

The Brickwork at Poplar Forest: Mr. Jefferson Builds His Dream House

TRAVIS C. McDONALD, JR.

Restorers of Thomas Jefferson's villa retreat have access to a trove of documentation revealing the great architect and builder's blend of idealism and practicality.

Introduction

One of Thomas Jefferson's legacies was the blending of the ideal and the circumstantial.¹ This is certainly true of his architectural creations, which had to be translated from the realm of the ideal on paper or in thought into practical realities during construction. Jefferson's work as a designer, owner, and building contractor provides well documented insights into late-eighteenth and early-nineteenth century American building technology.² Much has been written about Jefferson's construction and reconstruction of his principal residence, Monticello. Much less is known of his secondary residence, his villa retreat called Poplar Forest.³ This article focuses on the brickwork at Poplar Forest, and how it relates, as a mature project, to Jefferson's lifelong experience with masonry (Figs. 1, 2).

Thomas Jefferson and Brick Buildings

Thomas Jefferson began his first construction management project at the age of 25 in 1768 with Monticello. For the rest of his life, almost sixty more years, construction projects provided a constant thread through his many other endeavors: the remodeling of rental houses in Paris, New York, and Philadelphia; the rebuilding of Monticello; the construction of Poplar Forest; and the construction of the University of Virginia. In between he designed and specified many other projects, ranging from public buildings to private residences. Quality construction was a necessity for a man wishing to fulfill his innovative, and even revolutionary, architectural ideas.

Jefferson railed against the typical shoddy wood construction of Virginia architecture in his 1785 book *Notes on the State of Virginia*, which contained one of the first architectural conservation studies in America. In it he analyzed the moisture found in brick buildings versus that in wood buildings.⁴ He hoped to overcome a prejudice that condensation made brick buildings less "wholesome" than those of wood:

A country whose buildings are of wood, can never increase in its improvements to any considerable degree. Their duration is highly estimated at 50 years. Every half century then our country becomes a tabula rasa, whereon we have to set out anew, as in the first moment of seating it. Whereas when buildings are of durable materials, every new edifice is an actual and permanent acquisition to the State, adding to its value as well as to its ornament.⁵

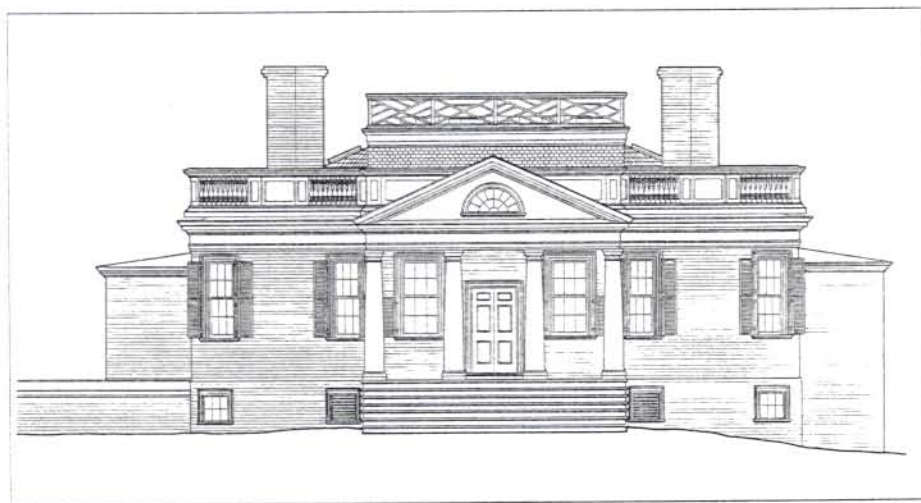


Fig. 1. Restored front elevation (north), Poplar Forest. Drawing courtesy of Mesick Cohen Wilson Baker.

Through this internationally published book, Jefferson set forth his advocacy of brick buildings, which he had already demonstrated in practice at Monticello, his own stylish Palladian residence.

By the time Jefferson turned seriously to constructing the retreat he had longed for all his life, he was both mature as a designer and experienced as a builder.⁶ A visitor to Monticello in 1796 remarked that Jefferson “orders, directs and pursues in the minutest detail every branch relative to” the management of buildings.⁷ This was certainly true at Monticello. He sometimes decreed that workers were to cease their work when he was not there to supervise them.

Jefferson is famous for his constant note taking and compilation of useful information on all manner of things, especially construction. For instance, he recorded in his account book from the 1770s the cost for two men and three boys to mold and burn bricks (7£ / 6s per 1,000 bricks); the amount of lime relative to brick (15 bushels of lime to 1,000 bricks); the conversion of limestone to lime (1 bushel of limestone equals 2 bushels of slacked lime); and the difference of hauling wood and water to make bricks versus hauling the finished bricks (54% less weight to move finished bricks).⁸ Jefferson’s Farm Book noted that a 4-foot cube of earth yielded 1,000 bricks; a man could turn up four to five such cubes a day at 1£ per cube; a man could mold 2,000 bricks a day with three helpers; 3,000 to 4,000 bricks make a kiln eye; each eye needed one cord of wood; brickwork represented one third the cost of a building; bricks cost \$4 per 1,000 in Philadelphia; brickwork required 10 bushels of lime for every 1,000 bricks in Georgetown (although he noted that his own bricklayer used 15); mortar took 3 hogsheads of water for every 1,000 bricks; and an acre of ground would yield 1 million bricks for every foot depth.⁹ The relative cost of these materials and labor were



Fig. 2. Restored north-south section, Poplar Forest. Drawing courtesy of Mesick Cohen Wilson Baker.

important to Jefferson when trying to recruit skilled workers from Philadelphia and Washington.

Jefferson’s relationship with his many skilled workers is an interesting story in itself. Some of his workmen were in his employ for twenty years or more and became like family members.¹⁰ Jefferson was shrewd enough to furnish slave apprentices to his hired craftsmen, making his projects a virtual building trades training center in which he retained, i.e., owned, the resulting trained labor. Many of the most skilled workers moved from one Jefferson project to another, beginning at Monticello, working at Poplar Forest, and finally working at Jefferson’s public magnum opus, the University of Virginia.

Affairs of the government kept Jefferson away from his preferred role as on-site construction supervisor. Poplar Forest began while Jefferson was still president. If he found it hard to supervise the work at Monticello, it was even harder to get to Poplar Forest, a three-day journey from Monticello southwest to the edge of the Blue Ridge Mountains. Jefferson’s trusted relationships with his workers, both slave and free, allowed him to carry on projects long distance. Letters to and from the workers provided the

crucial link Jefferson needed to supervise and follow the details of construction. Drawings often accompanied the letters, as evidenced by this line in a letter to the bricklayer: “Everything is drawn so plainly that no further explanation is necessary.”¹¹ Jefferson’s habitual use of the pantograph machine, which produced copies of his own letters, and the replies from his literate hired and slave workers have made Poplar Forest one of the best documented private construction projects of any time and have provided strong evidence for the current restoration. At Monticello it helped to have a trusted daughter and son-in-law to keep tabs on the work. Daughter Martha Randolph reported to her father regarding bricklayer Hugh Chisolm’s work at Monticello in November 1801: “The plaistering at Monticello goes on, not as well as the first room which was elegantly done but better than the 3rd and forth, the two I think you would have been most anxious about.”¹² This indicated that even the best craftsmen could have their good and bad days. Jefferson could certainly judge the abilities of a bricklayer by this time. He had used no less than six different bricklayers on the initial construction of Monticello and at

least five on its rebuilding in the 1790s, including Chisolm, who typically did plaster and stonework as well as brickwork and became the principal bricklayer at Monticello after 1800.

Brickmaking

In September 1805 Jefferson directed Chisolm, then earning \$20 a month, to make the journey from Monticello to Bedford County and to begin making bricks for his extraordinary octagonal house. Fall was the accustomed time in Virginia, as elsewhere, to begin this process. Chisolm himself once noted in late October that “the season for brickmaking [was] so far advanced.”¹³ At Poplar Forest Chisolm needed time to locate a proper brickmaking site, which would contain both good clay earth and a ready source of water and not be too far from the construction site. Sand would have been the only ingredient hauled to the site (recent archaeological excavations located a brickmaking site approximately 300 yards directly south of the house, next to a small creek). Fall was a crucial time because nature, in addition to supplying the materials, played a part in processing them. Jefferson explained this in a letter to Chisolm of December 1807 regarding a Monticello project: “prepare for this by having the earth well dug and cleaned of stone, at the former brick yard...in order that it may be well pulverized by frost. About mid-winter it should be turned over a second time and again well cleaned of stone.”¹⁴ Chisolm responded to Jefferson on February 11, 1808, that “we have got the earth turn up the second time for the Bricks and am now prepare the yard to lay them on.”¹⁵

Spring through summer was the time for the actual making of brick. The earlier that bricks were ready, the longer the season would be for laying them; as Jefferson put it, “as soon as spring will possibly permit, we must have the bricks moulded

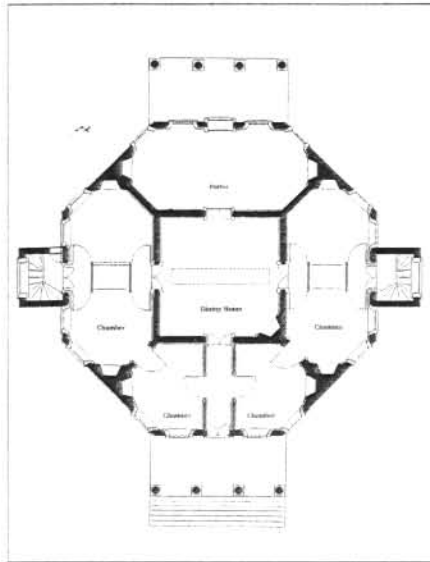


Fig. 3. Restored first floor plan, Poplar Forest. The structures in the center of each large chamber are bed alcoves; the rectangular form in the center room indicates the skylight above. Drawing by Mesick Cohen Wilson Baker.

and burnt.”¹⁶ After two firings Chisolm had bricks ready by June and July 1808. Wooden molds, like the “1 pair stock brick moulds” made by carpenter Reuben Perry for Jefferson in 1817 for \$13, would have been made for Chisolm’s use.¹⁷ After the winter’s weathering, the clay would have been tempered by treading, either with the assistance of animals or by bare feet. Jefferson implied that he had used animal power at Monticello when he inquired of his son-in-law in 1795: “could you take the trouble of knowing whether, if I find we have lost the method of making bricks without treading the mortar, I can have Mr. Pleasants’ man, and on what terms?”¹⁸ There is no reference to which method Chisolm used at Poplar Forest. After air-drying the bricks for a week or more, the bricks would be stacked together making a kiln or clamp and fired for five days or more with hardwood.¹⁹ The actual number of bricks made by Chisolm in the first season at Poplar Forest is unknown but judging from batches at Monticello, it was proba-

bly between 60,000 and 100,000 bricks. Jefferson recorded in his Garden Book in 1778 that a firing of 103,000 bricks yielded 90,000 hard, useable bricks.

Presumably Chisolm’s brickmaking efforts were successful in the spring of 1806. In June of that year Jefferson wrote from the White House to his daughter Martha that he would have to go directly to Poplar Forest for a week or ten days for “laying the foundation of the house, which [Chisolm] is not equal to himself....”²⁰ Jefferson was most likely referring to the unusual octagonal shape rather than the actual laying of bricks. Recent investigations revealed a 2.5 degree shift in the internal foundations of the house, which may be the physical evidence of Jefferson’s assistance (Fig. 3).

The second season began like the first with a letter from Jefferson to Chisolm in January 1807 instructing him to “set about digging dirt for bricks and preparing a cole kill [sic].”²¹ The following winter Chisolm was again instructed, this time in March, to make bricks at Poplar Forest. That same year, July 1808, Chisolm reported “we have burnt the bricks, and a finer kiln I never burnt in my life, it contains seventy five thousand.”²² This was the third or fourth batch of bricks, equaling an estimated 250,000 bricks used at the site.²³

Having started laying bricks in the summer of 1806, Chisolm and his men had the walls of the house up to the watertable in June 1807 and the top of the walls finished by Christmas. Although Chisolm was capable of doing stonework, he wrote that he was waiting for the stone masons to do the “square room.”²⁴ Jefferson had helped with the foundations in August 1806; his next trip to the site was a three-day visit in September 1807.²⁵ By this time the walls were nearly completed. During the fall of 1808 Chisolm completed the stair pavilions, the two porticos and their columns, and the two detached

octagonal privies. Hugh Chisolm, his crew, and a separate crew of rough carpenters had spent the best part of two years translating into physical reality one of the most idealistic and personal of Thomas Jefferson's creations.

It was only in 1809, with public life behind him at last, that Thomas Jefferson was able to spend sufficient time at his distant property which he had so frustratingly supervised through detailed letters, plans, sketches, and instructions. While the conception and design of the property were idealistic, what are the "circumstantial" details that were rediscovered through research and a thorough six-year physical investigation?

Bricks

The sand-molded bricks made by Chisolm and his workers averaged $8\frac{1}{2}$ by $3\frac{1}{2}$ by $2\frac{3}{4}$ inches, ranging at times up to 9 by 4 by 3 inches.²⁶ Their multi-hued coloration — ranging from orange to purple, with many shades of reds and browns in between — was typical for a late-eighteenth or early-nineteenth-century Virginia building.²⁷ The bricks contained random patterns of gray-to-black glazing on headers and stretchers in the wall without any conscious effort to either hide or display the marks from the hardwood fuel. The only seemingly conscious effort at colors and placement seem to be the dark brown five-sided squint bricks used for the 45-degree corners of the main house, while the more red squint bricks were used for the corners of the two octagonal privies.²⁸ Otherwise, horizontal bands and isolated areas of like-colored brick reflected the different firings and the order in which kilns were broken down and the bricks delivered to the bricklayers.

The quality of the bricks at Poplar Forest was not exceptional for the time. Monticello's bricks are mostly of a better quality; still, Jefferson's bricklayer, Richard Richardson (whom Jefferson had taken to

Philadelphia to acquire skill as a stone mason and plasterer), asked that a Philadelphia brick be sent to Monticello "as a model, and [to] prove how much too careless our workmen are in making theirs."²⁹ Jefferson did not comment on the quality of bricks or brickwork at Poplar Forest. However, when preparing for the construction of the University of Virginia, he referenced the quality of oil-stock brick in Lynchburg and in Richmond, presumably an innovation that came too late for Poplar Forest.³⁰ In a letter to Benjamin Latrobe in 1817, Jefferson wrote "I found your favor of June 28 on my return hither from my other home ... near Lynchburg, the most growing place in America. They have there the new method of moulding the stock brick in oil, and execute it with the most beautiful brick work I have ever seen."³¹ In recommending some of the Lynchburg bricklayers who expressed interest in the University of Virginia work, Jefferson wrote "I consider it as the interest of the College the town and the neighborhood to introduce a reform of the barbarous workmanship hitherto practiced there, and to raise us to a level with the rest of the country."³² A newspaper advertisement of March 19, 1819, called out Jefferson's expectations for quality materials and workmanship at the University of Virginia:

It is proposed to lay about a million of bricks this season in buildings so far distinct that the undertakings may be in one or more portions of about an hundred thousand bricks each, the undertakers finding materials as well as work, the front walls are to be faced with oil stock bricks, the others with sand stocks, the interior mass to be of plane bricks, all to be laid with good bond to be clinkers, and not a single sammell brick to be used in any part of the work under a penalty of 5 cents for every such brick, nor more than 2 bats to 9 whole bricks, the inner mortar to be one third lime and two thirds clean and gritty sand without any mixture of earth, the outer 1/2

lime and 1/2 such sand and the whole to be grouted with a mortar of the inner quality...."³³

Oil-stock bricks were indeed used for the facades of the pavilions and for the rotunda at the University of Virginia.³⁴ The side and back walls and the immediately adjacent student rooms were built of standard sand-stock brick. The facades of the pavilions and hotels and even the more publicly visible sides show a hierarchy of Flemish bond, while the adjacent student rooms and the more hidden pavilion walls are laid in three- or five-course American common bond. The bricks are of a carefully selected uniform color, and the oil-brick mortar joints were struck and finished with a very fine quality "ribbon" joint. These facades also contain residual evidence of a reddish wash and white pencilled joints. While painted washes and penciling in Virginia is generally thought to be a later technique, a reference that Benjamin Borden was paid for "oiling and penciling down of brick" on the initial Rotunda construction would argue that all the pavilions received this treatment originally.³⁵

Bricklaying

It is almost certain that Jefferson was disappointed in Chisolm's bricklaying at Poplar Forest. After his first and second visits, Jefferson did not visit again for two years, long after the brickwork was completed for the main house. In the summer of 1807, when Chisolm had the walls "ready for the sleepers," Jefferson called him back to Monticello "where I wish some work done under my own eye."³⁶ This is perhaps a differentiation that the more public Monticello required the more exacting work and the private Poplar Forest might be something less, even if that difference in quality were due to the absence of its owner.

Many parts of the Poplar Forest brickwork are typical of Virginia buildings: 16-inch (two bricks) thick lower walls which decrease to 12-

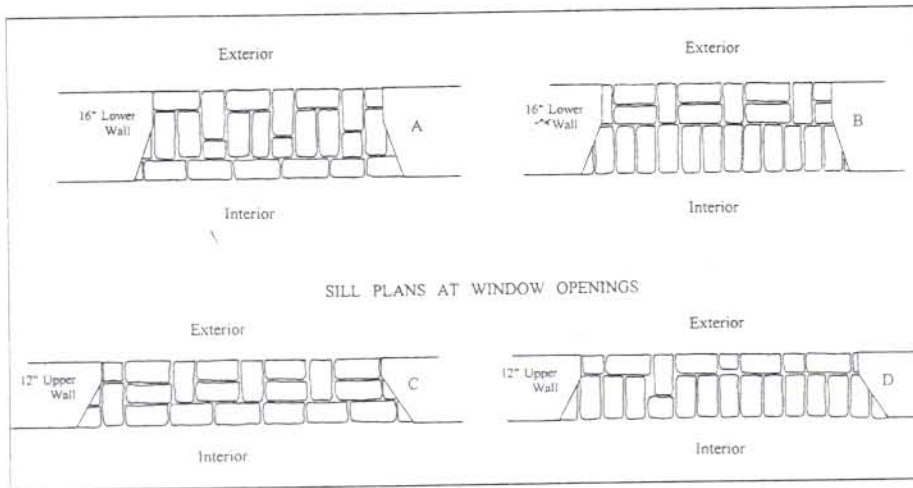


Fig. 4. This drawing shows the different relationship of a Flemish bond exterior meeting a Common American bond interior. Figs. A and B are the Flemish bond meeting an interior stretcher and header course respectively in the thicker 16" walls of the basement. Figs. C and D are the same relationships of Flemish meeting header and stretcher courses in the 12" upper wall. Note how the Flemish headers in Fig. D are not bonded. Drawing by author.

inch (one and a half bricks) thick above the watertable. The watertable consisted simply of a 2-inch inner and outer ledge created by the reduced wall thickness; the inner ledge provided a narrow seating for the floor joists. The exterior bond is Flemish but changes to an American common bond on the interior (Fig. 4). The bond on the inner walls of the house, which rise up to 20 feet, change from two-course common at the second scaffolding level to three-course above (Fig. 5); the interior chimney face walls feature a variety of bonds, which might be the result of four flues in each of the four chimneys.

Jefferson employed three basic types of arches in the building. The first appears on the exterior as five round-headed arches of the south portico arcade. They are inconsistently keyed and built without any use of gauged brick.³⁷ This type was also used for the two lunette windows of the east and west stair pavilions and the two lunettes and two clean-out areas in each of the two privies, and a half-round arch retrofitted in the lower wall of the west stair pavilion for a privy clean-out.³⁸

The second type of arch, by far the most numerous, is a segmental arch used for all masonry openings of inner and outer walls. They were constructed over solid white-oak centerings, which remained in place and acted as redundant lintels. While the interior doorway arches are a full wall thickness of 16-inch (basement) or 12-inch (main floor), the perimeter wall arches are 8 to 9 inches deep at both levels.³⁹ These outer wall arches were purely structural and not visible, hidden on the inside by plaster and on the exterior by a 4-inch wythe supported on the window or door frames. (Fig. 6) Chisolm actually had to construct the window openings without the finished frames due to their delayed construction by carpenter James Dinsmore at Monticello. Chisolm had to insert rough frames in the openings once he reached the arch level in order to support the outer wythe of brick. Physical evidence also shows that a vertical board just under the arched centering was used as a frame stop for attaching the finished frames once they were inserted.⁴⁰

The third type of brick arch was a flat, or jack, arch used in the 15 fireplace openings. Helping to support

the flat arches were two parallel wrought-iron lintels, hidden in the front by a narrow band of plaster.⁴¹ One additional type of arch, singularly used, was a squinch arch in the northwest corner of the deep, 20-foot square center cellar room, supporting the corner fireplace of the dining room above.

Typical masonry tools and devices are evident in the brickwork at Poplar Forest. Trowel impressions were left in wet mortar; scored lines on surfaces mark the location for various trim attachments; and marks

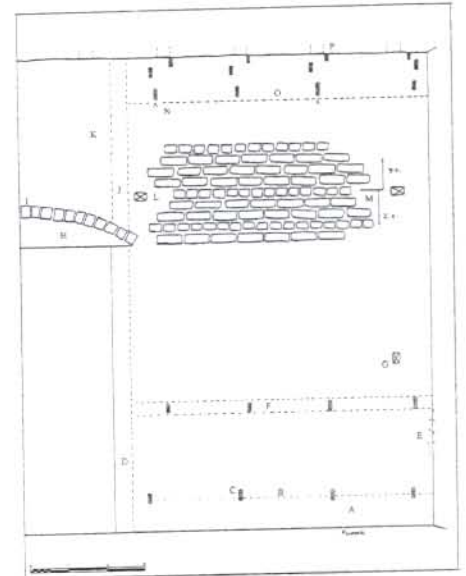


Fig. 5. A typical interior wall showing evidence of the bricklayers' preparation for later wooden trim. This drawing is from a mylar overlay on a 1" scale photograph, a recording technique recommended by Lee Nelson based on his success with this method at Independence Hall. A is the area of the base, defined by the plaster ground ghost at B; the ground was held by typical nailing blocks shown at C and elsewhere; D is the plaster ghost of the bed alcove wall stud as well as the door casing; E shows representative line pin holder marks in the corners; F is the plaster ground ghost for the chair board; G is the lower level scaffolding putlog hole; H is the space of the missing arched centering; I is the original segmental doorway arch; J is the upper alcove stud ghost; the door vestibule area at K did not contain the entablature; L shows the representative American Common Bond pattern which changes above the upper putlog hole M from a two- to a three-course bond; N shows scribe marks for nailing at the entablature ground O; and P indicates the joist pockets at 2' on center in the courses at this 12' wall level (this inner wall went up 20'). Drawing by author.

from brick hammers and chisels can be seen on make-ups, closers, "soap course" bricks, and in some nailing block holes.⁴² "Line pin" holes are evident on both the exterior and the interior walls where line pins were inserted into wet mortar at internal or external corners. The levelness of coursing, however, varies in places as if no strings or levels were used. The bricklayers adjusted for such errors in height, even in visible places, by using the sloppy practice of laying bricks up on their stretcher sides.

Chisolm once wrote to Jefferson of his use of string lines, indicating that he was taking great care to get the courses level at the stair pavilions. Jefferson added the two projecting stair pavilions, two porticos, and six doorways to the design during construction. Chisolm afterwards informed him that the pavilions would be constructed independent of the principal walls "as the angles where they join interfere [sic] so much with the Line that I work by."⁴³ Chisolm would have done better to have included the stair pavilions with the initial wall construction. Despite Jefferson's admonition to leave the proper spacing between windows for the stair pavilion, Chisolm miscalculated and constructed one basement window in the wrong place and shifted the opening by chopping out one side and adding to the other.

"Make-up" bricks are typically needed in Flemish bond work to supplement the traditional closer bricks at openings or corners. To achieve vertical and horizontal alignment of headers and stretchers, it is often necessary to break with the established pattern to avoid stacked joints and ensure a better bond. If used consistently, the adjustments can be interpreted as a bricklayer's signature. At Poplar Forest make-ups were used in many styles, such as multiple headers, multiple stretchers, or shortened stretchers (sometimes referred to as king closers or "bats"), with little regard for placement, consistency, or appearance.⁴⁴ Also typical of eighteenth- and early-nine-

teenth-century Flemish bond work, the joints were struck top and bottom into a projecting v-joint and then finally tooled for a straight, level grapevine joint.⁴⁵

Wooden trim was attached to the brick walls by the use of small, pine nailing blocks. These were not the typical "nogs" or "wood bricks" that were generally the size of a typical brick length and inserted in place of a stretcher.⁴⁶ Chisolm used narrow 1/2 by 3 inch blocks, which fit into a masonry head joint between two bricks. Evidence suggests that these blocks were both laid with the original brickwork and also retroactively driven into the joints. The blocks were used for attaching the exterior entablature and the interior plaster grounds for casings, surbases, chair boards, fireplace surrounds, and entablatures (Fig. 5). Scored lines on the brick served as references when the time came to hit the small wooden blocks with nails after they had been covered with trim.

Thomas Jefferson was particular about architectural orders, especially for the most noticeable part: the columns. In the 1770s the column bases, shafts, and capitals of the front portico columns of the first Monticello were constructed entirely of stone. In the 1780s he recommended that the stone columns on the Capitol in Richmond be executed by workmen from Europe, but these enormous 44-foot columns were executed as brick shafts with stone bases and capitals. In the 1790s his difficulty with the re-erection of the stone drums of Monticello's east portico may have convinced him of the advantages of brick. Benjamin Latrobe, as architect of the U.S. Capitol, conducted a lively correspondence with President Jefferson about its design and construction. Jefferson wrote in 1804:

[W]ould it not be best to make the internal columns of well burnt bricks moulded in portions of circles adapted to the diminution of the columns. Lt. Burlington in his notes on Palladio tells us that he found

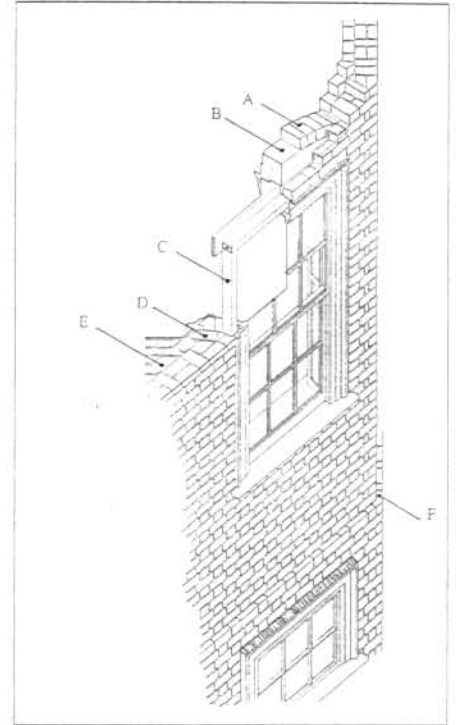


Fig. 6. Window frame isometric. A shows the 8" arch; B shows the arched white oak lintel; C shows the rough frame; D shows the splayed masonry jamb; and E shows the adjacent chimney mass. Drawing courtesy of Mesick Cohen Wilson Baker.

most of the buildings erected under Palladio's direction and described in his architecture to have their columns made in brick in this way and covered over with stucco. I know an instance of a range of 6 or 8 columns in Virginia, 20.9 high well proportioned and properly diminished, executed by a common bricklayer. The bases and Capitals would of course be of hewn stone.⁴⁷

At about that same time Jefferson was probably turning over ideas about his villa retreat, and it is not surprising that Chisolm was told to run the Poplar Forest columns in brick, especially since Jefferson would not be on hand to supervise anything more challenging (Fig. 7). Chisolm reported in July 1808 that "We have made the bricks for the bases and capt. of the columns as I thought it would make a better job than to have them of wood,"⁴⁸ thus indicating that Chisolm had some discretion as to materials.

Fortunately, whether by ideal preference or practical necessity, the Tuscan order chosen for the exterior of Poplar Forest was the easiest to execute. Despite Jefferson's consistent recommendations for capitals and bases of stone, Poplar Forest seems to be the first instance in his own work when he settled for less. It was not until 1822 that he replaced the temporary tulip poplar log columns of Monticello's west portico with columns of brick. His 1821 design for the Charlotte County Courthouse was in fact justified as a Tuscan Order because it was the least expensive to build and easiest to execute.⁴⁹ While he specified that the columns at the University of Virginia be executed in brick, he upheld his ideals there and used stone bases and capitals, although at great expense and trouble, for this legendary didactic example of architectural orders.⁵⁰

Hugh Chisolm reported to Jefferson in September 1808 that "we have also run the columns for the South portaco [sic] and I think they will, when finished be elegant."⁵¹ Jefferson himself could not form his own opinion until a year later, when he came to see the completed shell of a house. His reaction remains unrecorded. Recent investigation confirmed that the present columns were indeed the original ones, albeit with later rendering, poorly repaired damage, and an extra brick added to the abacus of the capital. The presence of some original rendering, however, calls into question the intended design and execution of the columns. The very thin rendering made the column diameter, versus its height, unbecoming to the proper Palladian modules, which meant so much to Jefferson and which are evident in the rest of the exterior and interior design. Did Jefferson bend the proper rules as he did with his interior Doric entablature, or did Chisolm get it wrong?⁵² We may never know. Paint analysis indicated that the original rendering was un-



Fig. 7. Tuscan capital stripped of its rendering. Photograph by author.

painted and simply left the color of the rendering, making them even more stone-like.⁵³

Chisolm was back at Poplar Forest in 1812 to finish the interior plaster, hauling a "very clean, gritty sand" from Lynchburg.⁵⁴ Chisolm returned again in 1814 to construct a four-room wing on one side of the house, executing its stone work as well as brickwork. It is probably this work to which Jefferson referred in his Farm Book in 1814: "Chisolm and two apprentices (one of them a new beginner) lay 1,600 brick a day."⁵⁵

The Test of a Well-Built Structure

Jefferson happily used his brick villa retreat for 14 years, beginning in 1809. At that time the walls were not plastered and much of the final wood trim had not been applied. It must have been similar to a 1794 description of the reconstructed Monticello: "we are now living in a brick kiln, for my house, in its present state is nothing more."⁵⁶ Or perhaps more appropriate was a 1796 reference to Monticello: "I have begun the demolition of my house, and hope to get through its re-edification in the course of the summer, But do not let this discourage you from calling on us if you wander this way in the summer. We shall have the eye of a brick kiln to poke you into, or an Octagon to air you in."⁵⁷ The difference, of course, was that Jefferson invited few people to Poplar Forest. He was accompanied sometimes

by one or two grandchildren after the house was a little more finished. He seemed perfectly content to live in partially completed houses, especially one providing long-awaited privacy and peace.

Even with a such a mature, well-conceived architectural ideal, Jefferson still made changes to the house. An interesting change took place in the central 20-foot cube dining room between 1809 and 1812, when the upper mass of the corner chimney was chopped out, leaving a projecting masonry shelf in the corner. It is interesting to speculate that this change took place when Jefferson visited the completed house, saw how the corner chimney destroyed the openness of his cube room, and ordered his workmen to pull down the chimney. He could do this and still use the fireplace because the flue had been constructed on an angle through a diagonal wall to one of the four symmetrical chimneys.⁵⁸ It is this diagonal flue which probably caused subsequent major changes at Poplar Forest in the 1840s.⁵⁹

Fire, the devastator of many architectural masterpieces, struck Poplar Forest in December 1845. Had Poplar Forest not been built as Jefferson put it, "as a permanent acquisition" in brick, it might be but a vague footnote in history and architecture. The Cobbs-Hutter family that took possession of the property in 1828 looked on the disaster as an opportunity (Fig. 8). As a family member remarked, it was a chance to make "some valuable improvements" and to make the house into a "more commodious"⁶⁰ and practical farmhouse. Between April and August 1846 the entire house was gutted and rebuilt in the then-fashionable Greek Revival style. Walls were rebuilt differently, window openings were lowered or bricked up, door openings were filled in, and all interior plaster replaced with fresh plaster. The quality of the construction, as well as that of the architecture, was clearly lower than Jefferson's

work forty years earlier.⁶¹ On the exterior, pencilled joints served to hide the new, reddish-brown wide mortar joints. Wooden lintels replaced the original masonry arches. Brick nogging, installed by Jefferson for inner frame walls to help against fire, sounds, and rats, was not reused.⁶² Changes in the 1940s further obscured the Jefferson details when the house was modernized (Fig. 9). Acquired as a museum site only 12 years ago, it has been one of the most investigated, documented, and analyzed historic house sites of this century.⁶³

Conservation of the structure began in 1993 when the main house received the foundation that Jefferson and Hugh Chisolm never provided. The house had been constructed with the brick walls sitting directly on the ground, except for a hidden stone foundation under the north portico on the high side of the house and the stone wall of the wing, which Chisolm had constructed in a later phase. Digging out the crown of a hill to make the house appear lower allowed the soft brick and mortar to soak up surface water. The walls settled, material deteriorated, and the portico piers and columns leaned toward failure. Supported in part by a Getty Institute grant, the outer walls and porticos were underpinned with concrete footings at the same time that the below-grade walls were waterproofed and a drainage system installed. The leaning piers and columns were moved almost intact into their original vertical alignment.⁶⁴ Work began then to conserve the original brick fabric at the openings throughout the basement level using a traditional 1:2 lime mortar, which replicated the original.⁶⁵ Recreating the ancient process of beating the mortar has made for an even more authentic process as well as a superior material. Exterior and interior brickwork is now being conserved and restored; completion of the exterior is scheduled for the

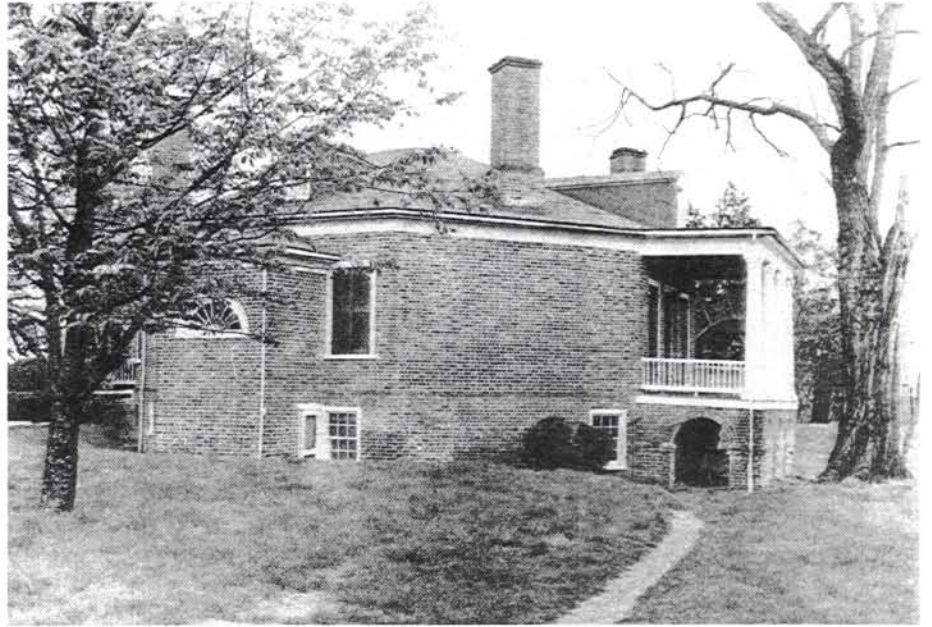


Fig. 8. View of Poplar Forest c. 1943, showing the bricked-up windows from the 1846 rebuilding and a surviving upper window opening in a lowered position. The roofline with dormers is also an alteration. Hutter Collection, Poplar Forest.



Fig. 9. Poplar Forest showing the 1945 changes with reopened window openings. Windows were lowered about 1' in the wall during the 1846 rebuilding and the triple sash windows of the parlor lowered and altered with jib doors. Photograph by author.

end of 1997.⁶⁶ The principal guiding philosophy is the conservation of original Jefferson-era material in its original context. Any new work must have a compatible relationship

with the old and be reversible, if necessary, in the future. Some of Chisolm's bricks, taken down and relaid in 1846, are being taken down and relaid for the third time (Fig. 10).



Fig. 10. Restoration mason Henry Cersley restoring a window opening. Photograph by author.

Jefferson was disappointed at both the speed of dismantling Monticello's brick walls and at the number of bricks salvaged.⁶⁷ Salvage at Poplar Forest runs 95% or higher.⁶⁸ Jefferson would have appreciated our high rate. It is doubtful, however, that he would agree with our philosophy to restore the "quality" of Chisolm's original work. Surely Thomas Jefferson, architect and builder, would have wanted another chance to narrow that gulf between the circumstantial details of his bricklayer's work and the incredible idealistic synthesis that his final home represented.

TRAVIS C. McDONALD, JR., is Director of Architectural Restoration at Thomas Jefferson's Poplar Forest.

Notes

1. Michael Dennis, *Court and Garden* (Cambridge: MIT Press, 1988), p. 236.
2. For the most comprehensive treatment of this subject, primarily at Monticello, see Jack McLaughlin, *Jefferson and Monticello: The Biography of a Builder* (New York: Henry Holt and Company, 1988). See also Richard Cote, "The Architectural Workmen of Thomas Jefferson in Virginia," dissertation, Boston University, 1986. The author thanks the research staff at Monticello for their continued willingness to share records and information.
3. The only definitive history of Poplar Forest contains the documentary history of the construction and the correspondence between Jefferson and his workmen: S. Allen Chambers, *Poplar Forest and Thomas Jefferson* (Forest, Va.: Corp. for Jefferson's Poplar Forest, 1993).
4. Thomas Jefferson, *Notes on the State of Virginia*, 1785; reprinted in Philip S. Foner, *Basic Writings of Thomas Jefferson* (New York: Willey Book Company, 1944), pp. 154-155.
5. Foner, 155.
6. For a discussion of Jefferson's many attempts to create a retreat, see Travis C. McDonald, Jr., "Poplar Forest: Synthesis of a Lifetime," *Notes on the State of Poplar Forest*, Vol. 2 (Forest, Va.: Corp. for Jefferson's Poplar Forest, 1994).
7. Duke de la Rochefoucauld-Liancourt, *Travels through the United States of North America, in the Years 1795, 1796, 1797*, in McLaughlin, p. 93.
8. Thomas Jefferson (hereafter, TJ), Account Book, 1771-1774, in Edwin Morris Betts, ed., *Thomas Jefferson's Farm Book* (Charlottesville: Univ. of Va. Press, 1987), pp. 338-339.
9. TJ, Farm Book, in Betts, pl. 102.
10. McLaughlin and Cote both document the interesting relationships between Jefferson and his builders and his lifelong attempts to find quality workers.
11. TJ to Hugh Chisolm (hereafter, HC), Sept. 7, 1806, Mass. Hist. Society, Jefferson Papers (hereafter, MHS), 5. Unfortunately none of the drawings that accompanied letters are known to survive.
12. Martha Randolph to TJ, in McLaughlin, p. 270.
13. HC to TJ, Oct. 20, 1808, MHS, 6.
14. TJ to HC, Dec. 15, 1807. MHS, 6.
15. HC to TJ, Feb. 11, 1808, MHS, 6.
16. TJ to HC, Dec. 15, 1807, MHS, 6.
17. Account, June 29, 1818, College of William and Mary, Trist Papers.
18. TJ to Thomas Mann Randolph, Jan. 29, 1795, Library of Congress, Jefferson Papers (hereafter, LC), 20.
19. For details of Virginia brickmaking, see Bill Weldon, "The Brickmaker's Year," *Historic Trades, Volume II* (Williamsburg: Colonial Williamsburg Foundation, 1990). For a good explanation of traditional English brickmaking see Gerard Lynch, *Brickwork: History, Technology and Practice* (London: Donhead, 1994).
20. TJ to Martha Randolph, June 16, 1806, MHS, 16.
21. Edmund Bacon to TJ, Jan. 1, 1807, Univ. of Va., Jefferson Papers (hereafter, UVA), 6.
22. HC to TJ, July 22, 1808, MHS, 6.
23. As a comparison, it was reported at the University of Virginia that bricklayers Thorn and Chamberlain were paid for laying 1,025,000 bricks and 50 perch of stone at the Rotunda. William B. O'Neal, *Jefferson's Buildings at the University of Virginia: The Rotunda* (Charlottesville: The Univ. of Va. Press, 1960).
24. This was in reference to the middle room of the lower level, generally referred to now as the wine cellar. Presumably TJ did these walls of stone as an economical measure. This middle room was constructed about 4 feet lower than the surrounding basement level rooms. The stone is a mixture of local fieldstone laid in a coursed rubble manner.
25. TJ's visits are also recorded in his Memorandum Book, in which he documents daily expenses. This crucial document, edited by Lucia Stanton and James Bear, will be published by Princeton University Press. The author acknowledges the editors and the press for providing a draft.
26. In his Building Notebook, TJ mentioned that 1½ bricks equal 12½ inches, which is consistent with the Poplar Forest size of 8½ by 3⅞ inch plus a mortar joint of ½ inch (N 139-146, MHS).

27. Oddly enough, the gray clay of Tidewater Virginia produces the same range of brick colors as the red clay of Piedmont Virginia. See Calder Loth, "Notes on the Evolution of Virginia Brickwork from the Seventeenth Century to the Late Nineteenth Century," *APT Bulletin* 6 (2, 1974): 82-120.
28. Leftover squint bricks were used in the brick floor of the central "deep cellar" room on the lower floor, where wine, spirits, and possibly other perishable goods were stored.
29. TJ to Thomas Mann Randolph, June 1, 1797, MHS, 13.
30. Oil-stock bricks were produced by wooden molds being slicked by oil rather than water and sand, producing a much more uniform and dense surface.
31. TJ to Benjamin Henry Latrobe, July 16, 1817, Princeton Univ., Jefferson Papers Project, 233/B11.
32. TJ to HC, Aug. 31, 1817, quoted in Phillip L. Scruggs, *Lynchburg, Virginia* (Lynchburg: J.P. Bell Co., 1973), p. 29.
33. *Lynchburg Press and Public Advertiser*, March 19, 1819. For more information on the initial construction story of the University of Virginia, see O'Neal; Cote; Richard G. Wilson, ed., *Thomas Jefferson's Academical Village* (Charlottesville: Univ. of Va. Press, 1993); and Mendel Mesick Cohen Waite Hall Architects, series of historic structure reports on several pavilions published for the Univ. of Va. in the 1980s-90s.
34. John Neilson, one of TJ's most skilled workers, who worked at the Univ. of Va., designed and constructed Bremono in Fluvanna County in 1820 with fine oil-stock brick. Neilson drew the only finished drawings of the rear elevation and floor plan of Poplar Forest; they do not show the house as executed but must have been done from earlier drawings of TJ's. It is thought that Neilson, who never worked at Poplar Forest, drew the house to influence Col. Cocke of Bremono.
35. O'Neal, p. 14.
36. HC to TJ, June 1, 1807, MHS, 5; TJ to HC, June 5, 1807, MHS, 5. These letters show how fast the mail could be. The normal journey between Poplar Forest and Charlottesville took three days and that between Charlottesville and Washington, four days.
37. Gauged brick is a face brick chosen for its consistent color and rubbed for a precise, crisp finish and edge. These were typically used in eighteenth-century Georgian architecture for arches, window and door surrounds, watertables, and belt courses. The crisp edges allowed arches to be constructed with very thin mortar joints of about $3/32$ " and without sand in the mortar.
38. Tucked under the west pavilion stair off of TJ's own bed chamber is evidence of an indoor privy. This was not a water closet but an old-fashioned privy with the space in the adjacent wall for periodic clean-out. Both octagonal privies had similar clean-out spaces.
39. The exception is the inner stair pavilion doorways on both levels where the door frames supported 4 inches of brickwork.
40. Most windows with intact splayed jambs have remnants of mortar that was packed between the frame and the jamb as a sealant. Scribe lines and ghost marks indicate where the frames fit into the jambs. In the lower level, nailing blocks and nails indicate boards that were nailed onto the jambs. No evidence of this type is found on the upper splayed jambs, except for TJ's own bed chamber.
41. Only one of the 15 fireplaces, bricked-up in 1846, remained unaltered. It provides a look at the lintels as well as the evidence of iron firebacks from a local furnace. TJ used a similar iron lintel for the flat fireplace arches at Monticello and similar ones are seen in the TJ-designed house Barbourville. At Monticello he also used curved iron bands in the floor to support arched brickwork below the hearths.
42. "Soaps" are thin slivers of face brick used to fill-in small spaces. Window sill ghost marks on the exterior indicate that the frames did not always work out with the top of a brick course, necessitating a soap course below the frame. This type of messy, yet hardly ever noticed, detail is found on the facade of Monticello. Soaps were also used in the arches of the south portico at Poplar Forest and in the area just above the flat arches of the fireplaces.
43. HC to TJ, June 1, 1807, MHS, 5.
44. The faith TJ must have had in HC's abilities are not borne out in the execution at Poplar Forest. Nevertheless, TJ chose Chisolm to execute the brickwork at the first Pavilion at the Univ. of Va., Pavilion VII. The author is indebted to restoration mason Henry Cersley for the many discussions about the brickwork at Poplar Forest. Cersley has carefully studied original work in order to conserve, restore and reconstruct a similar quality.
45. The purpose of grapevine joints was to fool the eye into seeing a more regular brickwork. The rough edges of sand-molded bricks are minimized by the straight, level, scored line in the mortar. This method was replaced in the early nineteenth century by painted lines on mortar joints called penciling. After the fire of 1845, the bricklayers rebuilding the outer walls of Poplar Forest used whitewash to pencil the new masonry joints. Where the 1846 brickwork abutted the original, the pencilled lines were painted on top of the grapevine joints for visual consistency.
46. A good example of the larger size blocks can be seen in the walls of Barbourville, a house now in ruins, designed by TJ for Virginia governor James Barbour. The only "wood brick" at Poplar Forest was a charred piece of poplar from the 1845 fire that workers inserted in the top course of the wall during the rebuilding in 1846, presumably as a good luck token.
47. TJ to Benjamin Henry Latrobe, Feb. 28, 1804. Latrobe Papers, I:440.
48. HC to TJ, July 22, 1808, MHS, 6.
49. Cote, 237.
50. Having first tried to have the bases and capitals carved out of native marble, TJ then ordered the Corinthian capitals from Carrara, Italy. One of the rejected local stone capitals can be seen behind the garden of Pavilion III.
51. HC to TJ, Sept. 4, 1808, MHS, 6.
52. There is good documentary evidence that TJ was willing to bend the rules at his private retreat. In his middle room he added an additional decorative element to the frieze of the Baths of Diocletian entablature, explaining to New York sculptor William Coffee, who made the frieze ornaments, that this was a private house and he could indulge his "fancy." TJ to William Coffee, July 10, 1822, MHS, 11.
53. A recent examination of the only Univ. of Va. pavilion column with original rendering suggests that they too were originally unpainted.

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54. The ceiling of the dining room had to be re-plastered in 1819, when TJ decided to rebuild his original "rafter roof" and replace it with a flat terras roof. Joseph Antrim did that plastering and later the plastering of the Rotunda.

55. TJ, Farm Book, in Betts, pl. 102.

56. TJ to George Wythe, Oct. 23, 1794, LC, 20.

57. TJ to William Giles, quoted in McLaughlin, p. 259.

58. This masonry mass is not unlike the box-like fireplace that extends into the south square chamber on the first floor at Monticello, thought to be an experimental attempt at radiant heating on a modified Rumford method.

59. The diagonal flue from this center fireplace is thought to have caused the fire in 1845. TJ had used diagonal flues in brick walls at Monticello.

60. See Chambers for the history of rebuilding.

61. The 1846 plaster was largely put on riven lath when sawn lath was commonly available. TJ clearly used superior building materials when he could, and the 1846 owners used inferior materials when they chose.

62. TJ had the wooden stud wall of his bed alcove brick-nogged by Chisolm for a more solid construction. There is no documentary evidence, and scant physical evidence, that TJ used his common system of counter-sealing between the joists of floors and ceilings at Poplar Forest. At Monticello he laid two courses of bricks between each joist. His letter to Benjamin Harris of Aug. 9, 1812, says that saved the house from fire.

63. Archaeological investigations have taken place concurrently, revealing a highly ornamental landscape. See C. Allan Brown, "Poplar Forest: The Mathematics of an Ideal Villa," *Journal of Garden History* 10 (1990): 117-139. Archaeologists are also investigating plantation outbuildings and slave quarters on the Corporation's 500 acres (down from about 1,000 acres when TJ died). Since

1989 the staff has had included archaeologists, architectural historians, historians, interpreters, architectural conservators, and craftsmen in addition to administrative staff. The architectural staff interacts with architectural consultants John Mesick and Jeff Baker and a five-member advisory panel: William Beiswanger, Robert Burley, Hugh Miller, Nicholas Pappas, and Orlando Ridout.

64. Four arches were dismantled at their centers and the bricks stored in their relative positions in an inverted arch form. The adjacent brick piers were then moved into their proper vertical alignment, underpinned with concrete, and the arch bricks reconstructed.

65. Mortar analysis identified the original sand, which matches that found in small amounts on the surface of the surrounding land today. This could not be found in sufficient quantity, so a three-sand mix from commercial sources was developed. This has a half hydraulic lime and half hydrated lime mixed with a small amount of clay fines as a coloring agent.

66. For information on the process of investigation and restoration, see: *Notes on the State of Poplar Forest, Vols. I and II* (1991 and 1994); Travis C. McDonald, Jr., "Poplar Forest: A Masterpiece Rediscovered," *Virginia Cavalcade* (Winter, 1993): 112-121; Jane Brown Gillette, "Mr. Jefferson's Retreat," *Historic Preservation* (July/Aug, 1992): 42-49, 79-81; and Mesick Cohen Waite, "Poplar Forest Historic Structure Report," series of reports from 1990-1994.

67. Jefferson commented in 1796 that "the walls are so solid that 7 men get down but 3 & 4,000 bricks a day. they could make new ones as fast." TJ to Thomas Mann Randolph, April 11, 1796, LC, 20. Jefferson had hoped to salvage 62,000 bricks but only ended up with 29,000 whole bricks and 15,500 half bricks. McLaughlin, p. 257.

68. This high salvage rate is true for bricks laid in the soft 1846 lime mortar. It is nearly impossible to salvage original bricks that have been laid in the hard 1940s Portland cement mortar. Removing the Portland cement repointing mortar has been very successful with little damage. This is accomplished by cutting a kerf in the center of the joints before removal.

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