[3] This was in reference to splinter brooms, made and sold by local Indigenous people. Splinter brooms were constructed from birch and ash branches, each branch long enough to form the handle of a broom. The malleable, fresh

Above: Shaker flat broom and Connecticut River Valley round brooms, similar to those made in Deerfield in the 19th century.

Below: Broom corn tassel with seeds still attached.



Harvesters cutting and "tabling" broom corn. The tall stalks were bent and laid flat upon each other to form a "table' with seed heads at a convenient height for cutting along open rows. From *Broom-Corn and Brooms,* published by the *American Agriculturist*, 1876.



Dry broom corn pulled through a hatchel (an iron-toothed comb) to remove the seeds in preparation for broom making.

bark (the splinters) was cut to one end of the handle where it turned backward and down, then gathered and held by a rawhide lace. The flexible strips of bark formed the sweeping end of the broom. Despite the unkind remarks of his neighbors, Dickinson persevered and in 1799 planted a full acre of broom corn and made many more brooms. Not only did he continue with his broom corn planting and broom making, he believed so strongly in what he was doing that as early as 1801 he prophesized the broom business would someday become the biggest industry in Hampshire County, home to Hadley.

Critical to making a broom was tightly securing the panicles to the handle so as not to fall off during sweeping. Dickinson's process for making his round brooms hold up to constant use began with a handle made from local hardwood. He sat in a chair with the broom handle on his lap and lengths of dry broom corn brush (i.e., the long dry panicles) on a bench close by. On the floor, held by his feet, was a ball of linen twine on a wooden roller. Dickinson would take a handful of brush from the bench and place it length wise on one end of the handle. Pulling the twine up toward his lap, he wound it tightly around the brush securing it to the handle with a tight knot. He finished his broom using a knife to scrape away any seeds still clinging to the panicles.

Levi Dickinson perfected his technique and made more brooms. Every household needed at least one broom, and all farmers needed one or two brooms in the barn. With an eager market and a good product, he continued to make brooms and soon had a sufficient number to sell. He was said to have remarked, the day he first sold a few brooms was the happiest day of his life.[4] Raising broom corn and broom making expanded beyond Hadley, and before

long farmers in the Connecticut River Valley towns of Deerfield, Whately, and Sunderland became involved.[5] The hill towns of Ashfield, Colrain, and Conway, where the soil was not fertile enough for growing broom corn, supplied the hardwood handles from woodlots. The broom-making business grew rapidly, and by 1805 Dickinson began selling his brooms in Boston and Albany. In the year 1810, 70,000 brooms were made in the towns around Hadley.

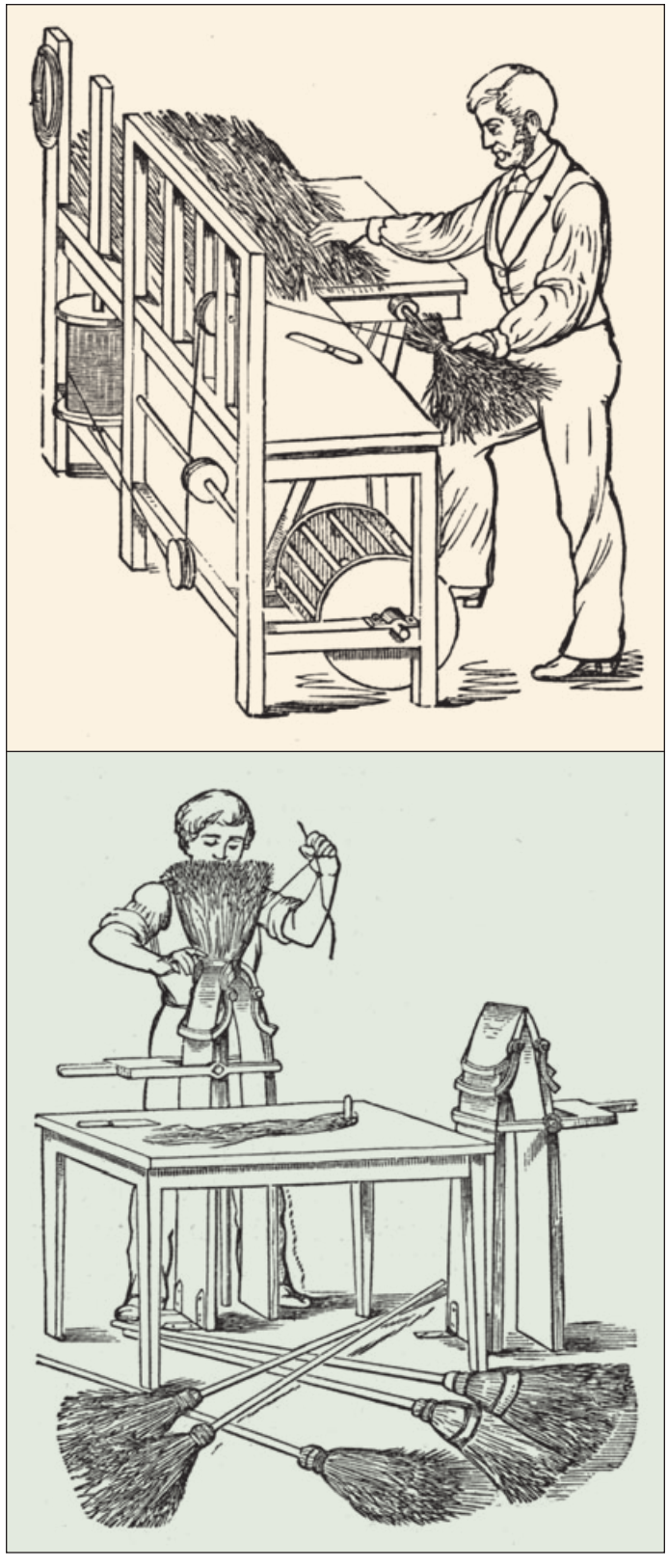
The growing market necessitated a process that went beyond tying broom corn brush to a handle held in the lap. Speed and consistency became important, and from this need came the next innovation, the treadle broom-making machine. The foot-powered machine, about the size of a carpenter's bench, consisted of a chuck to hold the broom handle and a revolving drum powered by a foot treadle that held twine. A flat surface on the top of the bench supported the broom corn brush and the broom maker's tools. Standing upright next to the tools, a metal toothed hatchel enabled the broom maker to scrape the seeds from the long panicles.

The invention of the treadle broom-making machine is often attributed to Levi Dickinson, even though little evidence points to him as the sole designer. More than likely, several broom makers developed versions of the machine themselves. The treadle machine was not produced or marketed by local manufacturing firms, nor patented until 1849.

While developing and improving the broom-making machine, its inventors looked closely at the handle to find a better way to secure the broom corn brush. The solution involved adding two pegs, positioned at right angles, to one end of the handle. Using a bit and brace, two holes were drilled into the handle and square split pegs pounded into the round holes. The pegs provided an anchoring spot for the twine as it was pulled tightly around the broom corn laid on the handle. As the broom maker treadled, the revolving drum turned the broom handle in the chuck and kept the twine tightly secured.

With the invention of the broom-making machine and the pegging of the broom handle, production became faster and the resulting brooms considerably improved. This led to rapid expansion so that by 1855, "906 acres of broom corn were raised in Hadley and thirty to forty small broom shops, often in a barn or a small shed behind a farmhouse, were making thousands of brooms."[6]

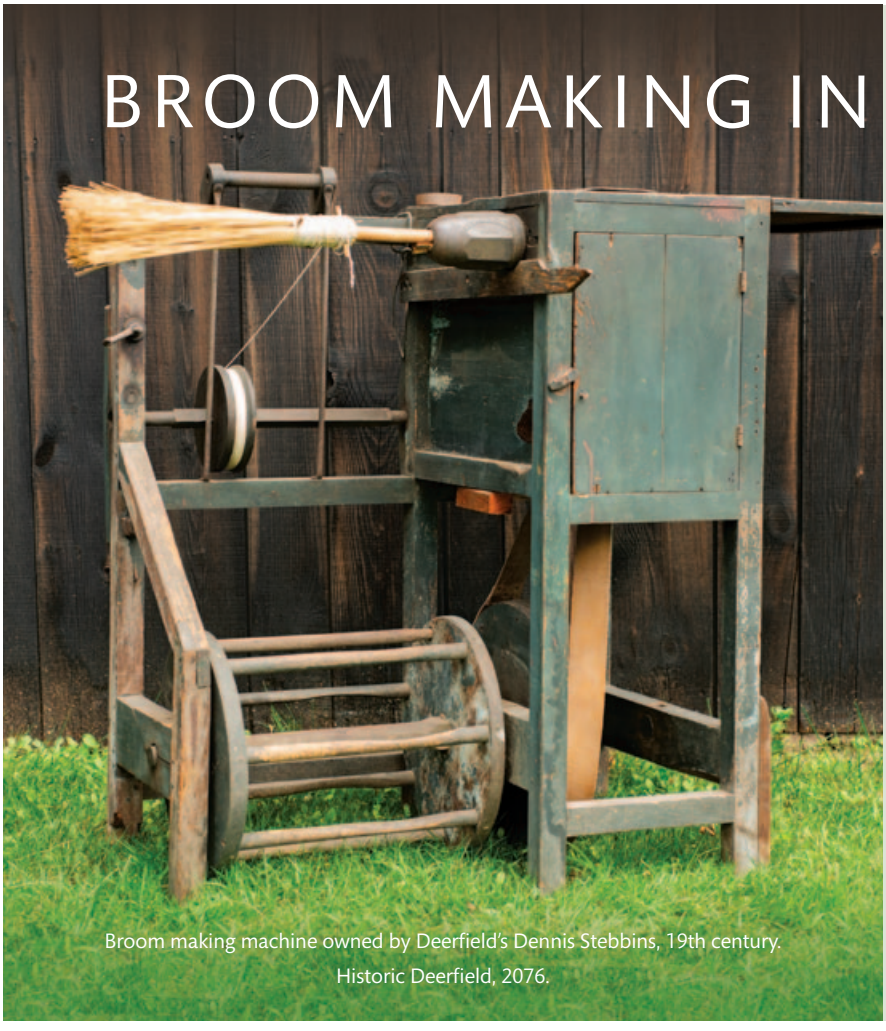
Thousands of brooms required hundreds of acres of broom corn, making it the cash crop of the Connecticut River Valley as Dickinson had predicted. Tending, fertilizing, harvesting, and drying broom corn required a great deal of



Top: A treadle-powered machine winds cord around bunches of broom tassels and a wooden handle. Above: Vise invented by the Shakers to flatten a round broom and holds it while sewn in place. From *Broom-Corn and Brooms,* published by the *American Agriculturist*, 1876.

Advertisement showing broom making tools including knives for cutting and trimming tassels and needles used to stitch the brooms. From *Brooms, Brushes and Handles,* 1919.

intensive seasonal labor. Seeds were planted in the late spring and harvested before the first frost. After hanging in a barn to dry, the cut panicles were ready to make into brooms during the winter months when many other farm tasks came to a halt. This was hard labor, but worth it for the farmers who profited from their crop. Each acre of well-fertilized land could produce 600 to 1000 pounds of broom corn. As the popularity of the Connecticut River Valley round broom expanded, farmers moved westward into New York seeking new land for their broom corn crop. It was in New York that another major broom-making innovation took place, about 100 miles from Hadley, in the Shaker Community of Watervliet.



Broom making machine owned by Deerfield's Dennis Stebbins, 19th century. Historic Deerfield, 2076.

BROOM MAKING IN DEERFIELD

by Claire Carlson

BROOM MAKING became a dominant cottage industry in the Valley in the early 19th century. In Deerfield, broom making took place in sheds, barns, and other dedicated small buildings. Farmers grew acres of broom corn during the summer, harvested it in the fall, and made brooms during the winter. Other farmers in the region's hill towns supplied turned broom handles from trees in their woodlots. By the 1830s and 1840s, Valley farmers harvested hundreds of thousands of pounds of broom corn each year, and there were half a dozen broom shops along Deerfield's village street. Farmers ran their own shops; the more successful employed one or two men. Deerfield alone produced more

Brother Theodore Bates (1762-1846) is credited with flattening the round broom. Believing he could make a better broom, Bates invented a unique wooden vise that pressed the round broom flat. This efficient flat broom soon became the standard for all brooms, creating the shape we are familiar with today.

The flat broom with its wooden handle, often called the "corn broom," is the one I sweep with daily. But brooms are used everywhere in the world, some made of synthetic materials, others made with whatever "brushy" stuff is found locally. The materials used and the shape and size of the broom reflect local culture. Sometimes adorned and decorated, sometimes stitched or braided, plain or fancy, brooms carry with them their own stories. What other common tools of daily life have a history of change over time, innovations we overlook and stories we don't know? Who were the innovators, men and women, who persevered in the face of obstacles like Levi Dickinson because they believed in their own vison?

I am deeply grateful to the following for their gracious sharing of resources, suggestions, and encouragement as I researched the history of broom making: Claire Carlson, Interpretive Program Manager/ Director of Archeology, Historic Deerfield; Dylan Gaffney, Archives Librarian, Forbes Library, Northampton, MA; Alan Weinberg, Historian, Hadley Historical Society, Hadley, MA; Tom West, Historian and Docent, Hadley Farm Museum.

ENDNOTES

1. Leonard W. Labree (ed.) *The Papers of Benjamin Franklin,* Vol. 7 October 1, 1756, through March 31, 1758 (New Haven: Yale University Press, 1963), 154-55.

2. For more on the role of enslaved people in bringing broom corn seeds to North America, see: Ethnobotany https://www.pullupyourplants.com/archive/sorghum/benfranklin

3. Sylvester Judd, *The History of Hadley* (Somersworth: New Hampshire Publishing Co., 1976), 36.

4. Ibid., 361.

5. For information on broom corn and broom making in Deerfield, see Barbara Mathews, "'A Wonderful Broom Maker': Calvin Salisbury of Deerfield," *Historic Deerfield* 19 (2021): 44-45.

6. Broom Corn Exhibit Panel, Hadley Farm Museum, Hadley, Massachusetts.

than 200,000 brooms in 1832; nearby Hadley made half a million.

Who were these craftsmen, and how do we know about them? George Sheldon, Deerfield's respected town historian, fondly reminisced about his childhood visits to the broom shop, recalling a claustrophobic world of seed dust, brimstone smells, and skilled makers singing popular ballads. Two brothers, Dennis and Baxter Stebbins, were noted broom makers and successful farmers. Dennis married Lois Hawks, and Baxter married Martha Hawks, whose families made brooms. Meanwhile Avice Stebbins, their sister, married George Arms, who also made brooms. As with most household industries, women worked alongside men, their labor often unrecorded.

According to Sheldon and others, Calvin Salisbury, an African American man, had the reputation of being one of the best broom makers in Deerfield. Until his death in 1847, Salisbury lived with and worked for Dennis Stebbins. Although deaf and non-speaking, "Cab" had a "lighting-like stroke" when cutting broom corn. Another Deerfielder praised his ability to "make a thousand brooms which all seemed alike," working at double a normal maker's speed. His impressive skills enabled Calvin Salisbury, who might otherwise be limited by disabilities, to earn a living. Francis Munn, another local man, made brooms for Dennis Stebbins. Thanks to the expertise of these broom makers, the Valley prospered in a typically New England fusion of agrarian production and ingenuity.

Account of the expenses of cultivating an acre of Broom Corn in Deerfield meadows, in the year 1832, by Mr Alvah Hawkes:

One ploughing, 12th May, - -	$1,25
Holeing out, one third of a day's work,	34
Ten loads of manure, at 75 cents, -	7,50
Putting manure in the hill, - -	2,00
Planting, one day's work, - -	1,00
Seed, 4 quarts, at 75 cents per bushel,	10
Hoeing, first time 3½ days, - -	3,00
do. 2d do. 3 do -	2,50
do. 3d do. 2½ do. -	2,50
Horse and boy to plough for the season,	1,00
Tabling and cutting, 4 days, - -	4,00
Gathering, carting, and packing away,	2,50
	$28,68

Alvah Hawks' account of expenses to cultivate broom corn in Deerfield in 1832. From *New England Farmer,* July 22, 1835.

The Odessa Hoop Skirt

by Samantha Frost

Odessa Skirt Co.'s hoop skirt, 1867–1869. Historic Deerfield 2011.26.

VOLUMINOUS SKIRTS have evolved over the centuries, from their origins as farthingales in 15th-century France and Spain, to the cording, baleen, and horsehair enhanced petticoats of the 18th century. By the 1850s, the Bessemer process and mass-production of steel allowed for petticoats and underskirt supports to be reinforced with metal.[1] Skirts became even wider in the 1860s with the advent of the hoop skirt or cage crinoline, an undergarment comprised of a set of steel hoops attached by cloth strips, providing the wearer with a full skirt without the added weight of several petticoats. The Odessa hoop skirt, manufactured by the Odessa Skirt Company between 1867 and 1869, reflects the elliptical skirt shape favored in the United States in the mid-1860s.

Less than 20 miles south of Deerfield, the Odessa Skirt Company was founded by Charles D. Clapp in Amherst, Massachusetts, in 1863. By 1865, H.J. Bardwell and E.H. Haskell joined the company as partners and began employing upwards of 30 women to make hoop skirts in a shop located near the town's meetinghouse.[2] On May 22, 1866, Anna Maria Porter Clapp, Clapp's sister, and Bardwell's wife, propelled the company by securing a patent for a "new and useful improvement in Hoop Skirts."[3] The patent, for which Bardwell and Clapp were assignees, allowed for the Odessa hoop skirt to be altered via cords while on the wearer, thus the undergarment could easily take the shape of an "Empress trail," "Paris trail," or "Parlor invisible" silhouette.[4] The ability of the hoop skirt to be adjusted while on the wearer marked an innovation in women's fashion in the mid-19th century, prompting the Odessa Skirt Company to continue to produce and sell other adjustable models. Factories in surrounding towns, such as Northampton, likewise produced volume-enhancing hoop skirts, and the affordability provided by mass-manufacturing allowed residents of western Massachusetts to purchase several skirts for themselves and their children.

As with many fashion trends, the popularity of a full skirt soon faced a decline, and the hoop skirt fell out of favor in fashionable society by the late 1860s and 1870s. In 1867, E.H. Emanuel purchased the Odessa Skirt Company and moved production to Gloucester, Massachusetts, where the business produced "skirts and undergarments" until 1870, after which the company may have begun making other products, been bought out, or ceased production altogether.[5] The lifespan of the Odessa Skirt Company may have been short, but the adjustable hoop skirt transformed women's fashion even in the most rural parts of Massachusetts and serves as an extant example of an invention that sought to achieve the ever-changing ideal of the perfect female silhouette.

The Odessa hoop skirt will be on view in the exhibition, *Body by Design: Fashionable Silhouettes from the Ideal to the Real*, at Historic Deerfield's Flynt Center of Early New England Life, through January 2026.

END NOTES

1. David E. (Ned) Lazaro, "Supporting Role: The Hoop Skirt in 1860s Western-Massachusetts fashion," in *Dressing New England: Clothing, Fashion, and Identity,* Dublin Seminar for New England Folklife Annual Proceedings 2010, Historic Deerfield.
2. Edward Carpenter, *History of the Town of Amherst, Massachusetts* (Amherst: Press of Carpenter & Morehouse, 1896), 297.
3. Lazaro, "Supporting Role," 37.
4. Carpenter, *History of the Town of Amherst*, 297.
5. Lazaro, 38.

SAVE THE DATE 2025 FALL FORUM · Friday–Saturday, September 12–13, 2025

Fashioning the Body: Dress in New England 1600–1900

Fashion has garnered great interest in recent decades, and research into the history of clothing has yielded new insights into culturally embedded ideas around self-styling and the body. Yet, few studies have explored New England's relationship with styling the body and fashionable dress. Organized in conjunction with the current exhibition, *Body by Design: Fashionable Silhouettes from the Ideal to the Real* on view in the Flynt Center, Historic Deerfield's 2025 Fall Forum *Fashioning the Body: Dress in New England 1600-1900* will convene a group of experts in the field to explore the rich history of dressing the body and self-presentation in this region.

The forum will begin on Friday with demonstrations of historic dressmaking and tours of the exhibition and library, followed by a welcome reception and the keynote address, "The Teen, Her BFF, Her Uncle, and Some Tailors: Documents with Clues to New England Fashion" by Alden O'Brien, Curator of Costume and Textiles at the DAR Museum in Washington, DC, who will share her insights into the diary of Sylvia Lewis Tyler and what it can tell us about shopping, making, [re] making, fashionability, and thrift in New England clothing.

Saturday's speakers include Jennifer Swope of the Museum of Fine Arts, Boston, David E. Lazaro of The Wadsworth Atheneum, Hartford, Lynne Z. Basset, freelance curator of fashion and textiles, Chloe Chapin, Assistant Director of Course Development, Derek Bok Center for Teaching and Learning, Harvard University, Kristina M. Hanson, Curator of Collections and Exhibitions, Fleming Museum of Art, University of Vermont, Laura Johnson, Curator of Costumes and Textiles, National Museum of American History, Smithsonian Institution, Kristina Haugland, independent researcher, Emily Whitted, graduate student, University of Massachusetts, and Livy Scott, Ph.D. candidate at MIT. Saturday will include a buffet lunch with free time to walk the old Main Street and view open-hearth cooking demonstrations and historic houses.

Registration information and a detailed schedule of the Fall Forum will be posted on HD's events website.

CONTRIBUTORS TO THIS ISSUE

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Bruce W. Cortis is a Westfield, MA, native and has been involved with genealogical and historical research for more than 20 years. He authored *Whips of Westfield, the Rise and Decline of an American Industry* in 2018, and was a presenter for Westfield's 350th Anniversary speaker series in 2019, focusing on Westfield's whip industry.

Faith Deering lives in Florence, MA, where she makes brooms and grows broom corn in the local community garden. She learned the history and craft of broom making during the 15 years she worked as a Museum Educator at Historic Deerfield. Prior to coming to Deerfield, Faith worked at the Smithsonian's National Museum of Natural History as an entomologist.

Michael Emmons, Jr. is Director of Historic Preservation and Architectural Research at Historic Deerfield, where he oversees the preservation and restoration of the organization's 55 historic buildings. He holds an M.A. in History from the University of Connecticut, an M.A. in Historic Preservation from the University of Delaware, and is a Ph.D. candidate in Preservation Studies, also at UD.

Steve Finer has enjoyed carrying on as an antiquarian bookseller for nearly a half century in Franklin County, all the while trying to elude being noticed much. During the earlier years, business success was largely the result of specializing in local history. Hence, his abiding interest in L. L. Langstroth.

Samantha Frost is Assistant Registrar at Historic Deerfield. She joined the staff in 2024 after graduating from Northeastern University with her M.A. in public history and a certificate in digital humanities.

Kenneth Hafertepe served as director of academic programs at Historic Deerfield from 1990 to 2000 and has been a professor of museum studies at Baylor University since then. He has written many articles and books, including *The Material Culture of German Texans,* which won the Ruth Emery Award from the Victorian Society in America. While at HD he founded the Deerfield-Wellesley Symposium with James F. O'Gorman of Wellesley College.

Matthew W. Jones has a life-long interest in history, art, and antiquities. He graduated from the University of Massachusetts with a degree in Anthropology only to pivot to an apprenticeship as a restoration bookbinder and paper conservator at Green Dragon Bindery in Shrewsbury. In the late 1990s, a client inquired about conserving an early globe. More than 500 globes have crossed his bench since.

Will Melton, a resident of South Hadley, MA, balanced his 40-year career as a professional fund raiser with a lifelong pursuit of research in American history. When he discovered that the builder of a threatened Revolutionary War-era sawmill near his home had also commanded an ancestor's militia company, he decided to assist in the preservation of Slarrow's mill.

Jeanne Solensky is the Librarian of Historic Deerfield and the Pocumtuck Valley Memorial Association. Before coming to Deerfield in 2020, she was head of the Joseph Downs Collection of Manuscripts and Printed Ephemera in the Winterthur Library in Delaware.

Daniel S. Sousa, Associate Curator at Historic Deerfield, is responsible for the museum's collection of American furniture. Prior to joining the staff in 2017, he worked as a researcher at the New England Historic Genealogical Society. He has also worked for Skinner Auctioneers, and has contributed to several furniture study projects, including the Boston Furniture Archive.

Laura Fecych Sprague, an independent museum curator, has studied Maine's material culture for many years, contributing to publications and exhibitions for the Bowdoin College Museum of Art and Maine Historical Society, among others. In 1987 she edited *Agreeable Situations: Society, Commerce, and Art in Southern Maine, 1780–1830.* With Justin Wolff she co-curated *Rufus Porter's Curious World: Art and Invention in America, 1815–1860* at Bowdoin College Museum of Art and co-edited the catalog of the same name (Pennsylvania State University Press, 2019).

Lea Stephenson, former Luce Foundation Curatorial Fellow in American Paintings & Works on Paper at Historic Deerfield, is currently the Kenneth R. Woodcock Curator of Historic American Art at the Pennsylvania Academy of the Fine Arts in Philadelphia. She is a Ph.D. candidate in Art History at the University of Delaware.

Lauren Whitley is Curator of Textiles and Clothing at Historic Deerfield and previously worked at the Museum of Fine Arts, Boston, where she was senior curator in the Dept. of Textiles and Fashion Arts.

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