

United States Department of the Interior
National Park Service

National Register of Historic Places Multiple Property Documentation Form

This form is used for documenting property groups relating to one or several historic contexts. See instructions in National Register Bulletin *How to Complete the Multiple Property Documentation Form* (formerly 16B). Complete each item by entering the requested information. For additional space, use continuation sheets (Form 10-900-a). Use a typewriter, word processor, or computer to complete all items

XX New Submission _____ Amended Submission

A. Name of Multiple Property Listing

Traditional Patterned Brickwork Buildings in New Jersey

B. Associated Historic Contexts

(Name each associated historic context, identifying theme, geographical area, and chronological period for each.)


Traditional Patterned Brickwork Buildings in New Jersey, ca.1680 – ca.1830 (Statewide)

C. Form Prepared by

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D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR 60 and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation.
(_____ See continuation sheet for additional comments.)

 11/1/18 Ass't Commissioner
Signature and title of certifying official | Date
NJ DEP
State or Federal Agency or Tribal government

I hereby certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.

Signature of the Keeper | Date of Action

Traditional Patterned Brickwork Buildings in New Jersey MPS**New Jersey**

Name of Multiple Property Listing

State

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Provide the following information on continuation sheets. Cite the letter and title before each section of the narrative. Assign page numbers according to the instructions for continuation sheets in National Register Bulletin *How to Complete the Multiple Property Documentation Form* (formerly 16B). Fill in page numbers for each section in the space below.

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Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C.460 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, PO Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.

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Section E:

Context: Traditional Patterned Brickwork in New Jersey, ca.1680-ca.1830

Introduction

Southern New Jersey is the principal home of traditional patterned brickwork in the United States. Surveys of American architecture with a regional focus cite or depict examples,¹ and the scholar who looked most carefully in a comparative way concluded that New Jersey contained more such buildings than the other states combined.² If this conclusion has not yet been firmly established as fact, it has also not yet been contradicted, as the discovered examples in New Jersey have surpassed 375 and move toward 400 buildings, both surviving and disappeared. Their construction began about 1680, in the earliest years of the West New Jersey³ colony, before the first Philadelphians came ashore, and patterned brickwork continued to be practiced, in waning fashion, until the early years of the 19th century when both its possibilities and its popularity yielded to the imperatives of a new style and a new architectural environment.

Today it is hard to capture what patterned brickwork meant to the first generation that built it on these shores. For these almost exclusively Quaker families, it was an architecture of solid possession, and it was theirs. To a people who had been a small, despised minority in England, hounded and prosecuted for their faith,⁴ these brick houses, even more so than the more numerous frame houses, represented the ability to acquire property and substance that had been denied them at home.

¹ Architectural historian Harold D. Eberlein called attention to these buildings in an article, "Early Brick Houses of Salem County, New Jersey," *American Architect* (formerly *American Architect & Building News*), 120 (August 31, 1921): 139-148. Folk cultural treatments and cultural geographies include Thomas Jefferson Wertenbaker, *The Founding of American Civilization: The Middle Colonies* (New York: Charles Scribner's Sons, 1938; Reprint 1963), esp. Chap. 7: "The Quaker Spirit in Brick and Stone;" Henry Glassie, *Pattern in the Material Folk Culture of the Eastern United States* (Philadelphia: Univ. of Pennsylvania Press, 1968): 152-153; Gabrielle Lanier and Bernard L. Herman, *Everyday Architecture in the Mid-Atlantic* (Baltimore: Johns Hopkins Univ. Press, 1997): 97-108.

² The original source of the comparison is Paul V. Love, "Patterned Brickwork in the American Colonies," Ph.D. dissertation, Columbia University, 1950, p.i (Preface), et passim, and Appendix A. Although Love failed to find many examples that have occurred in other states (he especially short-changed Pennsylvania), he also enumerated only a minor fraction of the New Jersey examples. Paul Van Derveer Love (1908-1986) was an interesting figure. It is unclear why he was moved to study patterned brickwork houses. Born in Long Branch, New Jersey and raised in the northern part of the state, he taught at a Passaic County high school at the start of his career, in all which places patterned brickwork buildings are either entirely absent or nearly so. However, he also wrote his master's thesis on patterned brickwork in Salem County, and he married Ora Penton, whose name suggests she was a member of a longstanding Salem County family. Love attended Columbia University for both his M.A. and his doctorate, earning the Ph.D. in art history in 1950. He eventually became a tenured art history professor at Michigan State University, and the university archives holds a substantial collection of his papers. Only in New Jersey, however, is he remembered for his writings on patterned brickwork. After penning an article in 1955 summarizing his dissertation findings for the *Proceedings of the New Jersey Historical Society*, he seems never to have touched the subject again. Elsewhere, where he is remembered at all, it is for his large body of work on modern dance.

³ In its earliest years from 1664 to 1676, New Jersey was a single, proprietary colony. It was divided into two proprietary colonies, West New Jersey and East New Jersey from 1676 to 1702 [hereafter referred to as West Jersey and East Jersey], then was a single, royal colony afterward.

⁴ Perhaps as many as one-third of the adult males in early West Jersey had been jailed in England for reasons related to Quakerism, as well as many Quaker women. For an extensive treatment, see Craig W. Horle, *The Quakers and the English Legal System, 1660-1688* (Philadelphia: University of Pennsylvania Press, 1988.) See also David Hackett Fischer, *Albion's Seed: Four British Folkways in America* (New York: Oxford University Press, 1989), 486.

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Even more broadly, of the several vernacular architectures that spread themselves regionally across the New Jersey landscape before the middle of the 19th century, patterned brickwork was the only one that took its inspiration from a high-style, high-end precedent, an architecture of power and permanence, and it was the only one that symbolized the coming rise of American capability to construct great buildings. It was the first recognizable architecture of “refinement” in New Jersey, one that responded not to those first pioneer conditions but pointed past them toward a more accomplished future.⁵ Flemish checker was an evocation in brick of the weave of linen cloth.⁶ The patterns of vitrified brick were the architectural equivalent of the decoration that adorned that cloth, as when girls stitched golden-colored threads into their samplers, and the dates and initials laid in with brick were like monograms. The golden glow that sunlight produced on the brickwork—and still does⁷ when the viewing conditions are right—gave expression to all the possibilities for a fine future.

Patterned brickwork appeared in perhaps one percent of the houses built in New Jersey in the colonial period,⁸ but as architectural historian Damon Tvaryanas has noted, “they made an architectural statement far disproportionate to their numbers. As a group, they were the largest, most expensive, and most impressive private buildings constructed in West New Jersey, and they visually dominated the landscape of the colony.”⁹ Patterned brickwork was not spread evenly across that landscape. Although isolated examples appeared even in northern New Jersey locations where the conditions for brick construction were favorable, the overwhelming majority of patterned brickwork—about 95 percent—was built in six southwestern counties, but even where it was most popular it appeared in fewer than one house in six.¹⁰ Even among the *brick* houses of early New Jersey, patterned brickwork is in the minority. Yet it had an appeal that has transcended the generations who built these buildings. By the middle of the 19th century, patterned brickwork drew attention for its old-fashionedness, and these buildings were photographed once photography became popular. At least in Salem County, a modest literature has grown up about them. Artists have painted them.¹¹ Even builders have repeatedly appropriated the motifs of patterned brickwork during the past two centuries. In the 20th century, brickmaking firms produced bricks with a reflectivity that mimicked vitrified headers, and some builders gave a new rustic expression to Flemish checker. Today, patterned brickwork still comes into and goes out of architectural fashion, and the Internet reveals that patterning is carried out with a greater imagination than ever.

⁵ See for comparison, Richard L. Bushman, *The Refinement of America* (New York: Vintage Books, 1993).

⁶ Cf. to designs in Betty Ring, *Girlhood Embroidery: American Samplers and Pictorial Needlework* (New York: Alfred A. Knopf, 1993).

⁷ When looking at patterned brickwork without the glare of reflected light, vitrified headers most often seem darker in color than the bricks that surround them. They more often appear as black or as a dark, slate gray, or of the color of pewter or lead. But bricklayers could do what alchemists could not: in reflected sunlight, dark headers turn golden for fleeting moments, piece by piece to a viewer up close, seen from the right angle at the right time. For another acknowledgment of these bricks’ enduring reflectivity, see Cary Carson and Carl R. Lounsbury, eds. *The Chesapeake House: Architectural Investigation by Colonial Williamsburg* (Chapel Hill, NC: University of North Carolina Press and Colonial Williamsburg, 2013), 246.

⁸ A similar situation prevailed in Maryland and Delaware, where the incidence of brick architecture was small, though its impact large; see Carson et al, *The Chesapeake House*, 255.

⁹ Damon Tvaryanas, “Parallel or Precedent: Patterned Brickwork Architecture and Quaker Needlework,” *Folk Art* 29, 1-2 (Spring/Summer 2004): 43.

¹⁰ Chiarappa, dissertation, 49, and 60 (note 72).

¹¹ In Burlington, local artist John Collins painted some early buildings there during the middle 19th century. The Salem County Historical Society holds a collection of paintings of old Salem County houses, painted in the 1880s by local artist and photographer James H. Simkins.

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Although most patterned brickwork houses in New Jersey are privately owned, an impressive number are in public stewardship. Two 18th-century patterned brickwork houses are owned and interpreted by the State park system: the William Hancock house Salem County and the James and Ann Whitall House in Gloucester County. The Burlington County Park System owns the Ezekiel Wright house at Smithville. The Mercer County Park System owns the shell that was the John Rogers house with plans to stabilize and interpret it. Five county historical societies own, occupy, or have their headquarters in patterned brickwork houses. The New Jersey chapter of the Society of the Colonial Dames of America own and interpret the Old Schoolhouse in Mount Holly. Patterned brickwork was a theme highlighted by the National Park Service in its New Jersey Coastal Heritage Trail. The William Trent House, Trenton's house museum, occupies the capital city's finest patterned brickwork house. The White Hill mansion in Fieldsboro has been acquired by the Borough of Fieldsboro, which is researching and repairing it. The Joseph Brearley house in Lawrence Township is township-owned, as is the Isaac Pearson house in Hamilton Township.

The patterned-brickwork houses of New Jersey collectively comprise a national architectural treasure. Vernacular architecture and folklife historian Michael Chiarappa called these buildings among "West [New] Jersey's most powerful and meaningful artifacts."¹² The best of the early examples, the Abel and Mary Nicholson house (1722), has been designated a National Historic Landmark.¹³ About 75 New Jersey patterned brickwork buildings have been recorded with measured drawings and photographs by the Historic American Buildings Survey [HABS], and more than 80 have been listed in the National Register of Historic Places (not all the same ones). Some are listed under Criterion C for their architectural importance. Some are listed for other reasons under Criteria A or B. Others (for example, in Bordentown, Burlington, and Salem) contribute to listed historic districts. In unusual instances, they may also meet Criterion D because they have yielded or may be likely to yield significant architectural information unknown and unavailable through documents. **[Note: Only Criteria C and D are treated in this MPDF—see Section F.]** Despite all this attention, many worthy buildings that meet the eligibility requirements, including some quite important ones, remain unlisted, and a thematic treatment is needed to address their lack of recognition.

These buildings represent English craft influence, Quaker-led innovation, and American prosperity across the span of the 18th century. Brick was an expensive material wherever it appeared in colonial America, and New Jersey did not have a monopoly on its use, but only in southern New Jersey—the old colony of West Jersey—and subsequently in Philadelphia did brick tradesmen appear with the first English arrivals and so prominently contribute to its architectural history from the very beginning. This document is meant to help tell that story.

Defining "Patterned Brickwork"

In this document, the phrase "patterned brickwork" means the deliberate use by a bricklayer of "vitrified" brick (brick as if glazed) or at least darkened brick to form patterns in a wall based on the contrasting color and reflectivity of the bricks. It is thus meant to differ from ordinary or plain brickwork which did not take advantage of these qualities. Ordinary brickwork employed the same bonds—English, Flemish, and common bond—but executed them in the unvarying color of plain, common brick. Both classes of brickwork employed

¹² Michael J. Chiarappa, "The Social Context of Eighteenth-Century West Jersey Brick Artisanry," *Perspectives in Vernacular Architecture IV* (Columbia, MO; and London: University of Missouri Press, 1991), 31.

¹³ Two other New Jersey patterned brickwork houses have also been designated NHLs, for historic figures associated with them: the Francis Hopkinson house, in Burlington County, and the William Trent house in Mercer County.

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the same bricks, but masons laying ordinary brickwork did not use the vitrified bricks for any decorative purpose.

Patterned brickwork in America was almost exclusively a two-dimensional art. Sophisticated three-dimensional modeling of brick clay, which in some famous English buildings resulted in Gothic tracery or elaborate chimney tops being executed in brick, was not carried out in New Jersey. Apart from water table bricks, which were molded with either a Roman ovolo or were beveled, sculptural effects were rarely attempted, and never on a large scale.¹⁴ Thus the work of the brickmakers was not a significant factor in this architectural fashion; patterned brickwork was the art of the bricklayer.

The particular phrase, “patterned brickwork,” has been deliberately chosen to emphasize the role of bricklayers, rather than brickmakers, in this architectural phenomenon. It is not the fabrication of individual bricks that embodied patterning (except insofar as they were modified by the bricklayer), but rather in the manner in which they were assembled. Alternative possibilities such as “pattern brick,” “pattern brickwork,” etc. were rejected for this reason. This choice is not novel. “Patterned brickwork” was also the phrase that Paul Love chose in his writings. Damon Tvaryanas chose it for his 2004 article in the journal *Folk Art*. It is the usage chosen for the *Old-House Dictionary*, and it is the usage adopted by this writer in a brief earlier treatment of New Jersey’s patterned brickwork.¹⁵

Patterned Brickwork in England

The direct roots of New Jersey’s patterned brickwork lie in England.¹⁶ Although efforts to find that influence elsewhere have been made with unconvincing results,¹⁷ the evidence for a direct borrowing from London and southeastern England is, in this author’s opinion, direct, compelling, and unassailable. Even the Swedish minister Israel Acrelius, who in 1758 wrote an account of the Swedish churches in the Delaware Valley, stated

¹⁴ There are a few examples of date plaques that embodied a tiny amount of three-dimensional modeling; for one example see Bernard Herman, “Eighteenth-Century Quaker Houses . . .,” in Emma J. Lapsansky et al., *Quaker Aesthetics: Reflections on a Quaker Ethic in American Design and Consumption* (Philadelphia: University of Pennsylvania Press, 2003) 188-211.

¹⁵ Stephen J. Phillips, *The Old-House Dictionary: An Illustrated Guide to American Domestic Architecture 1600 to 1840* (New York: John Wiley & Sons, 1994); Damon Tvaryanas, “Parallel or Precedent: Patterned Brickwork Architecture and Quaker Needlework,” *Folk Art* 29, 1-2 (Spring/Summer 2004), 42-53; Robert W. Craig, “Patterned Brickwork,” *Encyclopedia of New Jersey* (New Brunswick, NJ: Rutgers Univ. Press, 2004): 620. It also represents a compromise between George W. Johnson’s “patterned brick” and Michael Chiarappa’s “pattern brickwork.”

¹⁶ The classic work on English brickwork is Nathaniel Lloyd, *A History of English Brickwork, With Examples and Notes of the Architectural Use and Manipulation of Brick from Medieval Times to the End of the Georgian Period* (London: [H.] Grenville Montgomery, 1925; New York: W. Helburn, Inc., 1925). More recent scholarship includes Ronald W. Brunskill and Alec Clifton-Taylor, *English Brickwork* (London: A Hyperion Book, Ward Lock Limited, 1977 [hereafter “Brunskill”]); and Peter Guillery, *The Small House in Eighteenth-Century London: A Social and Architectural History* (New Haven and London: Yale University Press, 2004). For London architecture, the many volumes of the *Survey of London*, published jointly by the London County Council and the London Survey Committee since 1900, are the foundation for any architectural study of that city.

¹⁷ Allen Gowans argued for a Swedish-influenced origin to Delaware Valley patterned brickwork in “The Mansions of Alloways Creek,” upon the basis of weak and conflicting evidence. Curiously, he carried on this argument in the notes of his article, rather than the text. He dismissed a direct English precedent for Delaware Valley patterned brickwork, believing that English patterned brickwork ceased in the 16th century, ignoring that it survived in English vernacular building construction for another two centuries [see text below]. Architectural historian Damon Tvaryanas also failed to find Gowans’ argument convincing. *Folk Art* (Spring/Summer 2004): 44.

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“the houses along the Delaware are built of bricks, after the *English* fashion, every other brick glazed.”¹⁸ The influences upon *English* brickwork, however, were Continental.

Among the countries of Europe, the use of brick in architecture came late to England.¹⁹ Lloyd and Brunskill explain the use of brick during the Roman occupation of Britain and the subsequent re-use of Roman brick in the early medieval period, but that production of brick in England did not begin again until the 13th century.²⁰ Lloyd asserts that Little Wenham Hall, built about 1260-1280, was “probably the earliest dwelling house of its kind in England.”²¹ It was constructed of brick “of the true Flemish or Low Country type, measuring 9 by 4½ inches.” Lloyd explains that refugees from the Low Countries “appear to have introduced the art of brickmaking just as they introduced other industries.”²² Lloyd describes the influence of the Hanseatic League upon England from the 14th through the 16th centuries, and the use in north German cities of brick clay for three-dimensional architectural effects.²³

For the type of English patterned brickwork that would later be practiced in the American colonies, however, Lloyd argues for a French connection.²⁴ The English word *brick* derives in the 15th century from the French word *brique*, according to both Lloyd and Brunskill, but more tellingly, Lloyd explains, the limited geographic impact of the Hanseatic influence was overtaken “well into the fifteenth century,” by another influence “that caused brickmaking and building in brick to be carried out in localities widely apart.” Lloyd continued,

The strongest evidences in support of [the] theory of French influence are the facts (i) that certain fifteenth-century brick castles were built by English knights and peers, who had been engaged in wars against France, and had even established themselves in French castles for years, from which they organized raids and despoiled that country; (ii) that what we term ‘English bond,’ which was in use in France, became adopted generally in England in place of the irregular bond of early medieval work, and (iii) the introduction of diaper patterns on wall surfaces formed by flared headers of dark colour and partially vitrified.”²⁵

Paul Love agreed with this interpretation, and further observed that French influence was limited to English patterned brickwork, but had no direct influence on American colonial brickwork. He could find no examples of patterned brickwork in France’s American colonies.²⁶

Curiously, Lloyd also noted that Little Wenham Hall was constructed with some courses of knapped flint, which would have exhibited a reflectivity that contrasted with the flat color of the brick. He also identified other, prominent 16th-century examples of this use of flint in several English buildings.²⁷ Another, which he failed to

¹⁸ Quoted in Gowans, 389, footnote 1.

¹⁹ Lloyd, *History of English Brickwork*, 1-7.

²⁰ *Ibid.*, 4, 107.

²¹ *Ibid.*, 4.

²² *Ibid.*

²³ *Ibid.*, 6-7.

²⁴ *Ibid.*, 7-8.

²⁵ *Ibid.*, 7.

²⁶ Love, dissertation, 10. There was likewise no patterned brickwork in the areas of northern New Jersey where French Huguenots early settled, though those were areas where stone was widely available and extensively used. Curiously, these areas would develop a type of patterned *stonework* employing brownstone that was practiced during a period roughly contemporary with traditional patterned brickwork, and in some cases imitated diapering effects.

²⁷ Lloyd, 69. Also see Love, dissertation (citing Lloyd), 12.

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mention, was the Holbein Gate in London, built about 1530, in which blocks of knapped flint alternated with flat limestone of a slightly contrasting color, which produced a checkered effect.²⁸ Hampton Court palace was enlarged in the early 16th century, and its aggrandizement included a prominent wall extensively decorated in a diamond diaper pattern.²⁹ If Hampton Court helped to introduce patterned brickwork to Londoners, the Holbein Gate helped to encourage the idea of Flemish checker.³⁰

A principal reason that some architectural historians have not embraced the view that the patterned brickwork of the Delaware Valley is fundamentally English in origin is the supposed 200-year gap between the use of patterned brickwork in such prominent buildings as Hampton Court and the heyday of patterned brickwork in the Delaware Valley in the middle 1700s. Gowans wrote of a “two-century hiatus.”³¹ Reading Lloyd and Brunskill, one would be inclined to agree. Certainly the plates published in Lloyd argue for the proposition that patterned brickwork disappeared from British high architecture before the end of the 16th century. Yet there was no hiatus. “It should be remembered,” Love wrote, “that patterned brickwork was in full stride ... in the 17th century for minor buildings in England; [and] that it was common knowledge of the builder and bricklayer in England.” Patterned brickwork survived in vernacular architecture in the parts of England where brick was produced and used, chiefly in the counties to the south and east of London, and in London itself.

The Great Fire of London and its Aftermath

On September 2, 1666, the combustion ever afterward known as the Great Fire of London broke out uncontrollably in one of the poorer sections of that largely timber-framed city. In three days of frantic confusion, more than 13,000 buildings burned, about 85 percent of the old city within the ancient walls. Before the Fire, the land outside the walls could still largely be characterized as open fields, and it was there to which most of the dispossessed from the fire evidently went.³² The year after the fire was largely consumed with the legal, financial, and logistical preparations for rebuilding. A Parliamentary statute of 1667 determined that the city would be rebuilt in brick and stone. It was the spring of 1668 before reconstruction activity was generally underway. For the first few years afterward, London experienced a construction boom that brought many journeymen into the city from distant counties, including masons and bricklayers. In the early 1670s, however, hard times set in as the rebuilding of the city got too far ahead of the effective demand for housing. Nearly all rebuilding of houses was complete by the end of 1672.³³ But what had been open spaces around the city before the Fire had become suburbs of it—the word *suburb* was actually used—and many former city residents were either unwilling or unable to return to the old city as it rebuilt. After the city conducted a population census in

²⁸ *Survey of London*, vol.5, pp.7-12.

²⁹ Regarding Hampton Court, one good source is John Summerson, *Architecture in Britain, 1530-1830* in the Pelican History of Art (Harmondsworth, Middlesex, UK: Penguin Books, 5th revised edition, 1969).

³⁰ Love found in Lloyd the example of a house in Sarre, Kent in which the date of construction, 1691, was executed in knapped flint, cut to the size of brick headers, illustrating the connection between the reflectivity of flint to that of vitrified brick. The flint must have been a more expensive treatment. Was vitrified brick the poor man’s flint? For an example of a house in Buckinghamshire, whose date of construction, 1693, was executed in *molded* brick, see Tunstall Small and Christopher Woodbridge, *English Brickwork Details, 1450-1750: A Portfolio of Full-Size Mouldings*, London, The Architectural Press, n.d., and New York: W. Helburn, n.d.), pl.18.

³¹ Gowans, Alan. “The Mansions of Alloways Creek” 389-391.

³² This treatment is largely taken from T.F. Reddaway, *Rebuilding London after the Great Fire* (London: Edward Arnold & Co., 1940). Largely agreeing with his conclusions but taking a different approach to the subject is Elizabeth Kelleher, *The Birth of Modern London: The Development and Design of the City, 1660-1720* (Manchester, UK and New York: Manchester University Press, 1999).

³³ Stephen Inwood, *History of London*, (New York: Carroll & Graf, 1999), 244-249.

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1673, “the problem of empty houses replaced that of empty spaces, and pride in the achievement of rebuilding gave way to anxiety about re-peopling.”³⁴

London after the Great Fire was rebuilt in brick, and patterned brickwork was present in that rebuilding, both in London proper and in the construction of suburbs in the fields surrounding the ancient city wall. That fact is not easily discerned, however, for as John Summerson noted, “only a very few unimportant specimens of immediately post-Fire housing survive.”³⁵ Yet despite limitations imposed on buildings by the 1667 statute that governed the city’s rebuilding, which tended to suppress architectural imagination, Summerson also noted that “the streets were by no means uniform and much ingenuity was shown in giving houses distinct individualities according to the trade of the builder—*ornamental rubbed-brick from the bricklayers*, stone dressings from the masons, balustrade balconies from the carpenters, and so on.”

Until World War II, such a house of great rarity in the City of London stood at 34 Great Tower Street in the parish of All Hallows Barking by the Tower. It was the brick house that Richard Beckford arranged to have constructed in 1668, in the immediate flush of reconstruction after the Fire. Beckford was a prominent member of the London merchant class, and at different times an alderman of his parish and the churchwarden of All Hallows Church. Curiously, considering Summerson’s comment, Beckford was “Master of the Clothworkers Company” in 1670.³⁶ Beckford’s house, 5 bays wide by 3 stories tall, and with a center entrance, featured a façade of Flemish checker.³⁷ The former existence of this house, documented by the *Survey of London*, refutes the view of some architectural historians that patterned brickwork in England had appeared only in relatively iconic 16th-century buildings, and then fully disappeared. Rather, it argues for the alternative explanation Love reached, that patterned brickwork, at least in its simplest forms, survived through 16th- and 17th-century vernacular architecture, and was being practiced in post-Fire London in the city’s rebuilding. Indeed, examples were still being built in 18th-century London.³⁸

The Making of Vitrified Brick

The authors of building trade manuals who wrote during the heyday of English patterned brickwork included Stephen Primatt, William Leybourne, John Houghton, and Richard Neve. Their careers overlapped, but the names can be thought of as in roughly chronological order, based on their most important writings. Leybourne wrote in 1684 that brickmakers would select clays “that will vitrifie,” or become like glass.³⁹ He wrote that some tradesmen called bricks possessing this attribute “clinkers,” and he classified such bricks as being of “the first and best sort.”⁴⁰ Stephen Primatt wrote that this sort of brick made a “tinckling” sound when one was

³⁴ Reddaway, 302.

³⁵ Summerson, “The Rebuilding of London...,” chapter 13 in *Architecture in Britain, 1530-1830*, 208.

³⁶ The suggestion here is a pure speculation: that one whose business was in the production of clothing might have been more likely to build a house with patterned brickwork [see “Analogy to Linen Cloth” in the text].

³⁷ *Survey of London*, vol. 15, pp. 2, 23, 30, and pl.37. The Flemish checker can be clearly seen in the photograph, despite the rather soft focus of the print and the accumulated coal soot on the building’s outer surfaces. German bombing during the War was evidently the cause of its destruction.

³⁸ See Peter Guillery, *The Small House in Eighteenth-Century London: A Social and Architectural History*. New Haven and London: Yale University Press, 2004. Also Love, dissertation, 10.

³⁹ William Leybourne, *The Builder’s Guide* (London: 1684): Book 2, p.129; quoted in Love, dissertation, p.1.

⁴⁰ William Leybourne, *A Platform for Purchasers, Guide for Builders, Mate for Measurers* (London: Thomas Radcliffe and Thomas Daniel, 1668; 2nd edition, 1685); 129.

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struck with another.⁴¹ Leybourne further explained that “those which in burning lie next to the fire in the keele [*sic*], which, if they have much salt-peter in them, they will run and be as it were glazed all over.” By this Leybourne was explaining that brickmakers sought clays that during the firing would fuse the ends of brick directly exposed to the fire into hard, tinted, and glossy finishes, ie. “glazed”—though no substance that any potter would understand to be a glaze was ever applied.

Writers other than Leybourne did not have such a high opinion of clinkers, nor did they describe them in the same terms. John Houghton, describing brickmaking in 1693 in a series of essays published in installments, agreed that clinkers were “over-burnt bricks,” but that’s where the similarity to Leybourne’s writing ended. He had a decidedly more negative opinion of these bricks and their makers. Houghton wrote that poorly-trained brickmakers who did not alternately fire the clamp and then slack the fire several times, thereby to help even out the temperature within, made the raw brick in the lower part of the clamp “run so with the excessive Heat, that they are almost united in one entire Body; so that they are forced to get them out with Wringers (or Iron bars) and each Bolt of Tiles [or bricks were] one entire Mass, (which I have observed myself).”⁴² Brick burned in that manner would have been unusable for any decorative purpose. At first Houghton asserted that clinkers were best for foundations, then reversed himself, explaining rather that they had little value, being worth less than half of the best red bricks. He seemed to associate this problem with a primitive form of clamp more susceptible of this result.

However, Houghton also described a very different form of clamp, apparently a larger and more efficient kind, composed of “arches,” in which the raw bricks were stacked mostly in “long necks,” 42 bricks long, or in “short neck[s], which [are] about 30 bricks long,”⁴³ The raw bricks were stacked up to a height of about three feet, then subsequent bricks were corbeled over the brick below to close the arch. Raw bricks were then stacked upon them to the height of several additional feet, enough that where long necks were used, each arch accounted for ten thousand bricks.⁴⁴ While one might question whether brickmaking practices described in these manuals were actually followed in the Delaware Valley, when the Chesterfield Monthly Meeting of Friends built its meetinghouse in 1707, its brick was evidently shipped in loads of ten thousand.⁴⁵ This leaves open the possibility that brickmakers might not always sell an entire clamp worth of brick to the same buyer, nor limit his production to that for which he had immediate orders, but only sell as many arches from his clamp as a bricklayer needed.

Clamps fashioned in this manner would produce many bricks—the corbeled ones—that would have not only one end that would “run” or vitrify, but also a minor portion of the adjacent bedding plane. In the buildings of the Delaware Valley it is commonplace to see bricks with such resulting surfaces, which means they must have been stacked in arch-fashion, and that they “ran” not because they were on the bottom, but because they were corbeled over one another in the arch and directly exposed to the heat, however well-controlled the temperature may have been. Only clinkers that were well-formed could be used in the exteriors of buildings, but this type of clamp would have produced many such bricks, given the right ingredients to begin with, and skillful hands

⁴¹ Stephen Primatt, *The City and Country Purchaser... second edition much enlarged by William Leybourne* (London: John Wright, 1667) 51.

⁴² Neve, *City and Country Purchaser ...* (1726 edition), [unpaginated, “Brick” entry]. The parentheses are as in the original.

⁴³ John Houghton, *A Collection for Improvement of Husbandry and Trade*, no.73, December 22, 1693, p.195.

⁴⁴ *Ibid.*

⁴⁵ RG2, Ph/C47/6.4, Friends Historical Library, Swarthmore College, Swarthmore, PA.

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attending the fire. Evidently bricks that lacked the substances that would cause vitrification merely darkened in the firing.

Would such a clamp produce vitrified bricks in the numbers needed for patterned brickwork? From straightforward arithmetic, in the design of an arch-type clamp described by Houghton, about 1500 to 2000 bricks would have been directly exposed to the heat of the flame for each arch of 10,000 bricks, or about one brick in six. These bricks would have ranged from the bottom of the clamp to the middle, but with a homogeneous mixture of the clay and proper firing and slacking, all or nearly all exposed to the fire could be expected to darken or vitrify alike. For a wall laid in Flemish checker, if that wall were one foot thick (1.5 bricks thick), then two bricks of every nine would need to be vitrified headers, or 22 percent. In a wall of only one brick thickness, four vitrified headers would be needed for each 12 bricks, or 33 percent. In either case, a wall so laid would require a greater percentage of vitrified headers than the clamp would produce, which, in turn, would limit the number of elevations that could be outfitted with that pattern. This may perhaps explain why so few examples have more than the facade laid in Flemish checker, and why patterned brickwork seldom appeared below the water table course. (The builder of the William Montgomerie house in Upper Freehold evidently underestimated his needs and ran out of vitrified brick while laying the second-story walls. He could have saved some of the product by dispensing with the stringcourse that he laid with vitrified headers between the first and second stories, suggesting that it was only after that point that he discovered how insufficient his supply was. He did not waste any on secondary elevations, but even without the stringcourse he would not have had enough for the façade.)

The key to whether brick would vitrify at all evidently lay in the composition of the substance to be fired. The authors agreed that the substances from which brick were formed included much more than the "earth" [they avoided the term 'clay'] that was its principal ingredient. Also crucial was the "spanish" (their term) that was added. This was a nasty witches' brew that Houghton wrote consisted largely of coal ashes, street sweepings, and household dust.⁴⁶ He implied that the substance making "the bricks run" was horse dung, which, of course, would have been a common component of street sweepings. Houghton wrote, "if horse dung happens to be mixt with any earth, 'twill make the bricks run, and look of a green glazy colour..."⁴⁷ It is possible even today in the Delaware Valley to find tinges of green in the vitrification of some brick (see "A Spectrum of Colors"). This spanish would be sifted and thoroughly mixed with the earth in the autumn, allowed to set all winter, and molded and burnt into brick in the spring.

Neve agreed that brickmakers never applied glazes to their product,⁴⁸ but the idea of one day doing so was something he actually pondered. He speculated in terms that made him more than 150 years ahead of his time

⁴⁶ Houghton, 192.

⁴⁷ Ibid., 197.

⁴⁸ Although it has become a consensus understanding that glazes were not applied to brick before firing, Michael Chiarappa challenged this view in his 1993 dissertation. While he did not deny that vitrified brick in fact existed, he nevertheless asserted that "many of the bricks used in West Jersey pattern[ed] brickwork received a glaze finish prior to firing" (Chiarappa, pp.93-94). His statement oddly conflicts both with the British writers cited in this document and with the weight he places on Leybourne, who wrote instead that bricklayers sought out clays "that would vitrifie." Leybourne wrote that the presence of salt-petre within the body of the clay, itself—not applied to its face—would make the brick vitrify. Chiarappa reported a Neve comment about the possibility of using a glaze, but not his comment that English brickmakers did not do so. He also ignored Neve's conclusion that a deliberate R&D program would have been required to obtain practical and effective glazes that could transform brickmaking. English brickmakers throughout the 18th century made bricks with similar uniformity of color and in the same colors that brickmakers produced in the

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when he wrote that if brickmakers would only invest part of their efforts over a period of years, they would, with careful study, eventually find practical, efficient methods to produce brick in a range of beautiful colors, as well as achieving marbling and other desirable effects. But he was resigned to the fact that that would not happen. Alas, he wrote, "But (more is the Pity)—Men of this Profession [brickmaking] are like the Materials they work upon, viz. heavy and lumpish."⁴⁹

Patterned Brickwork in the early American Colonies

Paul Love identified that patterned brickwork in colonial America was limited to the eastern seaboard, from New England to North Carolina.⁵⁰ He wrote, "The greatest concentration is in Salem and Burlington counties in southern New Jersey. This state acts as a center outside which, to the north and south, the examples diminish in number, although the South has in all cases more than the North." Love relied heavily on HABS data, and there is bias in his work, both in that New Jersey had a more extensive HABS program than other states did,⁵¹ and that Love had studied the Salem County houses more intensively than any others, but his general conclusion about the distribution of patterned brickwork still seems valid, even if his numbers seem small everywhere.

Of known examples, there are at least three and probably more in Connecticut, at least four in New York, four in Pennsylvania, one hundred and eight in southern New Jersey and one in northern New Jersey, at least six in Delaware, thirty-one in Maryland, fifteen in Virginia, eleven in North Carolina, one in Kentucky, and one in Louisiana. *In these totals are not included the many examples of the commonest form of patterned brickwork used alone, the Flemish checker.*⁵² [emphasis added]

Love also concluded that, while there may have been some Dutch influence upon the patterned brickwork in New York, the patterned brickwork of New Jersey and to the southward was English-influenced and that in some areas of the South a direct influence from Philadelphia or New Jersey was probable.⁵³

Delaware Valley. That uniformity of result can be accounted for by the quality of the pugging, or mixing of the clay prior to molding. Both Leybourne and Neve agreed that clinkers resulted from nearly every firing, but they disagreed about the definition. To Neve, clinkers were defective brick of little value; to Leybourne they were "the first and best sort"—the finest brick and of unsurpassed durability, which would have been wasted if not used in exterior walls. Chiarappa presents no documentary evidence that brickmakers in the Delaware Valley (or in England) bought glazes or the ingredients for glazes, nor of customers ordering specific colors. Circumstances run solidly against Chiarappa's conjecture. There could have been no widespread use of such bricks in the Delaware Valley. Were it otherwise, there would have appeared many mistakes in the bricklaying, as for example the unintended use of wrong colors in buildings, or the deliberate use of multiple colors in the same building or in the same design, which does not appear in the Delaware Valley. If glazes had been applied to bricks, one could expect a wider variety of colors and much more vivid tones. Instead, the varieties of color are subtle variations on a dark theme (see "A Spectrum of Color"). If glazes had been applied, the sloppiness inherent in such an activity would have left brush marks that have not been found. Where vitrification does extend beyond the header onto the bedding plane (a very common occurrence), it does so predictably and stops abruptly, corresponding to the spacing by which the brick would have most likely been corbeled in the arch-type clamp. This, too, is inconsistent with any possible system of glaze application.

⁴⁹ Neve, *City and Country Purchaser ...* (1726 edition), "Brick" entry, n.p.

⁵⁰ Love cites two individual exceptions, one in Kentucky, the other in Louisiana.

⁵¹ Historic American Buildings Survey, comp. *Historic American Buildings Survey: Catalog of the Measured Drawings and Photographs of the Survey in the Collections of the Library of Congress, March 1, 1941* (Washington, DC: United States Government Printing Office, 1941). New Jersey boasted by far the longest series of entries.

⁵² Love, dissertation, 4. A few specimens of patterned brickwork have also been found, for example, in Vermont. See Herbert Wheaton Congdon, *Old Vermont Houses* (Dublin, NH: William L. Baun, 1973).

⁵³ Love, dissertation, 133, 137. Love's point about a Delaware Valley influence on some areas of the upper South is consistent with the findings of architectural historian Roger Moss, who studied the Philadelphia building trades in the colonial period; see Roger W.

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The Quaker Impact: Patterned Brickwork in the Delaware Valley

During the years between 1675 and 1690, about 10,000 members of the Society of Friends emigrated to the Delaware Valley, mostly from England and Ireland, overwhelming a European population (British, Scandinavian, and Dutch) of fewer than 1,000,⁵⁴ producing a situation that had no parallel in England: the opportunity (as the Puritans had experienced in New England) for one religious or cultural group to put its stamp on the building construction of an entire region within the American colonies. Historians of vernacular architecture in Britain have not explained what motivated clients to employ patterned brickwork in their buildings. One looks in vain through the volumes of the British journal *Vernacular Architecture* for any treatment of this issue. Clearly, patterned brickwork was widely available in the English context; it could not in Britain have been the exclusive possession of any specific social group. In the American colonies, however, the situation was far different. Quakers brought many building preferences and practices to the Delaware Valley, but patterned brickwork made their buildings more regionally distinctive than did any of their other building practices.

Folklife historian Michael Chiarappa has explored the impact of the Quakers in West New Jersey and their relationship to the phenomenon of patterned brickwork.⁵⁵ Chiarappa chose William Leybourne's phrase, "The First and Best Sort," for the title of his dissertation, for several reasons. Leybourne, of course, was referring to the vitrified bricks, the clinkers, as the best of the three grades or sorts of brick that resulted from the firing of clay in a brick clamp, both for durability and for use in the facades of buildings. Chiarappa, however, had other meanings chiefly in mind. The initial English migration to the Delaware Valley was a Quaker migration, emphasizing entire families, not single individuals, and the hundreds of families who composed the New Jersey portion of that migration quickly spread over the Inner Coastal Plain areas where the better farmland was and where the region's brick clays would be found.

Despite the presence of about one thousand Europeans whose presence predated the Quaker arrivals, it was left to the Quakers to organize the region, to give it its first effective settlement. Swedish, Finnish, and Dutch enclaves in the Delaware Valley had never coalesced into anything that could fully be considered a colony, let alone organize the territory or govern it with staying power. Simply put, they were too few to occupy the region, as their leaders had frequently cautioned their superiors back home.⁵⁶ The Quaker influx completely changed matters. In southern New Jersey, evidence of Swedish or Finnish or Dutch settlement is sparse, while echoes of the early Quaker presence are nearly ubiquitous. Being effectively the first gave Friends the opportunity to place a Quaker stamp on the emerging cultural landscape. Quakers quickly dominated the landholding in West New Jersey, and within a fifteen-year period occupied the coastal plain areas from below Greenwich on the Cohansy River to the site of Trenton on the Assanpink Creek. Among the groups that formed the West New Jersey colony, the Quakers ranked first, in the sense of foremost.

Moss, "The Master Builders: A History of the Colonial Philadelphia Building Trades," Ph.D. dissertation, University of Delaware, 1972.

⁵⁴ And a Native American population of a few thousands, but uncounted.

⁵⁵ Michael J. Chiarappa, "The Social Context of Eighteenth-Century West New Jersey Brick Artisanry," 31-43, in *Perspectives in Vernacular Architecture IV* (Columbia, MO and London: University of Missouri Press, 1991); and "'The First and Best Sort: Quakerism, Brick Artisanry, and the Vernacular Aesthetics of Eighteenth-Century West New Jersey Pattern Brickwork Architecture.'" Ph.D. dissertation, University of Pennsylvania, 1993.

⁵⁶ Cf. Amandus Johnson, *Swedes on the Delaware* (Philadelphia: 1927).

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Chiarappa has pointed out that brickwork was "the best sort" of architecture that the Quakers built. It was the finest and most expensive way to build to which a wide range of people could aspire. Patterned brickwork accentuated this characteristic. Patterns highlighted and strengthened the refinement that the presence of brick implied, and made the work still more expensive. The English practice had been to value ordinary bricklaying by the "rod"—4500 bricks—but designs were charged separately, at a higher, negotiated rate (see below). The Quakers did not re-invent traditional English patterned brickwork; they simply brought English brick masonry practices with them. The importance of Quakers to the practice of patterned brickwork lay in the social realm.

While timber-frame houses built according to English framing practices sufficed for most Quaker families, those who wished to own a brick home could build within a range, according to their means. There were a range of small houses built on a "hall" plan, such as the Abbott house in Elsinboro, built in 1704, and the John Rogers house (1718) near Burlington (about which see more below). Larger homes corresponded to families of greater means, in the most fortunate cases, families whose fortunes were lifted by commercial trading. Both in a spiritual and in a socio-economic sense, patterned brickwork came to be associated with what Quaker historians have identified as "Weighty Friends," a term that was current in the 18th century. **[For the specific building types and sub-types associated with patterned brickwork, see Section F.]**

The most important of the brick tradesmen themselves, the master bricklayers and brickmakers, were themselves weighty Friends, judging from the records of the Quakers' monthly meetings.⁵⁷ Chiarappa observed that brick tradesmen "were key actors ... as they built a minority number of structures for a minority of power-wielding members of this religious group."⁵⁸ He further commented that

Under the aegis of the Society of Friends, pattern[ed] brickwork owners and brick [tradesmen] traveled together, fraternized together, and administered together. The exercise of craft patronage made for the simultaneous wielding of social, economic, and political influence on the part of both client and artisan. [Together], ... these [tradesmen] powerfully negotiated the most salient material expressions of the social order."⁵⁹

The sharp geographic focus of patterned brickwork in New Jersey, limiting it almost exclusively to Quaker-settled areas, is also due to further practices that the Friends promoted. They emphasized that their members wherever practical to socialize only with Friends, and to buy from fellow Quakers.⁶⁰ They also encouraged parents to consider their children as "tender plants," and as their sons grew to apprentice them to Quaker masters. In all these ways Friends meetings encouraged and reinforced a series of practices that limited opportunities to spread patterned brickwork beyond the territorial geography dominated by the Friends.⁶¹

Bringing Brickmaking to a Quaker Colony

The Conditions for Brickmaking

The depressed conditions for construction workers in London after 1672 meant that the leaders of West New Jersey and of Pennsylvania would have no difficulty recruiting building tradesmen to emigrate across the

⁵⁷ Chiarappa, dissertation, 42-48.

⁵⁸ Ibid., 48.

⁵⁹ Ibid., 48-49.

⁶⁰ See, Frederick Tolles, *Meeting House and Counting House* (Chapel Hill, NC: University of North Carolina Press, 1948), 89, for a discussion of the Quaker practice of "keeping their Trade within themselves."

⁶¹ Ibid., esp. chapters 2 and 4.

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Atlantic. Efforts undertaken during the past several decades have identified dozens of bricklayers and brickmakers who worked in Philadelphia or in West New Jersey before the year 1700, some men working in both colonies. The masonry tradesmen who arrived in the Delaware Valley quickly found that conditions were, indeed, very favorable for brick construction. They may not have been expecting what they would find, however, since the earliest promotional literature that described the Delaware Valley emphasized the flora and fauna and the promise of the soil for farming, not its more elusive geological aspects.⁶² The Inner Coastal Plain in southeastern New Jersey and stretching through parts of southeastern Pennsylvania, northern Delaware, and through Kent County, Maryland was well-endowed with clays of a superior quality for brickmaking.⁶³ The Delaware Bay also possessed a vast superabundance of oysters, which became a very popular food among all classes of the population. The leftover shells were a ready source of the calcium needed for lime mortar. New Jersey was more favorably situated relative to this wealth of clay than Pennsylvania was, for building stone was widely available through Bucks County, Pennsylvania, and in areas where stone was widely available, good clay often was not, and brick construction was generally not practiced.⁶⁴ This helps explain the relatively small area in which patterned brickwork is found in Pennsylvania compared to southern New Jersey. Patterned brickwork tended to appear wherever suitable clay, brick tradesmen, and a preference for masonry construction combined. The mid-Atlantic inner coastal plain provided many such places, southwestern New Jersey foremost among them.

Philadelphia's Emergence in the 1680's

The population of West New Jersey would have doubtless risen faster were it not for the emergence of Pennsylvania close on its heels. The consensus view has been that the stream of Quaker emigrants to West New Jersey stopped promptly after emigration to Pennsylvania began in 1681,⁶⁵ and while such a conclusion is generally true it does not take into account a large but unestimated number of arrivals at Philadelphia who thereafter settled in West New Jersey. One such man, William Watson (not a building tradesman), left a brief account of his transatlantic crossing in the summer of 1684 that seems representative of the experience of many. Once the ship *Bristol Merchant* on which he sailed left Bristol, England, the captain drove his passengers to "ffiladefia" in about eight weeks. Only weeks later he and his family moved to what soon afterward became Nottingham Township in Burlington County, West New Jersey, where they began to occupy a tract of land that they named for the farm they left behind in Nottinghamshire.⁶⁶

⁶² Harry B. Weiss and Grace M. Weiss, *The Early Promotional Literature of New Jersey* (Trenton, NJ: NJ Agricultural Society, 1964). In 1685, however, after several brick tradesmen had already made their homes in West Jersey and after brick masonry was a widespread activity, Thomas Budd published the fact of the area's abundant brick clays; see Chiarappa, dissertation, 64.

⁶³ See, for example, the observation made by Thomas Jefferson Wertenbaker, about the line from central New Jersey to Wilmington, Delaware that generally separated the areas of stone and brick construction. Wertenbaker, *The Founding of American Civilization: The Middle Colonies*, 236. The wide variety of clays in the Inner Coastal Plain were the subject of a one-volume study in 1904: Heinrich Ries and Henry B. Kummel, assisted by George Knapp, *The Clays and Clay Industry of New Jersey* (vol. 6 of Final Report to the State Geologist), Trenton, NJ: MacCrellish & Quigley, 1904).

⁶⁴ Lloyd, *History of English Brickwork*, 9, made a similar comment about England.

⁶⁵ For an account of the settlement of West Jersey from a political perspective, see John E. Pomfret, *The Province of West New Jersey, 1609-1702* (Princeton, NJ: Princeton University Press, 1956). To examine it in its cultural geography dimensions, see Peter O. Wacker, *Land and People: A Cultural Geography of Pre-Industrial New Jersey* (New Brunswick, NJ: Rutgers University Press, 1975). For a historic and folklife treatment of the entire Quaker migration to the Delaware Valley, see David Hackett Fischer, *Albion's Seed: Four British Folkways in America* (New York: Oxford University Press, 1989).

⁶⁶ William Watson's ms. book, 1675-[1684]. MG 698, Historical Society of Pennsylvania, Philadelphia, PA. The text uses the word "driven."

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The ability of southern New Jersey clients to sponsor brick construction was somewhat enhanced by the knowledge that an even larger body of brick tradesmen lay just across the river in Philadelphia. With its rapid pace of settlement, Philadelphia's population would seem to have been about 6,000 to 8,000 by the year 1700, by which time the West Jersey population has been estimated at 4,000.⁶⁷ The respective populations of brick tradesmen in the two colonies were probably rather proportional to these general figures, with a small additional nod to Philadelphia. Philadelphia served as a magnet that drew building tradesmen to it. With the large brick production in Philadelphia, New Jersey brickmakers could be relied upon to procure additional brick when required. In at least a few instances, documentation has survived of buildings constructed from brick floated up the Delaware River (likely from Philadelphia) to a landing near the job site. Likewise, some New Jersey brick production may have been intended for use in Philadelphia.⁶⁸

These circumstances suggest that Philadelphia was the only place in the Delaware Valley in which the number of patterned brickwork buildings rivaled, and may for a time have exceeded, those of New Jersey.⁶⁹ The emphasis on, and incidence of, brick construction in Philadelphia was much greater than in West Jersey, for Philadelphia evidently kept more closely in mind the experience of London, where brick construction had been mandated by the rebuilding act of 1667. There are dozens of Philadelphia houses—and probably many more—either still standing or known from historic evidence that possessed Flemish checker facades, and some with dates in their gable ends. Due to the greater proximity of Philadelphia houses to one another, however, than those in most of southern New Jersey, they may have been less likely built with decoration in their gables, which requires generous amounts of space to be properly appreciated. It also makes it more likely that such decoration as did make its way into Philadelphia buildings would have been covered up by later buildings that abut them.

*The Settlement of Brick Tradesmen in Salem and Burlington*⁷⁰

The town of Salem was first settled in the late autumn of 1675, two years before Burlington, but it did not grow as quickly as Burlington did, nor did its roster of brick tradesmen. It was exceptionally well-endowed with brick clay, but the settlement of Salem was less well-sponsored than that of Burlington, and its growth similarly suffered with the founding of Philadelphia just half a dozen years later. Still, bricklayer John Harding signed Fenwick's articles of agreement before leaving England in 1675, and he bought a town lot in Salem in 1685/6, where he lived and worked thereafter. Thomas Anderson, of Middlesex, England, may have come with the first arrivals, and he acquired land in Salem County by 1679. Bricklayer William Sirredge was present in Elsinboro Township, just south of Salem, in 1679. He moved his work to Salem in 1684 and remained active there until

⁶⁷ Philadelphia population estimates for the year 1700 seen by this author vary from 4,400, which seems too low, to 10,000, which seems unrealistically high and in conflict with later, lower estimates. An estimate of 7,000, more or less, would seem more realistic, if Fischer's estimate for the colony of Pennsylvania, at 18,000, is accurate. See Fischer, *Albion's Seed*, 421, where he also estimated the 1700 population for West Jersey at 4,000. Fischer's West Jersey estimate seems to this author more accurate than the slightly lower number arrived at by Peter O. Wacker, at about 3,300, which was largely based on a 1699 enumeration of freeholders. Cf. Wacker, *Land and People: A Cultural Geography of Pre-Industrial New Jersey* (New Brunswick, NJ: Rutgers University Press, 1975): 133.

⁶⁸ This may be the meaning of Joseph Browne's early brickmaking activities in what later became Camden County.

⁶⁹ Historic photographs probably provide the best sense of the variety of patterned brickwork in Philadelphia: see Robert F. Looney, *Old Philadelphia in Early Photographs, 1839-1914* (New York: Dover Publications, Inc., 1976).

⁷⁰ One is often asked whether the construction of individual houses can be attributed to specific building tradesmen. It is occasionally possible to link one or more tradesmen to a given building, but such answers often come, if at all, at the end of a long evidentiary trail. The matter is clouded even more by the fragmentation of the building process.

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1706. Bricklayer Richard Woodnutt II made a career in Salem, from 1688 until his death in 1717. Bricklayer John Clark died in Salem County in 1691, although when he arrived or how long he was active is unclear. A brickmaker, John Mason of Philadelphia, who appears to have been associated with fellow Philadelphia brickmaker Joseph Browne, acquired property in Greenwich (Cumberland County) in 1687, then moved to Elsinboro in 1695. Remarkably, his brick house in Elsinboro still stands (see below). Mason continued in Elsinboro until his death in 1726. Bricklayer Thomas Hasson established himself in Penns Neck Township in the northern part of Salem County by 1697, and continued there until 1725.⁷¹

Brick construction began quickly in Burlington, perhaps even more so than in Salem. The first ship of Quaker settlers arrived there late in the year 1677, and aboard were two bricklayers: Samuel Abbett and Francis Collins. They were joined by bricklayers Richard Fenimore and Thomas Kendall in 1681. (It is worth noting in passing that West Jersey was gathering in brick tradesmen at a time when parts of East Jersey were still building chimneys with timber and clay.) Other bricklayers and the dates of their arrival in Burlington [or the dates by which they are known to have been active] include Samuel Houghton (1687), Thomas Douglas (1689), and Thurlas Sullivan (1696). Brickmaker John Petty arrived with his son William in 1678.⁷² Joseph Blowers, Martin Holt, and John Ingram were active by 1683, and Richard Westcott I arrived with his son Richard in 1684. Brickmaking was such an advanced activity in West New Jersey already by 1683 that that year witnessed both its first reported brick-related litigation and its first legislative response. In *Browne v. Holt*, Philadelphia brickmaker Joseph Browne sued West New Jersey brickmaker Martin Holt over an order of several thousand defective bricks.⁷³ The provincial assembly that year enacted a statute setting forth size and quality standards for brick sold in the colony, to take effect in May 1683, just about when bricks being prepared the previous winter and fired that spring would be readied for sale.⁷⁴

As the above suggests, there also was some cross-river movement of bricklayers in the early decades of the colonial period. Richard Woodnutt I (father of above-mentioned Richard II) worked in Philadelphia before moving to Burlington County by 1684, settling in Salem County. Also, the above-noted John Mason, appears to have taken the transatlantic passage to Philadelphia where he worked for some years before moving to Salem County. Joseph Browne apparently moved from Philadelphia to Gloucester County for a brief interlude about 1688, then returned to Philadelphia. He also evidently returned to Salem County by 1703, and died there in 1711. Francis Collins, who spent an entire career primarily in Burlington County and in what would much later become Camden County, also did some work in Philadelphia and acquired some property there.

⁷¹ The careers of these and other New Jersey building tradesmen are known mostly from transactional records, but the survival of those records is incomplete, so some of the tradesmen's dates of activity are likely to change as more is learned.

⁷² Thompson, *Burlington Biographies*, 35.

⁷³ H. Clay Reed and George J. Miller, *The Burlington Court Book: A Record of Quaker Jurisprudence, 1680-1709*. (Washington, DC: American Historical Association, 1944; reprint Millwood, NY: Kraus Reprint Co., 1975). The court found for the plaintiff. For further discussion, see Chiarappa, "First and Best Sort," 89, and 125, note 40.

⁷⁴ For the text of the statute, see Aaron Leaming and Jacob Spicer, Jr., *Grants, Concessions, and Original Constitutions...*, (Philadelphia: ... 1758; Reprint 2002), 459. See also Harley J. McKee, *Introduction to Early American Masonry: Stone, Brick, Mortar and Plaster* (Washington, DC: National Trust for Historic Preservation, 1973).

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The Spread of Patterned Brickwork in New Jersey

Twin Hearths⁷⁵ in Burlington and Salem

The first brick houses in Burlington were under construction no later than 1680, according to a anonymous contemporary account published in 1681: “Their Houses are some Built of Brick, some of Timber, Plaister’d and Ciel’d, as in England.”⁷⁶ The first Friends meetinghouse in Burlington was a unique, hexagonal building begun in 1685, that became well-known to Friends as the location that alternated with Philadelphia until 1760 as the site of the sessions of the Philadelphia Yearly Meeting of Friends. This building was demolished between 1786 and 1792, but several hand-drawn sketches exist, and some show that it exhibited a Flemish checker facade. A brick house was built for local entrepreneur and tavern owner George Hutcheson about 1687, also within the first decade of Burlington’s history. It was a small house and was a single story tall with a gable roof before being enlarged with a gambrel roof. A house of that size, if it possessed a stone foundation, as was common, would have required about 10,000 bricks, possibly somewhat more, a number that would have been obtainable with little difficulty. Burlington historian Robert Thompson has made a careful examination of the extent of brick construction in early Burlington, including other houses, and chronicled the same in his recent book.⁷⁷

The earliest patterned brickwork in Salem County was built in the southwestern area encompassed today by Salem City and Elsinboro Township. The house believed to be the earliest patterned brickwork building in the county was probably built in the 1690s, but the facts of its construction, including the date, are not supported by the strongest evidence. This was the so-called Bradway house, or Hall-Bradway house, which stood on the north side and near the west end of West Broadway in Salem City, and tradition has long attached the date 1691 to its construction. The house was photographed by Thomas Yorke in 1887, when it still retained most of the elements of its original appearance, but it was devastated by fire in the early 20th century, then was rehabilitated and to a degree remodeled by a local glass company, for its office. The date ‘1691’ was painted in the upper reaches of the east end wall below the gambrel roof, and many have thought that that paint was applied directly over brick numerals that formed the date. A close-up photo taken in 1964, however, clearly shows that the paint merely covered up plain brickwork.⁷⁸ The house was demolished in 1967, with mysteries of its origin not firmly resolved. Its architectural features, however, clearly placed it in the first generation of patterned brickwork in Salem County, between 1690 and 1720.

Another house that no longer stands was built for Christopher White in 1690-91.⁷⁹ It stood in present-day Lower Alloways Creek Township and featured a bold, brick porch and wraparound pent roofs shielding the first and second stories, and Flemish checker brickwork. This was a unique design, never afterward duplicated in

⁷⁵ ‘Hearth’ is a cultural geography term, meaning the place where a specific regional cultural practice began, or from whence it spread.

⁷⁶ The passage is from the pamphlet, *The Present State of the Colony of West-Jersey, in America, September, Anno Dom. 1681*, excerpted in Albert Cook Myers, ed., *Narratives of Early Pennsylvania, West New Jersey and Delaware 1630—1707* (New York: Charles Scribner’s Sons, 1912), 191; quoted in Robert L. Thompson, *Burlington Biographies: A History of Burlington, New Jersey, Told Through the Lives and Times of Its People* (Galloway, NJ: South Jersey Culture & History Center, Stockton University, 2016), 33.

⁷⁷ Robert L. Thompson, *Burlington Biographies: A History of Burlington, New Jersey Told Through the Lives of Its People* (Galloway, NJ: Stockton University Center for South Jersey Culture & History, 2016). See especially chapter 4, “Houses of Timber and Brick.”

⁷⁸ See *Fenwick’s Colony: Salem County Pictorial, 1675-1964* (Salem, NJ: Salem County Tercentenary Committee, 1964), 28. Whether the date was situated somewhere else on the house, or whether it manifested in some other form or was not present at all, remains uncertain.

⁷⁹ Thomas Shourds, *History of Fenwick’s Colony* (Bridgeton, NJ: G.F. Nixon, 1876), 308-309.

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any other Salem County house. Sadly, it was demolished in 1841, before a daguerreotypist in the infancy of photography could take an image of it. A hand-drawn sketch was made from memory, after the house was gone.⁸⁰ A second early patterned brickwork house was built in Elsinboro for John Mason, the brickmaker. Almost certainly he and those who worked for him were the bricklayers responsible for the masonry elements of the construction. According to the Salem County historian, Thomas Shourds, Mason's house was built in 1695 and enlarged in 1704.⁸¹ The second section of the house still stands, on Money Island Road, and embodied within the south wall of that house is the north wall of the former 1695 section, protecting the oldest piece of patterned brickwork in Salem County.

The Salem Quakers, in their monthly meeting, decided to build a new, brick meeting house in 1699, and decided to hire the local Quaker bricklayer Richard Woodnut to execute the masonry.⁸² This building stood in the lot on West Broadway that contains the Friends' Burial Ground and the Salem Oak, and was replaced by the present Friends meeting house on East Broadway in 1772. Although this author has not seen direct evidence of its patterned brickwork, Woodnut is known to have extensively used it in other houses he built, and its spread in Salem County would seem to suggest that this building would have embodied it. Another patterned brickwork house that still stands was built in Elsinboro in 1704 for the Abbott family on the edge of the fast land near the tidal marsh on the north side of Alloways Creek. Other houses joined them in the 1720s, '30s, and afterward. Together, this neighborhood, including the Hancocks Bridge portion of Lower Alloways Creek Township, deserves consideration as a rural historic district as the most important surviving grouping of early patterned brickwork houses in New Jersey. One of its gems is the Abel and Mary Nicholson house (1722), a National Historic Landmark. Paul Love considered this neighborhood the cultural hearth of patterned brickwork, certainly in Salem County, but possibly for all of New Jersey.⁸³ This latter conjecture, which Love could not prove, seems beyond where the evidence is headed. It seems that Burlington and Philadelphia were independent centers for the spread of this architectural phenomenon, but Salem was at least their equal.

A third mini-hearth, closer to Philadelphia than either Burlington or Salem and one of lesser impact, developed in portions of Gloucester County, including Newton Township and Haddon Township and Gloucester Town (today Gloucester City).⁸⁴ Settlement of this territory began in the 1680s, after that of Burlington or Salem, and appears to have been somewhat more reliant upon Philadelphia directly across the Delaware River. Philadelphia brickmakers Joseph Browne and William Higgins evidently had property in Gloucester County about 1688 and perhaps had brickmaking operations there, but, otherwise, this area does not seem to have developed brickmaking production independent of these men during the period before 1700. Bricklayer Thomas Hester was present there in 1686, but died later the same year. Bricklayer Martin Holt, previously of Burlington County, bought land from Browne in 1688. Bricklayers Thomas Atkinson and Francis Collins, both otherwise from Burlington County, were parties to a Gloucester County land transaction in 1691. Thomas Kendall, also a Burlington brickmaker, moved his residence there in 1700 and remained until his death in 1709.

⁸⁰ David A. Fogg, *Fond Recollections* (Princeton, NJ: Backes Graphic Productions, 1997) 164-166.

⁸¹ Shourds, *History of Fenwick's Colony*, 150.

⁸² Chiarappa, dissertation, 67.

⁸³ Paul V. Love, "Salem Tenth: The Origins and Development of Its Patterned Brickwork." M.A. thesis. Columbia University, 1940.

⁸⁴ These areas of Gloucester County were set off to Camden County in the 19th century.

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Spreading Inward from the Port Towns

Because so many patterned brickwork houses bore dates or initials or both in their end walls (about 40 percent of the total), analyzing these dates can explain the spread of this architectural phenomenon in New Jersey.

[Note: In this document, the construction dates of houses that exhibit their dates in vitrified numerals are indicated in parentheses, eg. (1728); those for which the construction date is known or approximated from other evidence, the information is given without parentheses.] Patterned brickwork generally spread from the port towns on the Delaware River inward. In Salem County, from the Salem-Elsinboro-Hancocks Bridge hearth area, patterned brickwork quickly spread eastward and southeastward throughout Lower Alloways Creek, and to Greenwich on the Cohansey River, and farther to Stow Creek. Both Greenwich Township and Stow Creek Township today are within Cumberland County, but the territory of Cumberland was part of Salem County until it was set off in 1748, and the western part of the county was settled by Quakers. Patterned brickwork included an early but undated example in the Reeve-Sheppard house, at the foot of Greate Street in Greenwich, the Nicholas Gibbon house up the street, built in 1730, and the Greenwich Friends Meeting House, built about 1770. Some patterned brickwork houses also are found in other townships farther to the east, including the John and Elizabeth Remington house (1728) in Hopewell Township, and Upper Deerfield townships, including the Isaiah and Mary Sheppard house (1736) in Fairfield Township. The eastern half of Cumberland County was settled chiefly by New Englanders who had a decided preference for timber frame construction.⁸⁵

Patterned brickwork spread through nearly all of Salem County. East of Salem it extended through the townships of Quinton, where the William Tyler house and the William Chandler house (1735) both still stand. In Alloway Township, the William Oakford house (1736), the John Dickinson house (1754), and the Joseph Sneathen house (1765) stand. To the northeastward of Salem, patterned brickwork spread through Mannington Township, where the John Pledger, Jr. house of 1727 still stands. Beyond Mannington lie the townships of Pilesgrove and Pittsgrove, and the Borough of Woodstown, where collectively stand the Zaccheus Dunn house (1743), the Samuel Bassett house (1757), and the Seven Stars Tavern (1762). The Woodstown Friends Meetinghouse (1785) bears its construction date in the gable.

Patterned brickwork also spread north of Salem into Lower Penns Neck (today Pennsville Township). The "Old Guard House" of ca.1735, long since vanished, is still remembered through historic photographs. Very similar to the William Tyler house in Quinton, they exemplified a house form so obscure that architectural historians have never named it. The William Mecum house (1737) was enlarged about 1770 in the Georgian style, extending the Flemish checker facade, and the house still remains among Mecum descendants. Pennsville also includes the Matthias Lambson house (1741). Further north in the 18th century was the Upper Penns Neck (today Oldmans) Township. This township was part of a larger area, extending across Oldmans Creek to Swedesboro, that was chiefly settled by Swedes and Finns who favored log construction and avoided brick construction altogether.

In Gloucester County, which throughout the period of traditional patterned brickwork included the future Camden County, decidedly fewer brick houses were built. Taken together, these two counties produced fewer than half of the patterned brickwork buildings of Salem County alone, and fewer than one-quarter of those of Burlington County. The City of Camden once boasted several patterned brickwork houses, but nearly all have been destroyed, including some within the past decade. The principal exception is Pomona Hall (1726)(1788),

⁸⁵ Joan Berkey, *Early Wood Architecture of Cumberland County, New Jersey*. (Greenwich, NJ: Cumberland County Historical Society, 2015).

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headquarters of the Camden County Historical Society. In other towns of Camden County, the James Hillman house (1756) in Gloucester Township, and Gibb's Tavern (1777) in Haddonfield still stand. In the counties north of Salem, patterned brickwork only appeared in the western half of their territory. The eastern reaches project into New Jersey's Pine Barrens, where clay is not locally available and where transport of brick was inconvenient and expensive. Patterned brickwork came late to the present Gloucester County, with the James and Ann Whitall house (1748) at the Red Bank Battlefield State Park being an early example. Only about one dozen examples have been identified within the county, among them the James Whitall, Jr., house (1766) in National Park Borough, and the Thomas Iredell house (1788) in Elk Township.

Burlington County produced the highest number of patterned brickwork buildings in New Jersey, more than 170 in all, only slightly fewer than half the total so far identified. (As with the other counties, only a few of the many buildings can be specifically mentioned here.) In doing so it possessed several advantages. Geographically, it was (and is) New Jersey's largest county (slightly larger then than now), and possessed the largest population of the southern New Jersey counties during the colonial period.⁸⁶ It was an early adopter of patterned brickwork, but also some of the latest examples were built there.

Burlington City had the unusual distinction of being the meeting place for two large groups of Quaker settlers, those from London (the "London Tenth") and those from counties in the English midlands (the "Yorkshire Tenth").⁸⁷ High Street was the boundary between the tenths. The London group was more familiar with brick construction, and one might expect that most of the patterned brickwork was built within its zone, as it was, but their preponderance over the Yorkshire group was only by a margin of about 3 to 2, leaving much to look for in the northern townships of the county. Several factors explain this unexpected finding. While the principal early settlers of the Yorkshire Tenth in the 1680s came from counties in England that lay outside the principal geographic region of English brickmaking, and though they were, themselves, more inclined to build in stone than in brick, still they were settling an area of New Jersey below the falls of the Delaware River that was not well endowed with high-quality building stone.

In Burlington County, the earliest well-documented house with a date formed by vitrified headers was the John Rogers house (1718). It stood in Burlington Township, a few miles east of downtown Burlington City. From Burlington, patterned brickwork spread out in a 180-degree arc. Moorestown contains the John and Mary Roberts house (1736), Thomas and Hannah Tallman house (1757), and Moorestown Friends Meeting House (1802). In Delran Township the Conrow house (1751) still stands. In Evesham Township, which has been less fortunate in its survivals, the mid-18th-century Daniel Lippincott house is remembered from HABS photographs, and the Jacob Evans house (1769) and Amos Evans house (1785) still stand.

Southeasterly from Burlington, the towns along the Rancocas Creek, include Mount Holly, where the mid-18th-century Three Tun Tavern, and the Old Schoolhouse, built in 1759, still stand. In Hainesport Township the Joseph Moore house (1754) and in Lumberton Township the Amos Wilkins house (1787) and the Eayres house (1789) still stand. The Benjamin Wilkins house (1785) and the William Sharp house (1772) still survive in

⁸⁶ See for example, John Brush, *The Population of New Jersey* (New Brunswick, NJ: Rutgers University Press, 1956): 32-33.

⁸⁷ For accounts of Burlington's early years, see John E. Pomfret, *The Province of West New Jersey, 1609-1702: A History of the Origins of an American Colony* (Princeton, NJ: Princeton University Press, 1956), 102-126; and Robert L. Thompson, *Burlington Biographies: A History of Burlington, New Jersey, Told Through the Lives and Times of Its People* (Galloway, NJ: Stockton University South Jersey Culture & History Center, 2016).

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Medford Township, and Westampton Township includes the Rancocas Friends Meeting (1772) and the site of the recently-lost Aaron and Rachel Wills house (1786).⁸⁸ Above Mount Holly the townships of Southampton and Springfield are rich with patterned brickwork: the Jacob Lamb house (1747), Noah Ridgway house (1753), John Irick house (1761), and several others, including some of the latest houses with dates in their brickwork: the Hollinshead-Peacock house (1786),(1812), and the Woolston house (1821).

Northeast of Burlington in the towns along the Delaware River, Bordentown, like a smaller version of Burlington, contains a cluster of patterned brickwork houses on its principal street, including the Francis Hopkinson house (1730) and the Thomas Buchanan Read house, built about 1765. Fieldsboro contains the White Hill mansion, probably built in the 1760s. To the east-northeast, Chesterfield Township holds the William and Susannah Black house (1740), the Thomas and Charlotte Taylor house (1766), The Locusts (1769), and the Chesterfield Friends Meeting House, built in 1773. Several patterned brickwork houses stand in Mansfield Township, including the Barzillai Newbold house (1740) and the Thomas Taylor house (1765).

A small number of patterned brickwork houses are found in the southern parts of Mercer County and the southwestern fringe of Monmouth County, areas that were a cultural extension of nearby parts of Burlington County. In Upper Freehold, the Thomas Woodward house (1733) near Arneytown, and a house on Wygant Road (1766) still stand, but Eglinton, built in 1773, on County Route 524, which had Flemish checker on three sides, has been gone since the 1970s.⁸⁹ In Mercer County, patterned brickwork is nearly as circumscribed as it is in Monmouth County. Mercer County was formed in 1838, and includes Trenton, the State's capital city. The southern portion of Mercer, including the south half of Trenton, was Nottingham Township in the 18th century and was part of Burlington County. The early building tradesmen there were mostly carpenters, but in 1700 the township was on the eve of the construction of its first stone house. Stone afterward became a popular material, the choice for bridges, a barracks, churches, a courthouse, residences, warehouses, and even the first statehouse. Brick construction might have been skipped altogether were it not for William Trent, Sr., the Philadelphia merchant and Trenton's namesake who was named Chief Justice of New Jersey's colonial Supreme Court. In 1719 he began the construction of a new residence for himself. The house was near enough to completion by the end of 1721 that Trent began to occupy it. It was a departure from prevailing practices in every way. The house was five bays wide, two stories tall, and double-pile, the first house in the future Mercer County to be built to these dimensions. While it may be argued that it introduced the Georgian style to New Jersey, there is little doubt that it introduced patterned brickwork to the future city of Trenton.⁹⁰

The house was evidently built by Philadelphia carpenters and bricklayers, and likely Philadelphia brick also. Both south and north elevations featured Flemish checker brickwork. Door and window openings on the south side were accented by relieving arches composed of cream-colored stock bricks, probably imported from London. William Montgomerie of Upper Freehold in Monmouth County was evidently impressed by Trent's house and did his best to build a similar one.⁹¹ He did not have Trent's resources, however, and although he

⁸⁸ Destroyed in 2016 by two fires only months apart, and then the ruins bulldozed.

⁸⁹ Eglinton was the home of Robert Montgomery. It was derelict from about 1940 until 1972 when it was destroyed in an arson fire. The remaining walls were torn down in 1975. Its site was finally swallowed up into a housing development in 2016. The house was documented in a collection held by the Hightstown-East Windsor Historical Society, Hightstown, NJ.

⁹⁰ Information about the Trent House is drawn from Susan Maxman Architects, "The William Trent House, Trenton, New Jersey: Historical Documentation and Strategic Planning Study," 1 January 1997. copy at NJ Historic Preservation Office.

⁹¹ On the north side of Doctor's Creek, on land that William Montgomerie acquired in 1702. This house, also known as the Gruca house for a 20th-century owner, long stood derelict until it was demolished about 2000.

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managed to have a two-story, five-bay brick house built with a nearly identical floor plan, it lacked many of the refinements of Trent's house.

Patterned brickwork was employed in the William Green house in Ewing Township, probably built in the 1730s, and in the Trenton Friends Meeting House, built in 1739-40. The John Rogers house (1751)⁹² is now a ruin in Mercer County Park. The Brearley house (1761) stands in a Lawrence Township park. The John Taylor house (1769) in Yardville is still a private residence, and the Isaac Pearson house (1773) is owned by Hamilton Township. Brick construction was uncommon in the eastern and northwestern parts of the county. In Princeton, where brick construction was introduced in the 1750s, the brick houses uniformly display plain brickwork.

The Outliers

The overwhelming majority of New Jersey's traditional patterned brickwork houses stand in the seven counties enumerated above, but at least a dozen were built in places farther removed. The Somers Mansion in Somers Point, Atlantic County, built in the 1720s, stands out among those in other parts of southern New Jersey. More intriguing, perhaps, are a small group of buildings that either stand or once stood in Middlesex and Union counties. The earliest of these houses, popularly known as the Belcher-Ogden mansion in Elizabeth, is understood to have been built about 1680, and it contains some Flemish checker in its facade, but it has undergone so many alterations that it is hard to say when that work was installed. Others include the Jonathan Dunham house in Woodbridge that was built no later than the early 1720s, and would be quite at home if it stood in Salem County. The Parker Castle in Perth Amboy was built up from a stone house of the 1720s that had a patch or two of Flemish checker in its masonry. Recorded by HABS, it was demolished in 1942. And the Proprietary House, built in 1762-64 for the East New Jersey proprietors to the design of imported British architect John Edward Pryor, was the residence of the New Jersey governor from 1774-76. As the seat of the eastern "division" of New Jersey until 1776, the colonial legislature alternated its annual sessions between Perth Amboy and Burlington, which meant that East New Jersey political leaders were aware of the brick houses of Burlington. An isolated and late example stands in Morris County, the John Smith house (1812), the only one of these outliers with its date expressed in brick in the gable.

Even in the communities where the outliers appeared, there tended to be a Quaker presence. The Quakers had a considerable presence in northern Cape May County, for example, one of the original four West New Jersey counties. The Somers Mansion probably built in the 1720s, stands in Somers Point, Atlantic County, across the mouth of the Great Egg Harbor River from Beesley's Point, where a Quaker meetinghouse was built about 1716. The Somers family were Quakers and part of that congregation.⁹³ Especially in Middlesex County, however, where patterned brickwork had a foothold, one can trace multiple paths of Quaker influence. In the 18th century, Middlesex County included most of the eastern half of the present Mercer County, and Quakers from northern Burlington County moved into the southwestern part of it. In Perth Amboy, however, and in adjoining Woodbridge, connections with Quakerism were especially strong. Small groups of Quakers resided from the beginning, and in Woodbridge at least by the 1680s, where they built a meetinghouse (of frame) a century later. Also in Woodbridge, Jonathan Dunham had a brick house built in the early 18th century, with Flemish checker facade and side wall and two hollow diamond in the gable. Perth Amboy was established in

⁹² John Rogers was from Burlington County; whether he was related to the John Rogers for whom the 1718 house was built is unclear to this author.

⁹³ Jeffrey M. Dorwart, *Cape May County, New Jersey: The Making of an American Resort Community* (New Brunswick, NJ: Rutgers University Press, 1992), 28-29.

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the early 1680s, when a second generation of Proprietors, led by Scottish Quakers, founded the town. To build it, they brought in building tradesmen, chiefly from London, including a few bricklayers who would have been familiar with patterned brickwork.

Early and Late Adopters

Paul Love observed that patterned brickwork surged in different counties at different times. He was seeking evidence to support his view that Salem's houses influenced those of Burlington County. He never found a smoking gun of evidence, but he did observe that patterned brickwork found its high tide in Salem long before it did in Burlington County.⁹⁴ The differences are quite significant. Thirty-five Salem County houses have been discovered with dates in their gable ends. These range from 1715 to 1792, but, importantly, the median date—half the examples earlier and half later—is 1746. In Burlington County, which has had more than 65 examples with similar dates between 1718 and 1802, the median date is 1772. Nearly all of Salem County's examples were built before half of Burlington County's were.⁹⁵

The Florescence of Patterned Work in Southern New Jersey

A Spectrum of Colors

The question of color in the vitrified bricks is an interesting one. Lloyd reported that some of the early British buildings featured bricks vitrified in shades of purple.⁹⁶ Their brick makers produced black headers, of course, but also shades of gray from dark to light. Sometimes light blues were obtained. Reds were possible, and yellow and white bricks could be produced with a clay mixture high in calcium. Quite a wide spectrum altogether. Modern brickmakers now know that by manipulating the percentage of carbon in the body of the clay a limited spectrum of colors can be produced, including some shades of green, blue, gray, and black.⁹⁷

None of the New Jersey patterned brickwork houses displayed purple bricks, and yellow and red vitrified bricks are entirely missing. New Jersey homes usually exhibit their vitrified brick in shades of black and gray, and these occur across the entire southwestern region of the state. Especially in Salem County, however, several houses were built with brick that was bluish in its vitrification, and in at least one house, the Samuel Swing house in Upper Pittsgrove, built in 1775, a fancy design in the gable end was carried out entirely in white brick.⁹⁸

White brick may have been imported from England. They were seldom used and only in small quantities. English brickmakers produced a brick in the 18th century that was a near white through the body of the brick as well as on the surface. It is unclear whether Delaware Valley brickmakers had also achieved the production of a white brick.⁹⁹ Bricks of this kind were used to accent a portion of the façade of the Proprietary House in Perth

⁹⁴ Love, dissertation, 61.

⁹⁵ The supporting figures are based on New Jersey Historic Preservation Office patterned brickwork data as of August 2017.

⁹⁶ Lloyd, pp.1, 68.

⁹⁷ Gerard C.J. Lynch, *Brickwork: History, Technology, and Practice*, vol.1. (Donhead, UK: House & Home, 1994), 16, 19-20; and W.B. McKay, *McKay's Building Construction* (London: Longmans, 1938. Reprint 2003), 12-13.

⁹⁸ It is unclear to this author whether this white finish in the gable end decoration of the Samuel Swing house was vitrified, glazed before firing, or applied in some other manner. Today this finish is fading and appears less vividly as a flat, whitish, light gray, clearly a much lighter color than the darker gray, vitrified bricks that appear in random locations elsewhere in lower parts of the same wall. Forty years ago, the color was described as "white" by Johnson, and even before by Love in 1950, who may also have seen it during or before 1941.

⁹⁹ English brickmakers also produced a fully grey brick, called a grey stock brick, but it was not vitrified.

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Amboy, built in 1762-64. Records show that these “white bricks” were purchased from a brickmaker identified as a “Mr. Conroe,”¹⁰⁰ but the bricks, themselves, are not vitrified.

The appearance of bluish vitrified bricks in New Jersey houses tended to be relatively early compared to the more common shades of gray, and they had a more constricted distribution within the region that is not yet clearly understood. Perhaps the earliest occurs in the surviving end wall of the John and Sarah Mason house in Elsinboro, a ca.1695 wall in an otherwise slightly later house. It is also unclear whether some of the brickwork that appears gray today was black to start. In some houses where the conditions have caused the vitrified ends of some headers to break up, the color behind the vitrification is sometimes black.

There is no evidence that bricklayers mixed colors to produce their designs. Each instance of patterned brickwork evidently produced a monochrome result. Bricklayers appear to have simply employed the bricks provided to them by the brickmaker or delivered to the client. There is no suggestion in these houses that the brickmakers segregated their vitrified product from unvitrified brick from the same firing, nor that they produced a variety of colors from a single clamp. Such sorting as must necessarily have been done appears to have been the work of the bricklaying crew. It appears to have been apprentice’s or laborer’s work.

Flemish Checker

Only by a deliberate decision of the bricklayer or an instruction by his employer could anything of a decorative character be achieved in brick masonry. Darkened and vitrified bricks often appeared in random places in plain brickwork, especially on rear or secondary elevations, but wherever a coherent pattern is seen, that pattern was deliberately chosen and carried out with the requisite care and concentration.

The simplest effect, and the one most frequently seen, was Flemish checker, which was Flemish bond with the placement of vitrified headers instead of plain ones. Flemish bond had been widely used in brick construction in England since the 16th century when it became the preferred bond for the fronts of buildings.¹⁰¹ Brick buildings of the colonial period in New Jersey that did not display patterned brickwork nonetheless ordinarily had a façade of Flemish bond executed in plain brick.

Flemish checker appeared in perhaps about three-quarters of the patterned brickwork buildings in New Jersey, often together with other patterned work. Its heyday coincided roughly with the 18th-century use of relieving arches over entrance and window openings that became a common feature in New Jersey architecture by the 1720s and remained popular in new construction until about 1770.¹⁰² Often in these arches a vitrified header and a plain stretcher would be alternated, as if voussoirs in a decorative accent that resembled Flemish checker and often accompanied it. These bricks were often gauged or rubbed to ensure that their sides fit as radii to the arch’s center (or centers).

Such decorated arches could appear over any opening, but were most common over entrances and first-story windows. They were also frequently constructed over cellar windows and over cellar entrances. They were

¹⁰⁰ John G. Waite Associates, Architects PLLC, “The Proprietary House Historic Structure Report,” Prepared for the Proprietary House Association, 1996, p.57, and Appendix B, “Annotated List of Documentary Sources,” 4-5.

¹⁰¹ Lloyd, *History of English Brickwork*, 7.

¹⁰² A 1709 Parliamentary statute required such relieving arches. See, for example, *The Builder’s Dictionary*, vol.2, (1734 edition; reprint 1981), entry for “Windows.”

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seldom built over second-story windows, since there were few three-story buildings (outside of cities) and without an additional story above, there was insufficient weight of brick above to require such arches.

Decorated Stringcourses

Many Quaker-built houses featured a pent roof (or pentice) above the first story.¹⁰³ This feature was common in frame houses as well, but in brick buildings it required modification to the brickwork. It made necessary a stringcourse, corbeled out from the façade plain, that might be from one to three courses high. The top row of the pent roof's wood shingles would be tucked under the soffit of the stringcourse to keep rainwater from penetrating within. These stringcourses were left undecorated in plain brickwork, but in patterned brickwork houses with a Flemish checker façade, they were sometime incorporated into the decorative scheme.

This could be done in a variety of ways. Even in a facade of Flemish checker, one or more courses of the stringcourse were sometimes left plain. The stringcourse was sometimes laid in Flemish checker consonant with the walls. In other cases, one or more courses of the stringcourse were executed with a vitrified header course. In an unidentified patterned brickwork house in Logan Township, Gloucester County, otherwise covered in stucco, the stringcourse contains a single course of vitrified headers.¹⁰⁴ Where multiple consecutive courses are laid this way, the effect is known as "header bond." Although in a few Maryland brick houses entire facades are laid in this manner, header bond was never, as far as is known, used in New Jersey in that way, and not even commonly in stringcourses.

Stringcourses were sometimes stepped down on their ends, or stepped up, another feature that appeared in New Jersey brick houses in the 17th century and lasted until the middle decades of the 18th. Early examples have included the Slate Roof House in Philadelphia, for which dates 1687-1699 have been offered; the Hall-Bradway house of 1691; and the Hinchman-Lippincott house in Haddon Heights, Camden County, believed to have been built in 1699. The value of this feature as a diagnostic device for the age of brick buildings, however, is limited by its continued occasional use over the following several decades.

In examples built before 1740, the pent roof was sometimes interrupted in the middle to accommodate a 2nd-story balcony over the entrance. These balconies were a pre-Georgian feature, first seen before the end of the 17th century. Such balconies were seen in the rebuilding of London. The inventory of Benjamin Clarke of Middlesex County, written in 1690, includes reference to a "Balconne Room," implying that there must have been a balcony in his house.¹⁰⁵ None of these features have survived to the present. A very few, such as the balcony on the old courthouse at New Castle, Delaware, have been reconstructed, although the evidence upon which such reconstructions have been based seems sketchy.

Zigzags

Zigzag lines of vitrified headers were an early design motif seen in a very few New Jersey houses, chiefly in Salem County. The two basic varieties are vertical and horizontal zigzags. Examples of both varieties are generally limited to Salem County. The John Worledge house (1727) (HABS NJ 383) in Salem was the principal example in New Jersey of a horizontal zig-zag. Decorations of this type may appear as simply the

¹⁰³ Fischer, *Albion's Seed*, 477-479. Fischer traces this element to a popular building practice in the English midlands.

¹⁰⁴ HPO Patterned Brickwork data, record #172.

¹⁰⁵ For more on the Inventory of Benjamin Clark, see Robert W. Craig, "Benjamin Clarke, Sr., and His Diary of the Early Raritan Valley," *Princeton University Library Chronicle* 66, 3 (Spring 2005) 435-436.

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bottom or top half of a row of diamonds (see below), and may require little change in the underlying bond of the masonry. No examples are known in which a horizontal zig-zag occupied an entire wall. In the Worledge house, the pattern only extends across the width of the house once. It consists of five 'V's touching, each ten courses high, as if they were intended to become the bottom segment of a diamond diaper. One unusual example of zig-zags is in the Job Ridgway house (1753) in Burlington County, in which narrow vertical and horizontal zig-zags form a box or rectangle around the date and initials.

The vertical zigzag is a more elaborate pattern, but very unusual. The William Hancock (1734) house in Hancocks Bridge, Salem County is the principal example of the type. In this house, in which the decoration fills the gable wall, ten zig-zags wide, the bond is altered by the use of two plain stretchers in each course between the waving lines of vitrified headers. The stretchers call attention to themselves, however, as part of the overall design, and make the vertical zigzag a bolder decoration than would otherwise be the case. Unlike other diapers, in which the visual effect derives primarily from the figure, itself, the vertical zig-zag derived most of its visual force from how the surrounding bond is changed in response to the shifting lines of headers. The headers are normally flanked by stretchers, and their presence highlights the effect. In this respect, the vertical zig-zag was the only one of the diapers that required a conspicuous change in the surrounding brickwork to ensure its effectiveness. The Nathaniel Chambless house not far away is another example of the vertical zig-zag diaper, quite similar to Hancock, but a lowering of the roof in the 19th century renders this decoration incomplete. It seems likely that the same unidentified bricklayers undertook the masonry of both houses. Local historians believe the Chambless house was built first, and Love speculated that the Hancock house was copied from it, but convincing evidence is still needed, and the priority may, in fact, have been the other way.¹⁰⁶ Another decoration in the same spirit, but not exactly a zig-zag and not quite a diaper, is the east gable end decoration in the Somers Mansion, in Somers Point, built in the 1720s. From the level of the eaves, diagonal rows of bricks, separated by a stretcher spread inward in converging diagonals toward the middle, as if they were buttressing an invisible center line.¹⁰⁷ This is a unique decoration within the State, though it has been found in a few examples in the Chesapeake region.

Banding

At least one dozen patterned brickwork buildings were built with a pattern that Love and subsequent writers have called "horizontal banding." Love defined it as the laying of one or more courses of vitrified headers across the length or width of an entire wall. Since there were no instances of vertical banding in New Jersey, it might be better to simply call it "banding." Nearly all buildings that exhibited banding were built in Burlington or Camden counties. Love attributed this outcome to a fundamental difference between Burlington and Salem County houses. Cultural geographer Peter Wacker also observed this difference. Salem County houses tended to be wider than deep and were more often single-pile. Burlington County houses, perhaps following a London influence, were narrower in front than in depth, and double-pile.¹⁰⁸ Both county's houses tended to exhibit pent roofs, but those of Salem County were most often limited to the front and rear, while those of Burlington County often wrapped around the sides of the house. In many cases these pent roofs were built between the first and second stories and a smaller pent roof at the eaves level. Where this practice was employed, Burlington

¹⁰⁶ Love, dissertation, 39.

¹⁰⁷ This element of the house was covered in stucco when the house was recorded by HABS in 1936. See NJ 281.

¹⁰⁸ Love, dissertation, 63; Peter O. Wacker, "New Jersey's Cultural Landscape Before 1800," *Proceedings of the Second Annual Symposium of the New Jersey Historical Commission ... December 5, 1970* (Newark, NJ: New Jersey Historical Society, 1971): 35-62.

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County houses were without the opportunity to include designs that mirrored the diapers of Salem County. Apart from Flemish checker, banding was the one design available to bricklayers to decorate the end walls in the first and second stories, even though it was not often used. Banding was also used in a few houses below the water table. The Jabez and Elizabeth Woolston house in Mount Holly offers a minor example of horizontal banding just above the foundation, as if the masons had suddenly been ordered to stop what they had begun. The Wright house in Smithville, Burlington County also confined horizontal banding to the foundation area, but in this case it was evidently a deliberate decision fully carried out.

Banding emerged late. Few examples possess dates in vitrified brick, but the earliest one yet found is the Richard Eayres house in Eayrestown (1769). Banding may have been encouraged by the emergence of a similar practice, underlining. In the Quaker meetinghouses of Rancocas (1772) and Salem (1772) the date in the gable was underlined by one course of vitrified headers that extended the length of the date. The date of the Eayres house seems something of an anomaly, however, as examples of banding otherwise cluster in the 1780s, and early 1790s. The Woolston house was built in 1783, according to an inscribed brick in the facade. The Charles French house in Cherry Hill (1785) and the Gaskill house (1792) in Springfield Township have their dates in vitrified brick. The Field-Stevens house in Fieldsboro exhibited an early Federal style design, which likely places its construction in the 1780s, and the Wright house, which has begun to lose its stucco and will one day reveal a date behind it, appears likely to have been built in the 1780s also.¹⁰⁹ Even the Cornelius Copner house, one of only two examples of banding in Salem County, appears highly likely to have been built in the 1780s.¹¹⁰

Two other related forms of decoration should also be considered as banding. These include what Love called “pediment-outlines,” which was a line of vitrified headers that paralleled the fascia boards that traced the line of the roof slope. There were versions for both the gable and the gambrel¹¹¹ roof, although the former predominated, being easier to execute. Love discussed these decorations along with the diaper treatments, for they sometimes occurred in the same buildings, but he also conceded that they were not diaper treatments themselves, and should be classified as banding.¹¹² The pediment outline as a separate decoration began to appear in the 1740s. It was used in the Matthias Lambson house (1741) in Pennsville Township and the Ware-Shourds house (1758) in Lower Alloways Creek Township. In the 1760s, however, it further came into its own when it was combined with a small diamond in the apex of the gable. This appeared in at least three houses during that decade, including the Thomas Taylor house (1765) built in Georgetown, Burlington County; and the John Taylor house (1769) in Yardville, Mercer County.¹¹³

Diamonds and Diapers

Apart from Flemish checker, the earliest designs in vitrified brick included hollow diamonds, composed of an outline of vitrified headers and a center of plain brickwork. Diamonds could appear in individual isolation, as in the diamonds that flank the entrance, one on either side, to the Gloria Dei Church, built in 1698-1700 in

¹⁰⁹ Love, dissertation, 152, noted that a datestone on the building inscribed with the date 1725 was installed by the owner in 1936, an act of prochronistic deception.

¹¹⁰ Johnson, 27 in '76, 40-43. Sickler gave a date of ca.1740 for the Copner house, but the physical evidence of the building does not support such an early date. Love agreed that the house was probably later than ca.1740. Love, dissertation, 157.

¹¹¹ For example, in the Richard Smith house (1729) in Elsinboro Township.

¹¹² By definition, a diaper is the repetition of a small design spread two-dimensionally over an entire wall, whereas the pediment outline was simply a single design across the width of a gable.

¹¹³ Whether there was a family relationship between the two Taylors has not been examined.

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Philadelphia.¹¹⁴ These diamonds were of an unusual size and configuration. They were of thirteen courses high, and had a single vitrified header at their centers. This precise formula, almost never seen in southern New Jersey, does, however, match the diamonds in what was the north wall of the John and Sarah Mason house of 1695, which gives added credence to the accepted date for that early building.¹¹⁵ In the Mason house, however, the design in the end wall is a grouping of hollow diamonds that touch at their apices (points) in a group probably two diamonds high by three wide.¹¹⁶

The Hall-Bradway house in Salem, believed to have been built in 1691, also featured diamond designs in both gable ends.¹¹⁷ The house featured a matrix of three diamonds wide by two diamonds high, joined at their points. The design was laid in the first story of the west gable end and repeated in the east side. The design was most easily seen in the Thomas Yorke photograph of 1887;¹¹⁸ it consisted of another diamond matrix three diamonds wide by two high. The construction date of the Hall-Bradway house has been in some question, however, because the numerals were painted on (see below), but the similarity of the diamond matrix to that of the Mason house lends the construction date some circumstantial support.

The Rogers house (1718) in Burlington Township, was the only Burlington County house that possessed the same type of diamond matrix. HABS drawings show that it possessed one matrix in the gable end of three diamonds wide by two high, below the initials and date, and two matrices on the rear elevation, each three diamonds high by three wide, the only house in southern New Jersey with this formula. This house is remembered from measured drawings produced in 1936 and photographs taken for the Historic American Buildings Survey in 1936 and 1937, but, sadly, the house--already derelict when it was recorded--was demolished in 1941.¹¹⁹ It may have been the last house built with this form of diamond matrix. The diamond diaper design shortly followed.

Richard Smith house (1729) contains a single horizontal row of diamonds, as if a horizontal zig-zag were doubled and flipped, positioned at the base of the end wall. The "General Clinton's headquarters" house in Mount Laurel Township (1740?), had a double diamond matrix just under the eaves level and just below where the date is positioned.¹²⁰ Diamonds also sometimes appeared in small groups. The Jonathan Dunham house in Woodbridge, Middlesex County, also contains a pair of small, hollow diamonds, touching at their side corners, in the west end wall of the house. Individual diamonds are sometimes associated with pediment outlines (see

¹¹⁴ This Swedish Lutheran church was built by English carpenters and masons. See Roger Moss, "The Master Builders," 44-45; Chiarappa, dissertation, 69.

¹¹⁵ The earliest portion of the John and Sarah Mason house, is understood from Shourds to have been built in 1695. It also had Flemish checker in its lower portion below the diamond matrix.

¹¹⁶ Discussion of the John and Sarah Mason house diamond decoration is somewhat tentative, because the design is not fully revealed from the plaster that covered it.

¹¹⁷ The patterned work in the Hall-Bradway house can best be seen in a postcard of the house in the collections of the Salem County Historical Society. See also Love, dissertation, 25-26, where he notes that the diamond designs were arranged on either side of a central window. That central window is hard to discern from the postcard, but the postcard clearly shows evidence of a bricked-up central window in the comparable location in the *first* story.

¹¹⁸ In the Yorke collection, at the Salem County Historical Society, Salem, NJ.

¹¹⁹ William B. Bassett, *Historic American Buildings Survey of New Jersey: Catalog of the Measured Drawings, Photographs, and Written Documents in the Survey* (Newark, NJ: NJ Historical Society, 1977), 167.

¹²⁰ HABS NJ 504. The HABS drawing that shows this elevation gives the date 1740, instead of the date 1764 that Love accepted (Appendix A). If the latter date is correct, then the house would have been architecturally retardataire when built. Its features place it comparable to other buildings of the 1740s.

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“Banding” above). Diamonds in small groups were sometimes placed in gable ends along with dates (see below).

Diamond “diapers,” which featured diamond motif repeated across the entire height and width of a wall, were executed almost exclusively in Salem County. At least one was built in Cumberland County at a time when it was part of Salem County. Such diapers did not appear in Burlington County, and it took more than a generation for the full diamond diaper to appear in Salem County. At least among surviving buildings, it was first achieved in the Joseph Darkin house (1720) in Elsinboro, coincidentally the earliest known Salem County house to feature a date in the gable in vitrified brick. The Darkin house was closely followed by its near twin, the Abel and Mary Nicholson house (1722), also in Elsinboro. For about the next 25 years, about one dozen examples altogether are known or expected. These include the John Maddox Denn house (1725) and the Joseph and Christiana Champneys house (1746). The David Davis house, built about 1730, has a diamond diaper in its gable end, but no date in the brickwork. Still, based on design features, it seems likely to have been built within the scatter of dates of the others. The Ephraim Padgett¹²¹ house, also undated in brick, is thought to have been built about 1735. The Wright house on East Broadway in Salem is entirely covered in stucco, but a historical record places its construction in 1726, and the nature of its construction makes it another suspect for a diamond diaper. In Cumberland County, the John and Elizabeth Remington house (1728) and the Isaiah and Mary Sheppard house (1736) also feature diamond diapers.

To execute such a diaper required more skill of the bricklayer than meets the eye. Careful planning was needed to center the effect from front to back. The easiest method would have been to find the midpoint of the side once the water table course had been laid, and begin to lay the base course for the diamonds outward from that point. No statement of how bricklayers actually achieved this feat appears to have been reported. Bricklayers laid diamonds as small as nine courses high (Padgett house) and as high as 23 courses (John Maddox Denn house). One curiosity of these designs was, however, that since the diamonds were always symmetrical, when their top and bottom points were both counted, their courses always resulted in an odd number. The design, however, was ordinarily laid in a field of English bond, which is an even number of courses. This meant that while outside the figure of the design it was simple work to preserve a consistent English bond, inside the figure presented a situation fraught with a fundamental difficulty. If the English bond was in a stretcher course at the bottom of a diamond, it would be so at the middle and at the top, but the spacing within the diamond would call for the opposite treatment: a header in the third course (second course above the point), whereas outside the figure a stretcher would be laid in that course. In the next course, the spacing within the diamond would call for a stretcher, whereas outside the design the bond would call for a header, and so on. Furthermore, while the same approach could be taken with all diamonds that were on the same level, and all diamonds that were tangent at their points, adjoining diamonds that abutted one another on their *sides* required the opposite treatment. To do so consistently would heighten the visual effect of the design—creating a different sort of checker—in much the same way that the vertical zig-zags were heightened by the laying of stretchers on either side. To fail would make the brickwork within each diamond look sloppy. But it required the bricklayer to make a decision at the beginning, and stick to it: favor the English bond of the overall wall, or favor the spacing needs within each diamond. This back-and-forth called for the utmost concentration.

A bricklayer inexperienced in laying this design would have been surprised that so much was involved in something so apparently simple. Even the bricklayer of the Abel Nicholson house couldn't get it completely

¹²¹ This house was built about 1735, probably for James Evans, and was purchased by Padgett in 1860 (Janet Sheridan, personal communication).

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right, leaving behind hundreds of inconsistencies, as evidence that he couldn't make up his mind. Love, who analyzed the skillfulness of each of the diapers he found, held that none were completely satisfactory and that all merited some criticism. The designs ranged from three diamonds (Denn) wide to eleven (Padgett). One diaper would not close properly due to faulty centering, and there were errors at the top sometimes caused by awkward efforts to link the diaper to a pediment outline. Love found that with the 11-diamond-wide pattern of the Padgett house, the "design was created in the process of building and was not carefully planned beforehand."¹²²

Coronets and Other unique designs

The diamond matrices and the diamond diapers were associated with the early generations of Quakers in the Delaware Valley, the generation that pioneered there in the 1670s and '80s, and their children's generation, the last one appearing in the 1740s. There was one final design, however, that, even though it wasn't a diaper by definition, it still occupied the entire end wall of a house. John Dickinson of Alloway Township, Salem County, had his house built in 1754, and from the attention it has received in recent decades it has become the single most popular example of New Jersey patterned brickwork. It does have its virtues. It contains the greatest volume of vitrified brick of any end-wall design, and it introduced the solid diamond—30 of them, large and small—for the first time to the patterned brickwork repertoire. It is both well-centered from front to back and well-balanced from bottom to top. It displays a complex and perfectly symmetrical structure of diamonds, solid and hollow, connected with branching diagonals. The pattern is evocative. It remains in some ways the high-water mark for patterned brickwork in the Georgian period, and it is an original design, uncopied either in England or America.

Yet from the bricklayer's point-of-view, it was not the most difficult design to execute nor does it reflect the highest skill nor the greatest level of effort. The entire design of diamonds and diagonals was executed in vitrified headers laid in their normal orientation and positioned step-wise within a field of plain Flemish bond. In effect, the bricklayer was able to achieve such an elaborate composition only by simplifying its individual components. Only in the initials of the owners and the numerals of the date did he deviate from this practice. There, in the vertical strokes of the numerals, he turned the headers to effect a slant in the '1' and the '7,' and similarly in the '5' and the '4.' This gave the numbers an attenuated look that nicely sets them apart from the structure of the diamonds. The numerals, however, look better in the HABS drawing than they do in photographs, for in fact the '1' and the '7' start two courses below the '5' and the '4,' although they all finish in the same line. Of the initials, the surname initial 'D' is slightly off-center and rests too low on the diamonds beneath it, while the 'I' and the 'M' are of slightly different heights.

The Dickinson house evidently influence the builders of the Samuel and Anne Bassett house (1757) in nearby Pilesgrove Township, which despite its much smaller gable end design, exhibits numerals very reminiscent of the Dickinson house. The Bassett house evidently introduced a band of underlining below the date for the first time. The manner in which it was turned up into a diagonal at either end suggests that it was the precedent for the same feature in the Salem Friends Meeting House (1772). The date is split in half by a column of three diamonds between the '17' and the '57.' This is the first of two¹²³ houses that feature a coronet (small crown) in the gable. It, too, is fashioned step-wise with each of the headers in its normal orientation. The overall design, including letters and numerals, is only half the size of the Dickinson house design.

¹²² Love, dissertation, 37.

¹²³ A third house, on the highway from Salem to Quinton, which copies the coronet, is a mid-20th-century imitation, a piece of flattery good enough to fool the unwary.

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Eighteen years later, the Samuel Swing house (1775) was built in Upper Pittsgrove Township with a coronet evidently copied from the Bassett house. There the design was carried out with a much better balance in the letters and numbers. This house features the design in the east gable, similar to the Bassett house, and its design in white brick (as noted above) would have been seen at its finest in the morning. The evidence for another coronet appears in the attic of the Mayhew-Isaac Johnson house (1762), in Upper Pittsgrove Township.

Initials and Dates

The practice of working dates in patterned brickwork into the gables of houses can be seen as part of a larger phenomenon observable at least since the Reformation, to inscribe buildings with their dates of construction. Such actions were not limited to the American colonies but were certainly widely practiced there. Dates were inscribed in numerous ways and in several different materials, including wood, stone, and metals. Even in brick, inscribing dates in houses was done in several different ways, of which patterned brickwork was the most conspicuous and probably the most frequently practiced.¹²⁴ In Quaker West Jersey, the initials stood for the original owners of the house—husband *and* wife—the clients for whom it was being constructed. Ordinarily, the surname initial is placed above the given name initials, the husband's appearing below and to the left, the wife's below and to the right.

The practice of placing the year of construction of a house in vitrified brick in the end wall of a house began as early as 1715, according to a painting in the collections of the Salem County Historical Society.¹²⁵ In 1718, an elaborate, although small, patterned brickwork house with diamond matrices was built for a John Rogers in Burlington Township, Burlington County. It not only featured the date in large awkward numerals, it also displayed the owners' initials "I R R". This was the earliest known instance in which either the date or the owners' initials were represented in vitrified brick. The oldest *surviving* patterned brickwork house that bears its construction date in vitrified brick is the Joseph Darkin house (1720) in Elsinboro Township, Salem County. That date is captured in small numerals, laid by a tradesman apparently already comfortable in doing so, meaning that it was likely not his first time. The near-identical twin of this house, the Abel and Mary Nicholson house, was built in the same neighborhood in 1722, only two years later, and the numerals are laid in the same manner, apparently by the same unidentified bricklayer.

The Rogers house (1718), with its bold diamond matrices, was possibly influenced by a still older Salem County house, the Hall-Bradway house believed to have been constructed in 1691. That date was rendered in paint in the east gable of the house, up near the peak. That the date was painted has led some to suspect that the date may not truly have been present in the brick there—a prochronistic piece of wishful thinking—or that it might have been expressed in some other fashion.¹²⁶

¹²⁴ Dates were also inscribed in datestones set into brick walls, and in wet plaster mounted as plaques framed with molded brick and set into walls. Individual bricks were also inscribed in their bedding planes by brickmakers before firing, or inscribed on their faces by family members or others, who also included their initials. These bricks were often laid into spaces about chest-height on either side of the front entrance, and sometimes disposed with perfect symmetry, indicating that their installation was done with a symbolic importance or in a ceremonial event.

¹²⁵ The painting, in May 1886 by Salem artist James H. Simkins, depicts a 1+1/2-story gambrel-roofed brick house with the date in the end wall, but the artist did not identify the house.

¹²⁶ It has not been uncommon for the dates to have been painted over in a darker color, often black. In other cases inspected by this author in which the date has been painted in that manner, the paint has been found to be covering numerals laid brick. That was not the case, however, with the Hall-Bradway house.

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In this case, however, it is possible to doubt the accuracy of the paint work. Although several photos of the house are known showing these numerals, the most revealing one appeared in 1964 in the book *Fenwick's Colony*, published by Salem County to commemorate the New Jersey tercentenary.¹²⁷ The text that describes this photo admits that the numerals in the gable are painted, but asserts that the paint overlies the numerals executed in vitrified brick. A careful study of the photo, however, disproves this. The general shape of the numerals is such that no bricklayer could have produced the slender lines and curves. Even more to the point, the bricks and mortar joints adjacent to the painted numerals show in numerous places that there were no brick numerals underneath. Such inconsistencies occur in at least six places with respect to the painted "1," eleven or more places with the "6," about as many places with the "9," and perhaps nine places with the trailing "1." If there was a date in vitrified brick in this house at that time, it did not exist in that location. Love also carefully inspected this date and came to the same conclusion.¹²⁸

The styles of laying the letters and numerals varied considerably. The simplest and most frequently encountered, merely involved laying vitrified headers in the ordinary horizontal manner, in the places where they were needed to complete each figure. Slants, as with a '1' or a '7' became verticals, and diagonals in the numerals '2' and '4' were executed in stepwise fashion.

For the bricklayer, the more artful the numerals the more time-consuming the execution. To produce work that resembled a script handwriting, it wasn't enough to merely craft the figure, itself; the bricklayer also had to craft the *void* into which the figure would be laid—both the inside curve and the outside curve. Thus the more sculpted the numeral, the more nuanced the void. Many of the houses that exhibit dates display numerals that were executed in the simplest fashion. A '1' for example was a vertical column of headers that only minimally impacted the bonding of the bricks on either side. A '7' was merely a '1' with an added horizontal row of headers at the top. A date such as '1771' could thus be easily accomplished. In some cases, slants were given to the vertical strokes of these numerals.

Enclosed numerals did not necessarily pose much trouble either, when executed simply. Curves could be avoided by laying bricks in vertical or horizontal orientation only. The '0' and the '8' were often handled straightforwardly in a boxy fashion, while the '3' could simply be handled as an '8' without the left-side verticals. enclosed portions of the '6' and the '9' were mirrors of one another. The '4' could cause more headaches for the bricklayer. One man—perhaps dyslexic—laid the '4' backwards when installing the date '1741' in the Fogg family farmhouse in Stow Creek Township. Two years later, another bricklayer, a few miles away, produced an even more awkwardly laid '4' in the '1743' of the Zaccheus Dunn house in Pilesgrove Township.

For numerals with clear diagonal strokes, such as the '2', some bricklayers constructed them merely by laying headers horizontally in stepwise fashion. The '5', however, even when constructed simply, required more patience and concentration to ensure that the vitrified headers were laid in the right places. A bricklayer not practiced in this work could easily lay an awkward '5', as in the Rogers house in West Windsor Township, Mercer County (often mistaken for a '6').

¹²⁷ Salem County Tercentenary Committee, *Fenwick's Colony: Salem County Pictorial, 1675-1964* (Salem, NJ: Sunbeam Publishing Co., 1964) 26.

¹²⁸ Love, dissertation, 25.

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But there were at least a few bricklaying teams who aimed to give their numerals a script-like appearance, complete with slants, serifs, and smooth curves. The dates of several houses were laid in this manner. In these houses, the bricklayers added to the slants of the '1' and the '7' a single header at the end of each stroke as the brick equivalent of a serif. The serif could be made in either pointed or unpointed versions. Numerals that when written end in a curve, such as '6' and '9', were laid so that the bricks actually formed smooth curves, sometimes even tapering the width of the bricks to terminate these strokes in a sharp point. Sometimes the '9', for example, terminated in a curve below the baseline of the other numerals. This might be a short taper in less painstaking work, or a much longer taper in the best work. In addition, the strokes of some numerals have an upward flourish. Where the '5' appears in these houses, it has been given a curved upward finishing stroke. In the finer work, bricklayers also manipulated the orientation of the bricks within the curve of each figure. This often meant turning the header perpendicular to the radius of the curve, and adjusting the edges with a brick chisel or by rubbing to make a smooth join with the next header. Sometimes bricklayers used some of the small number of vitrified stretchers that brickmakers would incidentally produce in their firings.

There is no clear evidence that bricklayers ordered, or brickmakers produced, deliberately molded or specially fired brick intended in advance to be used in the composition of initials or dates. One might speculate that a bricklayer, faced with a complicated design to execute, could have laid out the design beforehand on a board, thereby perfecting it, but a contemporary document explaining how a representative bricklayer performed these tasks has been elusive.

And there was a counter-intuitive element to the fashioning of dates and initials. When one prints Arabic numerals or writes capital letters on paper, one generally begins at the top of the figure and works downward, and even though some letters require more than a single stroke of the pen, within each stroke the movement is continuous. To fashion letters or numerals for a brick house, however, one had to work more or less in the reverse order. From the bottom to the top. Which posed few challenges when the strokes could be achieved with straight rows or columns of vitrified headers. But with some numerals executed in a script fashion, curved lines were paramount. The "1", "4", or "7" could be simply carried out with straight lines, except in a few cases, but the other numerals all posed issues with curves that would break the horizontal lines of brick bonding that were otherwise not deviated from. And with a "5", for example, the lowest part of the bottom of the curve would occur in the middle of the figure that was not the start nor end of the line.

Impact of Patterned Brickwork on Construction Cost

Any additional work that slowed the pace of a bricklayer's progress would have added to the cost of a building. It was generally understood, based on English experience in the rebuilding of London, that a bricklayer, working with an assistant to supply him with bricks and prepare mortar, could be expected to lay about 1,000 bricks per day in ordinary, plain brickwork. Builders' manuals analyzed this type of cost experience.¹²⁹ In 1707, when the Chesterfield Friends built a brick meetinghouse that probably contained 35 thousand bricks, the bricklayers were paid over £33 for their labor.¹³⁰

Even Flemish checker, the one type of diaper work that probably least affected the rate at which a bricklayer could perform, was dispensed with in any location where it would not be seen. In New Jersey houses that

¹²⁹ Lloyd, 23-24; and the authors of the various builders' manuals were in general agreement.

¹³⁰ RG2, Ph/C47/6.4, Friends Historical Library, Swarthmore College, Swarthmore, PA. 33,000 brick were provided for the work as it went forward, and another 3,000 were needed to finish it.

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displayed pent roofs, for example, Flemish checker was never wasted on those areas that would be covered by such a roof. Plain brickwork, usually in English bond, was employed instead. This would not have been done merely to conserve the supply of vitrified headers, though it would have that benefit.

The time-consuming tasks involved in laying the numerals must have added hours to the bricklayer's work and cost to the building's construction. Efforts to determine how much this must have added to the bricklaying cost have not been made, nor a contemporary document found that explains such extra charges, but as a conservative guess, it seems likely to have added at least a shilling per character to the cost, at a time when bricklayers earned only a few shillings per day. Even a single letter or numeral would require the bricklayer to make dozens of departures from ordinary bricklaying. For these reasons, the authors of the builders' manuals recommended that bricklayers needed to be compensated an additional, negotiated amount for diaper work or special designs, at least those that could not be accomplished in a step-wise fashion. The standard bricklaying rates did not apply for these or other types of extraordinary decoration. And the use of white brick also added to the cost. The sponsors of the Proprietary House in Perth Amboy paid two pounds per thousand for white brick, double the rate for ordinary brick.¹³¹

The Analogy to Linen Cloth

Bricklaying lent itself easily to cloth-making analogies, certainly in hindsight.¹³² The connection is inherent in the use of the word *diaper*, which OED has found that

since the 15th [century] applied to a linen fabric... woven with a small and simple pattern, formed by the different directions of the thread, with the different reflections of light from its surface, and consisting of lines crossing diamond-wise, with the spaces variously filled up by parallel lines, a central leaf or dot, etc. In earlier times, esp. in Old French or medieval Latin, the name was applied to a richer... fabric... woven or flowered over the surface with gold thread.¹³³

Flemish bond was like a simple, plain weave in which the warp was of a wider diameter than the weft. Flemish checker was like that same plain weave, but in which the warp was of a darker color and more reflective texture. It was not uncommon for images of buildings to be stitched into girls' samplers, by which they demonstrated their skill in embroidery. Nearly every design that was executed in patterned brickwork had its counterpart in 18th-century samplers: Flemish checker, zig-zags, diamonds in rows and matrices. Betty Ring, in her history of this type of embroidery, featured some startling examples from the 1720s and '30s, suggesting that the girls who stitched them were very familiar with houses that embodied the same patterns.¹³⁴

Damon Tvaryanas also raised the issue of how dates were handled in buildings, and saw an evident linkage to cloth there as well. While he found no compelling evidence to ascribe cause and effect, he wrote that "the most likely sources for [the bricklayers'] patterns were the domestic textiles that they probably encountered on a daily basis."¹³⁵ "Overall," he added, "the similarities between patterned brickwork and needlework were greater than the differences, and thus it is only logical to suggest that there would have been some cross-fertilization."¹³⁶

¹³¹ Proprietary House HSR, Appendix A, 4-5.

¹³² Love observed the similarity of patterned brickwork to the designs in samplers, but did not elaborate upon this insight; see dissertation, 58.

¹³³ OED online, "diaper."

¹³⁴ Betty Ring, *Girlhood Embroidery: ... 1650-1850* (New York: Alfred A. Knopf, 1993), especially 328-336.

¹³⁵ Tvaryanas, "Parallel or Precedent," 45.

¹³⁶ *Ibid.*

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Tvaryanas also analyzed how the manner in which the brickwork of owners' initials resembles "the rule to mark napkins" that was adopted somewhat later by samplers produced by the students of certain Quaker boarding schools in the last years of the 18th century. He showed that the earliest known sampler that followed the 'rule' was produced by a girl with ties to Trenton and her father to Burlington. The rule was also applied to other linens such as bed sheets, and two surviving sheets from 1792 were so labeled by the family that owned the Thomas Taylor house (1765) in Georgetown, Burlington County.¹³⁷

The Issue of Plainness and Simplicity

The Quaker historian Frederick Tolles, in a portion of a chapter entitled "Of the Best Sort but Plain," described a crisis of spirit that many Quakers faced, especially after 1750, as their material prosperity prompted a worldliness to grow within them. He quoted an ironic comment by Peter Kalm that "Although [Quaker women] pretend not to have their clothes made after the latest fashion, or to wear cuffs and be dressed as gaily as others, they strangely enough have their garments made of the finest and costliest materials that can be procured." Tolles then continued, "In domestic architecture the same tendencies were apparent. The brick town houses of the Quakers ... were as large and as comfortable as those of the most fashionable Anglicans." After admitting that there tended to be a certain austerity of some details, and that Quaker houses generally avoided "elaborate pediments, ... Palladian arches, rusticated quoins, and other purely decorative members," he concluded that "Beyond these subtle distinctions, however, there was little observable difference in grandeur and elegance between the homes of Quaker merchants and those of wealthy families of other denominations. There was equally little difference in the interior furnishings."¹³⁸

Chiarappa had little further to add, beyond noting Joshua Evans' caution against fine houses, and that Quakers should not "build their nests too high."¹³⁹ Chiarappa argued, however, that a central element of patterned brickwork, especially after mid-century, was that "Weighty Friends struggled to find forms that were socially affiliative, yet indicative of their community standing, even while the class separation between the prosperous and the less well-off continued to grow, "in an emergent process of class formation."¹⁴⁰ Still more recent scholarship has emphasized that the challenge for Quakers was "not so much [a fear of] living in the world but of how people [should] properly [live] in the world."¹⁴¹

Only about a dozen of the several dozen Friends' meetinghouses exhibited patterned brickwork at all, and in each one the matter was handled in a restrained way. Diamonds and zig-zags were avoided, as were more elaborate motifs. Flemish checker was the only diaper employed, and that appeared in the very first meetinghouse in Burlington, built 1685-92. Its use in such a conspicuous and respected building must have given implicit permission to Quakers to construct their private buildings in a similar fashion, even in buildings of modest inventiveness, such as that of Christopher White in 1690. The Upper Springfield Friends Meeting was built in 1727 with a Flemish checker façade, but when the Lower Springfield (aka "Copenny") Friends Meeting (1775) was added, it had only the date in the gable. Evidently the Trenton Friends Meeting House, of

¹³⁷ Ibid., 52.

¹³⁸ Tolles, *Meeting House and Counting House*, 127-128.

¹³⁹ Chiarappa, dissertation, 254.

¹⁴⁰ Ibid., 259.

¹⁴¹ Despite a shift in emphasis between Chiarappa and Herman, there appears to be a broad harmony in their respective interpretations; cf. Chiarappa, dissertation, esp. chaps. 1, 2, and 5, and Bernard L. Herman, "Eighteenth-Century Quaker Houses..." in Emma J. Lapsansky, et al. eds., *Quaker Aesthetics...* (Philadelphia: University of Pennsylvania Press, 2003) 188-211.

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1739-40, was built with both Flemish checker and the date in the gable. The Rancocas Friends Meeting House (1772) exhibits both a Flemish checker façade and the date in the gable end, while the Salem Friends Meeting House (1772), features only the date and underlining beneath it. After Salem, meeting houses limited their expression to dates only where there was any patterned brickwork at all, including the Pilesgrove Friends Meeting House (1785) at Woodstown, and the Moorestown Friends Meeting House (1802).

The Chesterfield Friends Meetinghouse at Crosswicks, built in 1773, reached what appears to have been a unique result. The building includes a datestone, while the walls display a clear dichotomy: Flemish bond executed in plain brickwork on the long south elevation, and Flemish checker on the long north side, carried out with black headers, that appear muted from a distance, not being reflected by direct sunlight. The undeviating manner in which this arrangement was executed implies that it was intentional, the product of a deliberate selection, since it could never have occurred purely by chance. It could be argued that the south side is the building's façade elevation, but there is such a near equivalence between the south and the north sides that it would appear no odium was being cast on either brickwork treatment. One might speculate about how this choice reflected a need to be plain, or how it responded to differences within the meeting's membership, or even whether the north side was considered a second façade, but this feature has been an overlooked element of this building's architectural significance.¹⁴² No other Friends meeting house built afterward featured Flemish checker.

As for private buildings, published Quaker disciplines included pages that expounded the ideas of plainness and simplicity where personal dress was concerned, but stated almost nothing with respect to architecture or building construction. But there are ways in which notions of plainness still seem evident in southern New Jersey patterned brickwork. These buildings did not apply the entire range of enhancements that were sometimes embodied in brick buildings in the Chesapeake, for example. Only a handful of New Jersey patterned brickwork houses included rubbed and gauged brickwork, and then limited to splayed jack arches over windows or doors, but the incidence of this work seems far less than in Maryland or Virginia. Likewise New Jersey's patterned brickwork buildings did not embody even more ambitious and three-dimensional elements such as frontispieces with projecting pilasters and pediments.¹⁴³ New Jersey house builders also seem to have rarely resorted to the further decorative use of washes on the finished brickwork, or of "penciling," the decorative painting of the mortar joints.¹⁴⁴ These treatments would likely have been beyond the means of most Quaker clients anyway, but would have also struck them as unnecessary and vain.

Patterned Brickwork and the Georgian Style

As the Georgian style arose in the second quarter of the 18th century, it posed a challenge to patterned brickwork. Prestigious architecture in Britain had already left patterned brickwork behind more than a century before, and the succeeding century of British architecture did not reverse that outcome. Patterned brickwork had persisted in the vernacular realm, from which it spread to the American colonies, but as American builders slowly gained the skills and the wherewithal to build on a grander scale, they understandably looked toward better British work, and the incidence of patterned brickwork in the Delaware Valley lessened, its inventive spirit greatly diminished. Some architectural historians have suggested that patterned brickwork was much

¹⁴² Local historian George DeCou mentioned this feature in passing; see DeCou, *Historical Sketches of Crosswicks and Neighborhood* (Burlington, NJ: Burlington County Historical Society, 1955), 11.

¹⁴³ Cf. for example, Carson et al., *The Chesapeake House*, 249-250, 252.

¹⁴⁴ *Ibid.*, 251.

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more popular before mid-century than afterward. Gabrielle Lanier and Bernard Herman came to that conclusion in their 1997 book *Everyday Architecture of the Mid-Atlantic*. In their study of Port Penn, Delaware, they found that brick houses that embodied patterned brickwork tended to have been built before 1750, although they were dealing with a small sample size. They explicitly linked this change to the rise of the Georgian style, which came relatively late to this part of the Delaware Valley. “Not until the 1760s did the local builders commissioning new mansion houses begin to embrace the various Georgian plans, and when they did they quickly moved away from visually distinctive local detailing. Windsor, built ... in the 1760s, abandoned the glazed header brickwork, pent eaves, and cove cornice...”¹⁴⁵

Lanier’s findings are consistent with others. Robert F. Looney’s *Old Philadelphia In Early Photographs ...*¹⁴⁶ yields a similar impression, even though it is worth noting that two important Philadelphia buildings, Carpenter’s Hall and the Free Quaker Meeting House, built in 1770 and 1789 respectively, both had facades of Flemish checker. In New Jersey, Princeton was one area in which Quakers settled in the 1690s, and where patterned brickwork could have emerged but did not. Its early masonry buildings were constructed of local stone, and when brick was adopted for new buildings beginning in the 1750s—even though the impetus was coming from Philadelphia—those buildings embodied only plain brickwork.¹⁴⁷

The Federal Style and the Waning of Patterned Brickwork

In the 1780s, with the ending of the Revolutionary War, the Georgian style in New Jersey began to yield to the Federal style. As the Federal style rose, transitional buildings were increasingly seen that simultaneously introduced elements of the new style while holding onto features of the old. Patterned brickwork fell into the latter category. The transformation took about a decade or longer to complete, and even in the 1790s, especially in rural areas, it was still possible to find new houses rising that could still be called Georgian in their features. Unlike Georgian, however, which conveyed a heavier solidity, the Federal style was a style of subtle effects, led on the exterior by decorative millwork. It could accommodate dates and initials in vitrified headers, since they were placed out of the way in any case, and even here and there a diamond in a gable, but it could not abide diapering, and was incompatible even with Flemish checker, which was a façade treatment. The visual impact of Flemish checker and other brick decoration could be quite strong, especially in favorable lighting conditions. This would take away attention from the elements of the Federal style that embodied the greatest investment of time and attention: the attenuated pieces of carefully fretted woodwork that gave the Federal style its lightness and refinement, delivering the delicate elegance that popularized the style. By the early to middle 1790s, with the completion of such buildings as the New Jersey Statehouse in 1792-94 and the new Burlington County Courthouse in 1796, the Federal style became fully ascendant in New Jersey, and any Georgian buildings constructed after that point were simply retardataire.

Patterned brickwork continued strongly through the 1780s, then seemed to disappear from new construction by the mid-1790s. Of course, one by one, the various types of patterned brickwork designs had been disappearing during the Georgian period, as noted above. This process had started with the diamond diaper, last used in

¹⁴⁵ Gabrielle Lanier and Bernard L. Herman, *Everyday Architecture of the Mid-Atlantic: Looking at Buildings and Landscapes* (Baltimore: Johns Hopkins University Press, 1997), 287.

¹⁴⁶ Robert F. Looney, *Old Philadelphia in Early Photographs, 1839-1914* (New York: Dover Publications, 1976).

¹⁴⁷ Cf. Constance M. Greiff, et al, *Princeton Architecture: A Pictorial History of Town and Campus* (Princeton, NJ: Princeton University Press, 1967); and Robert W. Craig, *The Princeton Architectural Survey* (Princeton, NJ: Princeton Joint Historic Sites Commission, 1981), 63-64. The brickwork of some houses is covered in paint or stucco, but none display patterned brickwork, and it has not been reported there.

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1746, which had never spread beyond Salem and Cumberland counties. The zig-zags never really caught on, despite the example of the William Hancock house. The exceptional designs of the Dickinson (1754) and Samuel Bassett (1757) houses were last seen in the Samuel Swing house (1775). Banding was the last relatively new decoration introduced, with a brief vogue in the 1780s, but it, too, was incompatible with the Federal style and it last appeared in a new house in the early 1790s. Yet what really made manifest the end of patterned brickwork was the discontinuance of Flemish checker, which also occurred in the early 1790s.¹⁴⁸ It was the earliest of the diaper treatments, the longest lasting, and the most popular, probably used in nearly three-quarters of the patterned brickwork buildings.

Numerals, sometimes with initials, were the last patterned work to be discontinued. They continued to have a functional purpose, especially as dates of construction. The Mayhew house (1792) was the last one in Salem County, the Abbot-Decou house (1797) the last in Mercer County.¹⁴⁹ Moorestown (1802) was the last Friends meeting house to place the date in brick in its gable. Dates tended to be executed more simply and they were smaller, both narrower and shorter. The John Smith house (1812) in Morris County is an outlying example of the lingering practice. Among surviving buildings, Burlington County provides the most recent examples. The Hollinshead-Peacock house (1786) in Southampton Township bears the date '1812' in an addition, while the Prickett house (1821), which was surviving in the same township in 1976, is yet to have its current status confirmed.

Disappearance under Stucco (and paint)

There was some use of plaster coatings of buildings in the Federal period, and rising interest in the second quarter of the 19th century. At least a few publications appeared, promoting stucco, a cement-based, smooth plaster coating for building exteriors. As used here, however, "stucco" means any cementitious coating over a previous finish treatment placed upon the exterior of a frame or masonry wall. As patterned brickwork became increasingly old-fashioned, some building owners resorted to stucco as an inexpensive means to freshen up a building whose age or condition, or the impact of multiple alterations, made its appearance less than appealing. This evidently was the cause in 1840 when the Trenton Friends Meeting House, built in 1739-40, reached its centennial.¹⁵⁰ Looking back on these changes in 1872, which included enlarging and stuccoing the building, one man recalled the blue headers that characterized the building before these changes.¹⁵¹ Many other buildings followed with like treatment.¹⁵² Some patterned brickwork was covered under paint, rather than stucco, but paint can be just as effective a hider of vitrified headers.

Both the painted and the stuccoed can be grouped together for purpose of analysis. More than 90 buildings in the patterned brickwork database have been found to be stuccoed or painted, nearly 25 percent of the total. Of these, at least 36 buildings, or about 40 percent, have already had the presence of patterned brickwork confirmed. This may have happened for any of several reasons. Sometimes the stucco or paint was never

¹⁴⁸ The Flemington Academy, built in 1810, embodies Flemish checker in its façade, a lonely chronological outlier.

¹⁴⁹ This author has a clear recollection of a Mercer County farmhouse having borne the date '1819' in its gable, but does not recall the precise identity or location, not having seen it since the 1960s. That house was probably lost for a housing development.

¹⁵⁰ A record of the 1840 changes to the Trenton Friends meeting house, including the stuccoing, is found in Philadelphia Yearly Meeting Records, RG2, at Friends Historical Library, Swarthmore College, Swarthmore, PA.

¹⁵¹ Statement of Isaac Stephens, 8th month 13th, 1872, recalling that the meeting house displayed blue headers in the date and in the wall construction; see *Friends Intelligencer* 29, 26 (1872) 406-407.

¹⁵² This period was one in which many buildings in New Jersey were given a coat of pebble dash, a stucco in which small pebbles formed the aggregate.

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applied intending to fully obscure all of the patterned brickwork, leaving dates and initials exposed. In several instances, such as the Thomas Buchanan Read house in Bordentown, built about 1765, an owner in recent years has physically removed the stucco. In still other cases, the stucco has been failing, thereby revealing the patterned work beneath. This can happen in two ways, either by spalling, in which the stucco cleanly detaches from the underlying brickwork and falls away, or by a slow, steady erosion of the stucco whereby the underlying pattern slowly emerges. The Ezekiel Wright house in Smithville, Burlington County, is an unusual example where both types of failure are occurring at the same time. As this happens, a date is slowly being revealed.

The other 60 percent of these buildings (about 50) are included in the database provisionally, because while patterned brickwork is strongly suspected there, its actual presence has not yet been confirmed. Success has followed some of these provisional entries, from a fuller physical inspection of the buildings or by the stucco's failure or removal. In several other cases, however, in which determination was reached that a building does not possess patterned brickwork, that entry has been removed from the database. Occasionally, discovery of patterned brickwork is made in buildings not even suspected. One was the Garwood House on Market Street in Salem City, a Victorian-era hotel that was enlarged from a tavern probably built in the 1750s, with a Flemish checker facade. This building was architecturally investigated in 2002 and extensively repaired—then restuccoed!

The importance of further stucco removal lies in the patterned work that is yet to be found. It is highly likely that several more diamond diapers and diamond matrices will be found, giving a more rounded knowledge of how these expansive decorations, especially in Salem County, began. New variations on the zig-zag may be discovered, or a wider range of dates expressed in vitrified brick. Perhaps new unique designs, like the coronets, will be found, and evidence within them that might help identify the tradesmen who produced them. And it should not be thought far-fetched that remote sensing technology might one day produce a method to peer through undisturbed stucco to find the patterned brickwork that lies behind.

The End of Traditional Patterned Brickwork

The practice of traditional patterned brickwork evidently did not survive the 1830s in New Jersey. The last instance of the placement of a date and initials in a building occurred in Camden County in 1828, while the appearance of a vitrified diamond in at least one Cape May County house evidently occurred during the 1830s. The era of the railroad was beginning, and patterned brickwork found no place in the new architecture that was coming even to Burlington and Salem, the two hearths of this architecture in New Jersey. Both towns had moved on to the Federal style as early as the 1790s, for which plain brickwork was a character-defining feature. They also moved on to the Greek Revival style by the 1830s, and produced significant examples of it. Still, however, there gradually arose among some a nostalgic reaction.

In 1858, the Parrish family, owners of a Burlington County estate known as "Oxmead," commissioned a small building to serve as the gatehouse for the property. Although the name of the architect has not been revealed, he was a very apt student of the historic buildings of this region. He designed a small, 1-and-1/2-story house with a gambrel roof like those of Salem County of the 1720s and '30s. He learned all the tricks of the early builders, and produced a marvelous, mannerist masterpiece, completing it with the date "1858" in brick in the end wall facing the road. In this case, however, the headers actually *were* glazed—a bright black—in a uniformity of size and color that could never have been produced in the 18th century. It was a homage to a vernacular house form

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already a century out-of-date, actually becoming perhaps the first building in New Jersey to which the label “Colonial Revival” could justifiably apply, and among the earliest in the United States.

When patterned brickwork came back, however—and it did come back¹⁵³—it could not return in the same way or for the same reasons. Industrialization had come to brickmaking, and the old ways that produced a large percentage of vitrified bricks in each firing were no longer practiced. The clay, itself, may have been little different than before, but the clamps disappeared in favor of kilns that “burned” the brick differently—with convection of hot air rather than a direct flame, and did not cause the glassy surfaces to emerge. This did not happen all at once with every brickmaker, but after about 1850, as brickmaking machinery replaced craft operations, bricks began to gain a more standard appearance, and were less the result of a person than of a process. Where vitrified bricks of the traditional type were still used in mid-19th-century buildings, they were put in secondary locations where the awkward appearance and random placement of the dark glassy edges did not matter. Within another couple of decades, such bricks disappeared altogether.

¹⁵³ Patterned brickwork came back in various guises during the Colonial Revival era.

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Section F: Associated Property Types

[Note: This MPDF treats significance under National Register Criteria C and D only. It does not treat significance under Criteria A or B, since under these Criteria a property's important historic associations would be independent of the presence of patterned brickwork.]

Significance of all types and subtypes

Under Criterion C

Patterned brickwork buildings of any of the following types or sub-types will be found significant under Criterion C in architectural history if they possess the basic characteristics of brick construction that were common in New Jersey during the latter 17th through early 19th centuries, plus one or more of the following attributes. They must possess a façade of Flemish checker (or at least one side elevation of Flemish checker), or possess either initials and/or a date in vitrified brickwork, or possess a combination of vitrified decoration in one or more stringcourses and in decoration of the arches over doors and windows. A house with a single elevation in Flemish checker, for example, or with a date, or with initials, or with both, even without other decoration, will be considered to possess a sufficiency of patterned brickwork for local significance. Alternatively, significant houses may possess a matrix of diamonds or a diaper of diamonds, zig-zags, or banding, provided that such decoration occupied all or a substantial amount of one elevation at the time of construction. They may possess rare or unique forms of patterned brickwork, such as unusual side elevation or gable decoration that expresses the higher artistic possibilities of patterned brickwork or the breadth of variation of it.

Stuccoed or painted brick buildings of the period will be found significant under Criterion C if physical evidence demonstrates that patterned brickwork is present that would satisfy the above requirements. Stuccoed buildings for which the evidence of patterned brickwork is merely probable or speculative would not be found significant under Criterion C. Brick buildings in which only a vestigial amount of patterned brickwork is present, such as Flemish checker on only a part of a chimney, or in which the bricklayers commenced a pattern of vitrified decoration but abruptly stopped it, are not significant examples of patterned brickwork. Houses will not be considered to possess significance if the extent of their patterned brickwork was minimal, even though completed. A house, for example, with only one or two decorated arched openings, or only one stringcourse, but no other decoration, will not be considered eligible.

Buildings that can be shown to have been constructed by master bricklayers important to the spread of or variation within patterned brickwork may be significant for this association under Criterion C. Examples might include buildings constructed by John Mason or Richard Woodnutt II in Salem County, or Francis Collins in Burlington County. In nearly all cases, patterned brickwork buildings will warrant evaluation at the local level of significance. In a few cases, however, some buildings may warrant evaluation at the statewide level, for embodying the most sophisticated designs, for influencing the evolution of patterned brickwork beyond the county in which it was built, or even for architectural qualities that transcend the brickwork itself. One building, the Abel and Mary Nicholson house (1722) in Elsinboro, has been designated a National Historic Landmark. It is the best-preserved of the early examples, and possesses the finest of the diamond diaper patterns, fully five diamonds wide. It is the finest patterned brickwork house in the neighborhood that served as the hearth of this architecture for all of Salem County, the most important county for patterned brickwork in the United States.

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Patterned brickwork buildings of any of the following types or sub-types will be found significant if they have already provided information or if they possess the potential to provide information important to the further study of patterned brickwork—for example where, when, and how practiced—of a kind unavailable or not yet found through documents; or if it otherwise yields or may be likely to yield information important to New Jersey's architectural history in some other context.

Archaeological sites may be shown to be significant if they demonstrate that a brick house stood that was very likely to have possessed patterned brickwork, provided that the finding also addresses one or more areas of important concern. These may include providing evidence that links specific brickmakers or bricklayers to specific buildings or their clients, providing information that addresses questions about the geographic and temporal spread of patterned brickwork, or about the presence or distribution of vitrified brick in colors other than black or shades of gray, or if the findings show better methods of discovery for the presence of patterned brickwork. Methods may include traditional excavation or even remote sensing technologies. Questions still surround the nature of vitrification, and whether and how much American brickmakers understood how to manipulate or control the results of their firings and the mixing of their clays. Questions still surround whether white brick was more commonly used than is currently understood, whether its finish resulted from vitrification or glazing, and whether it was produced by American brickmakers, or was imported.

Questions remain unanswered regarding the archaeological signature that a patterned brickwork house is likely to have left in the ground long after demolition. It seems likely that methods will be found to determine for such brick buildings whether the distribution of their brick debris reveals that patterned brickwork was present in them. Key considerations may include whether mortar survives attached to surviving bricks, and to which surfaces (mortar attached to the vitrified surface would indicate that that surface was not exposed to view) and whether tool marks remain in such mortar. The percentage of vitrified bricks among brick debris may be discovered to be telling, especially if that percentage materially differs from one elevation of a building to another. A wall that was decorated with patterned brickwork is very likely to have been constructed with a much higher percentage of vitrified brick than a wall that was not so decorated. Information, however, that merely addresses the question of the presence of patterned brickwork without touching upon any of the significant issues outlined above, would not be eligible for listing.

Standing buildings may possess Criterion D significance. One clear example has been the John and Sarah Mason house in Elsinboro Township, which has already revealed significant information not available in written documents. The north wall of the Masons' 1695 house still stands within the large 1704 addition, and with the selective removal of interior plaster it revealed the earliest known example of a diamond matrix in New Jersey, much older than the next oldest surviving example, establishing this as a 17th-century pattern. Further, the sophistication with which this house was constructed demonstrates that the tradesmen who built it were very experienced with patterned brickwork, a familiarity that must have been gained from years of previous work. Many patterned brickwork houses were stuccoed in the 19th century. Were any patterns now unknown hidden from the historical record in the process? Can additional examples of known but uncommon patterns be found among the stuccoed houses? Several examples of the diamond diaper pattern are known among Salem County brick houses. Several other examples are suspected among stuccoed houses. Can dates in brick earlier than 1720 be found among stuccoed houses? That date, itself (in the Joseph Darkin house in Elsinboro) was unknown until it was revealed through the demolition of a frame addition. Can owner's initials earlier than

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1725 be found? Can the presence of blue (rather than gray or black) vitrified headers be found, and their distribution be better understood (see also below)?

Type: Patterned Brickwork Dwellings

Residences of all sizes and forms comprise the overwhelming majority of patterned brickwork buildings, well over 90 percent. Patterned brickwork may appear in houses of any form that was constructed in the period, but is most frequently seen in a few house forms or sub-types described below.

Small House Subtype

Small brick houses were among the first houses built in West New Jersey, and they varied between one and two stories tall. One, known as the Thomas Revel house in Burlington, was built about 1687. These houses were sometimes of only a single room on the first floor, but more often of a two-room (or hall-parlor) plan. Some of these houses were of two stories, at least by the second quarter of the 18th century, and they continued to be built through the third quarter of the 18th century. These small houses are characterized by a small footprint, sometimes only two bays wide, a low second-story height, and a gable roof. They generally do not contain dates or initials or diaper work, but may exhibit a Flemish checker facade or decorated relieving arches over doors or windows. They may consist of a "hall" plan, such as the Abbott house, built in 1704 in Elsinboro, or as did the Rogers House (1718) in Burlington Township; or they may have possessed a hall-parlor plan, of which there were many examples.

Gambrel Roof Subtype

By the 1690s, some brick houses were being built with a gambrel roof. These were generally of a single full story with an additional half story under the roof. Shed dormers illuminated the half story. John Fenwick, leader of the Salem Colony in its earliest years, is thought to have occupied a gambrel-roofed house of timber frame. The type may have been introduced into patterned brickwork with the Hall-Bradway house, believed to have been built in 1691, which was¹ of a full two stories with a half story under the roof. An early reference to this building called it a "capital house," for its size. Other examples of the gambrel-roof house featured only a single story below the roof. It was built near the west end of Broadway, near the Salem town landing on the Salem River for merchant William Hall, and it was early used as a tavern. These houses, although small by modern standards, were nonetheless large enough to sport Flemish checker facades, and often decoration in their end walls. The Ephraim Padgett house, for example, built about 1735, featured a diaper of small diamonds, eleven diamonds wide.

Nearly all examples of this house type appear in Salem or Cumberland counties. The dates of their construction tend to cluster between the 1710s and the 1740s, but late examples such as the John and Hannah Oakford house (1764), appeared in the third quarter of the 18th century. Relatively few of these houses have survived in their original form. More often, examples such as the William Mecum house (1737) in Pennsville were enlarged to a full two stories and given a gable roof. This evolution is recorded in the side walls of these houses, and its impact on the original decoration is usually minor. Most of these enlargements occurred during the period of significance for patterned brickwork, and the fact of such enlargement should not be considered a loss of integrity that could compromise eligibility. Late examples of the gambrel roof sub-type were built in the 1760s, long after 2-story brick houses with gable roofs began to appear.

William Tyler House Subtype

¹ the house was demolished in 1967.

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This early house form was obscure in its own time, and architectural historians have never named it. Its form is an apparent compromise between the two-story small house subtype and the gambrel-roofed subtype, and its existence is principally known from two examples: the extant William Tyler house in Quinton Township, believed to have been built in the second quarter of the 18th century, and the so-called “Old Guard House” in Pennsville Township, now long gone, built as a residence about 1735 for the Gil Johnson family. This subtype features a full two stories and a visible division into two very different halves.. One is deeper than the other, and projects several feet farther in the rear elevation. The other is shallower and recessed in the rear elevation, though perhaps wider, and contains the house’s rear entrance under a deeply projecting pent roof that can extend beyond the facade plane of the projecting half. Both halves, however, are united under a single roof sized for the deeper half, leaving a sizable portion cantilevered over the recessed half. The roof shape is either a gable (as in the Tyler house) or a gambrel. In the example of the Old Guard House, the roof was of the gambrel type, but the lower slope was given a concave kick, perhaps for greater stability of the cantilevered part of the roof. This latter feature is so peculiar that it is unique to this sub-type among all of New Jersey’s early vernacular architecture. Since the two examples cited above were in widely spaced locations, it seems likely there were others that have not survived. The Daniel Denn house (or Trullender house) in Stow Creek Township—lost within the last decade—originated in the 17th century and was modified probably in the early 18th century to exhibit most of the features of this type, but the date of these modifications is uncertain. The William Wilkinson house in Salem County, also no longer standing, was another variation of this subtype.

Side-Hall House Subtype

In the second quarter of the 18th century a house form rose to popularity in New Jersey characterized by being two rooms deep with a wide stair hall on one side. These houses were chiefly built in Camden, Burlington, Monmouth, and Mercer counties. They generally featured entrances into the stair hall. A representative example was Eglinton, in Upper Freehold, Monmouth County, built in 1773. A variant of this type was narrower, only two bays wide, and lacked the stair hall, but possessed the other principal features.

Center-Hall House Subtype

Some examples of a center hall type emerged in Salem and Cumberland counties, such as the Nicholas Gibbon house in Greenwich, built in 1730, where houses were most often only one room deep. Center hall houses, however, were more common in Burlington and Camden counties, where they were more likely to have been of double-pile configuration. Both the side-hall sub-type and the center-hall sub-type were built from the second quarter of the 18th century through the remainder of the patterned brickwork era.

Type: *Friends’ Meeting Houses (and other houses of worship)*

Of the several dozen Friends’ meetinghouses in New Jersey, about one dozen exhibited patterned brickwork in some form. Despite a core concern within Quakerism that their members should live lives characterized by “plainness” and “simplicity,” no precise denotation of plainness in architecture was ever promulgated. The several editions of the *Discipline* were silent about patterned brickwork. The dozen meetinghouses included relatively small ones, such as Upper Springfield, built in 1751, and large ones such as Salem (1772). Even the brick meetinghouses at Bordentown and Trenton, which were of similar size, were not alike in their architectural treatment. Although both were authorized in 1739 by the parent Chesterfield Monthly Meeting, Trenton contained patterned brickwork but Bordentown did not. Today, both buildings still stand, stuccoed. There were a small number of other Protestant houses of worship that exhibited (or may have exhibited) patterned brickwork. The Pittsgrove Presbyterian Church in Upper Pittsgrove Township, built in 1767, exhibited a Flemish checker façade. That building was demolished after 1983. Some episcopal churches may

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likewise have exhibited patterned brickwork, perhaps including the ones in Salem, Burlington, Trenton, or Perth Amboy, but the fact has not been demonstrated. Among extant houses of worship from the 18th century, only some of the Friends meetinghouses display patterned brickwork.

Other Building Types

Known examples of patterned brickwork in New Jersey other than dwellings and meetinghouses are very uncommon, and probably never made up even five percent of the total. The incidence of such buildings may have been lower than what prevailed in Philadelphia, however, where, for example, a warehouse built in 1705 and the famous Carpenter's Hall, built in 1770, both featured walls of Flemish checker. In New Jersey, some patterned brickwork buildings may have been employed for civic purposes, but few seem to have been used exclusively for commercial purposes. One exception was the so-called "Franklin print shop" on High Street in Burlington. Several taverns exhibited patterned brickwork, but these can safely be subsumed under the dwellings category, since during the period of patterned brickwork they were of a residential character, prior to the tavern becoming a visually distinctive building type at the end of the 18th century. (One extant building in Burlington and another in Salem were enlarged into hotels in the 19th century. In Mount Holly, the Old Schoolhouse (Register-listed), built in 1759, possesses a Flemish checker facade. Some houses also had a secondary commercial use, such as the Allinson pharmacy (1731) in Burlington, or some of the townhouses on High Street in Burlington or on Farnsworth Avenue in Bordentown. The Jabez Woolston house, built in 1783 in Mount Holly, had an attached shop that was probably of frame construction.²

Historic Districts

Under Criterion C, one area within Salem County has been identified as a potential historic district for the remarkable cluster of patterned brickwork houses that it contains. This area is located within Elsinboro and Lower Alloways Creek townships. This neighborhood is of statewide importance for New Jersey's architectural history as containing the oldest and finest grouping of patterned brickwork buildings in the State, including the National Historic Landmark Abel and Mary Nicholson house. It contains the site of the Christopher White house of 1690-91; the oldest surviving example of patterned brickwork in Salem County; the finest example of the diamond diaper pattern; both known examples of the vertical zigzag pattern, and the three oldest surviving examples of construction dates executed in brick in New Jersey. This district was identified as the Alloways Creek Rural Historic District in a SHPO opinion on March 13, 2015, but although several of these houses are already listed, some key buildings are not. This district has not been nominated for Register listing, and its boundaries require further study.

Registration Requirements

For buildings to be listed as part of this Multiple Property Submission, they will generally exhibit one of the types or subtypes enumerated above, and possess significance of the character described above. They must also meet the following terms outlined below with respect to integrity and state of preservation.

Integrity

"State of preservation" means the degree to which the original materials and workmanship that characterized the building when constructed remain in place. "Integrity" means the ability of a building to convey its significance through the seven integrity factors of location, setting, design, materials, workmanship, feeling, and association.

² Another building, currently identified as a tannery, seems an exception to the general rule, but that identification seems doubtful. The building seems more likely to have been the house associated with the tannery, rather than the tannery itself.

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All eligible patterned brickwork buildings must be able to convey their significance. An eligible building will possess all or the major portion of the patterned brickwork it once possessed. The state of preservation of its patterned brickwork must remain high for it to convey integrity of materials and workmanship.

It is not necessary for a building, if painted or stuccoed, to *display* all, or even any, of its patterned brickwork decoration. It is necessary for the presence of that decoration to be confirmed and the extent or kind of that decoration to be determined, at least to the point that meets the terms outlined under Significance above. It may sometimes be the case that the nature or extent of the patterned work may be discernible through the failure of a stucco finish, or by other means when not directly viewable.³ Technical non-destructive tests might also be discovered to reveal patterned work that is present behind paint or stucco. Selective removal of a portion of the stucco may also be sufficient to reveal the general character of treatments across all or the major part of an elevation. A building that possesses only a minor fraction of its patterned brickwork will not be eligible. A stuccoed or painted-over building, however, will be assumed to still possess patterned brickwork that it was once known to possess, if the addition of such treatment is the only known or evident alteration to the wall surface.

General State of Preservation

For a building significant for its patterned brickwork to possess integrity of design, the form that it possessed during its period of significance must be substantially intact. In the case of gambrel roof buildings later raised to an additional full story, the former presence of the original roof shape must remain evident in the end wall of the house. In the event of additions to the building that post-date the period of significance, buildings that possess such additions may be eligible if the presence of those additions does not excessively distract from the ability of the building to convey the significance of its patterned brickwork.

A building must possess, in addition to its patterned brickwork decoration, enough of the other character-defining features that it possessed during the period of patterned brickwork to convey its character as a building recognizable from the period of its construction. It needs to possess the form and elements of the design and general construction of the period, such that its size and general character can be understood from its original materials. A house that possesses only one wall of the original building, even if it contains the patterned brickwork, is not eligible if the remainder of the house was demolished or rebuilt after the era of patterned brickwork.

A patterned brickwork house that was enlarged into a hotel in the 19th century and that does not exhibit any of its patterned brickwork will not be eligible for listing. A patterned brickwork house that was enlarged into a 19th-century hotel but that continues to display its Flemish checker façade or other brick decoration will be eligible if the extent of the enlargement and alteration does not prevent the building from conveying its origin as a patterned brickwork house.

³ For instance, the Flemish checker façade of one stuccoed building was confirmed by a unique pattern of mildew on the façade after rainstorms that perfectly corresponded to the size, shape, and spacing of Flemish checker brickwork.

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The geographical scope of this MPDF is statewide. Even though the very large majority of traditional patterned brickwork buildings were built in the southwestern counties of the state, this vernacular architecture was nonetheless available to builders across New Jersey who chose brick as their primary building material. Some important examples have already been identified in areas outside the principal concentration of these buildings, and more are likely to be identified as discovery work continues.

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Section H: Summary of Identification and Evaluation Methods

While an architectural context should always be based on an understanding of vanished examples as well as surviving ones, sound generalizations and valid understandings rarely require taking every example of an architectural phenomenon into account. Yet the search for traditional patterned brickwork in New Jersey has been the first effort by this office to comprehensively seek out *all* such buildings, past and present. Brick masonry buildings were expensive to build compared to their frame counterparts, which tended to limit their numbers, and patterned brickwork was a minor subset within the universe of brick masonry. One would not ordinarily try for such unabridged inclusivity, but in this case the numbers have seemed manageable. Yet it remains a work-in-progress, with new finds still to be added.¹

In addition, the constituents—historians, architectural historians, and lovers of these buildings—would not understand a lesser commitment. They, themselves, have worked hard to seek out each and every one of these buildings, usually attempting to find every example within the narrower geographic range of a county or township, not always possessing the wherewithal to successfully do so. To improve upon their efforts, their separate achievements have been brought together, reconciled, and enlarged upon.

Work to build the New Jersey Historic Preservation Office (HPO) inventory of patterned brickwork (PB) buildings began in 2011 by examining architectural survey forms and published works on southern New Jersey architecture. Kathie Irwin produced a first tally of 135 buildings, the information about which was collected in an Access 2010 data table that was quickly refined to determine the needed fields that would foster comparison and analysis. The work of this project was then largely set aside for more than two years until September 2014 due to conflicting time demands caused by HPO's role in helping to plan the 2014 annual conference of the Vernacular Architecture Forum (VAF) entitled "Down Jersey, from Bayshore to Seashore." The author of this MPDF, Robert W. Craig of the HPO staff, was the text editor of the conference's guidebook, which prevented any work on the PB database from September 2013 until after the conference. That guidebook contained several articles about patterned brickwork and PB buildings, which reinforced the need for a Multiple Property Submission.

With the resumption of this project, three decisions were reinforced. First, a working definition of "patterned brickwork" was made, to include any building of the era of pre-industrial brickmaking in which the bricklayer made deliberate use of vitrified brick² to produce patterns—even the most basic pattern, Flemish checker. Flemish checker, even by itself, is a conspicuous architectural feature that reflects a deliberate choice by the builder, and may by itself, without other decoration, convey significance to the building of which it is a component.

Second, the decision was made (as noted above) that the database would be built to include all examples of patterned brickwork, both surviving and disappeared, to the extent that the former could be found and the latter could be identified. Due in part to the appeal of patterned brickwork, architectural survey of a sort has been

¹ The patterned brickwork (PB) database informs the content of the MPDF, but is not part of it.

² Or bricks that were darkened but did not vitrify. A few buildings exhibit patterned work of this sort. Also, at least two buildings included in the database exhibit patterned brickwork based on a variety of white brick. In one case, the brick was unvitrified; in the other, the answer is unclear.

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undertaken in southern New Jersey in various ways since the last quarter of the 19th century, through painting, photography, and local history writing, longer than in most parts of the eastern United States.

Third, it was decided the database would also include the stuccoed (and painted-over) brick buildings of the period that were of the same architectural characteristics of PB buildings, even if no such work was currently visible. It has been clear from the beginning that much patterned brickwork has been hidden in these cover-ups. In some cases, failure of the paint (eg. White Hill Mansion in Fieldsboro) or of the stucco (eg. Wright house in Smithville, Burlington County) has revealed part or all of the patterned work beneath. In other cases the stucco has been deliberately removed through careful cutting, in whole or in part, while in others the stucco was never applied to cover up the presence of dates or initials. In some cases the stucco is failing naturally, by either of two methods. Stucco may either spall off, leaving a clean break between the unimpaired brick surface and the stucco, or it may erode or abrade away naturally, causing the underlying patterned work to intermittently appear. Sometimes minor structural failures in the walls, themselves, occur in ways that reveal the underlying presence of patterned brickwork. Still, about fifty records in the database are of buildings so covered in paint or stucco that it is not yet evident whether they include patterned work. They have been included since their construction dates and other architectural features make it more likely than not that they embody at least some patterned work. In several instances, buildings entered into the database without confirmation of PB presence have been subsequently shown to embody one or more patterns in one or more elements of the buildings. In one Salem County house, for example, a pattern of mildew emerged on a part of the façade after rainstorms that perfectly mirrored the presence of Flemish checker underneath. For the Trenton Friends meetinghouse, built in 1739 and stuccoed in 1840, the only evidence yet available is an 1872 recollection that was very specific about the presence of patterned brickwork. In a couple of cases, dates have been found showing in reverse in the attics of houses when they are obscured on the exterior by stucco or additions.

More systematic work was undertaken to make the database comprehensive. Fieldwork was undertaken by this author in Mercer, Monmouth, and Burlington counties to locate existing PB buildings. Similar work was undertaken by surrogates in the four other southern New Jersey counties where PB was found in considerable numbers (Camden, Gloucester, Salem, and Cumberland). These local informants have helped make the inventory much more complete and comprehensive. Especially helpful have been Paul Schopp (Burlington and Camden counties); Margaret Westfield (Camden & Gloucester); Janet Sheridan (Salem and Cumberland); and Penelope Watson (Cumberland). HPO Section 106 work and southern New Jersey architectural survey work have also been very helpful.

The database records the location of PB buildings three ways: descriptively, based on published surveys and maps; by street address, based on fieldwork and other data sources; and in latitude and longitude coordinates drawn from Google Maps or Bing Maps. This work allowed the HPO Geographic Information Systems (GIS) team in the spring of 2016 to make its first efforts to map the PB distribution in New Jersey. (It was the first time HPO had ever mapped an entire vernacular architecture in New Jersey.) While the resulting map was very attractive and received very favorable comment, it succeeded as a data presentation only in an impressionistic way. Not all of the PB buildings had been discovered; coordinates were not available for many; and due to an unfortunate data manipulation error that could not be reversed, incorrect coordinates were attributed to several dozen other buildings. A slow, careful process of coordinate correction and confirmation has been underway since.

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Sources of historic photography were consulted in the build-up of the data. James H. Simkins (ca.1885-86) and Thomas Yorke of Salem County (1887) were among the earliest photographers of these buildings, followed by local photographers Edward W. Humphreys (1895-1930) and William J.S. Bradway (1905-16), whose efforts were overlapped by the work of little-known Newark, NJ architect Lars DeLagerberg (ca.1906-15). These were followed by Joseph Sickler, who investigated through the 1910s and '20s, published in 1934 and then brought out a longer, revised edition of his book in 1949. The White Pine series of architectural monographs (1914-40) seems to have entirely overlooked South Jersey patterned brickwork. HABS, however, thanks to New Jersey's especially aggressive program, photographed dozens of PB buildings. And one of New Jersey's HABS photographers, Nathaniel Ewan, himself also the president of a county historical society and for a time a member of the New Jersey Commission on Historic Sites, left behind at least two collections of his own architectural photographs, as well as those he officially submitted for the HABS effort. In the postwar period, there have been various avocational efforts to find all the PB buildings that survive.

A serious challenge has been to discover and weed out duplicate records for the same building. The various sources of information—textual, photographic, and cartographic—sometimes lead one to believe that a previously unrecorded building has been found. Often this has turned out not to be the case, two different sources having described the same building with different sources or types of evidence or under different names. While nearly 460 records have been created during the course of the search, about 70 records have also been eliminated for one or another reason.

From the beginning, this MPDF was premised on the basis that it would be an architectural study of the bricklayer's art, focused on National Register Criteria C and D, but that it would also have a social focus. It has long been known that patterned brickwork strongly tended to be employed in areas of Quaker settlement, and without the understanding of the Quaker role in West New Jersey brick trades no proper sense of these buildings could be made. Fortunately, two scholars have investigated patterned brickwork at the dissertation level. The first, Paul Love, wrote in 1950. That work, however, was almost entirely forgotten by subsequent writers on the subject, and this Multiple Property Submission project resurrects it and makes it a focus of the identification and research efforts. In the process, Love's master's thesis on patterned brickwork was also rediscovered. The second scholar is Michael Chiarappa, whose 1993 dissertation for the University of Pennsylvania, "The First and Best Sort," forms the other pole around which the context statement revolves. Cooperation from the staff of the Friends Historical Library at Swarthmore College has strengthened our understanding of the Quaker roots of New Jersey's patterned brickwork. Salem County's buildings have had a small but remarkable literature published about them, which Burlington County's buildings—even though there are twice as many of them—have not. The staffs of their respective county historical societies have been quite helpful. Staff at the Philadelphia Athenaeum and at the Philadelphia Historical Commission helped further our understanding of that city's patterned brickwork and of the many connections between New Jersey and Philadelphia building tradesmen. Important research was also undertaken at the New Jersey State Library, the New Jersey State Archives, the Historical Society of Pennsylvania, Rutgers University Special Collections, the New Jersey Historical Society, the Newark Public Library, and at Princeton University's Firestone Library and Marquand Library. Understanding patterned brickwork from the British point of view has been aided by the collegial cooperation afforded by Annabelle Radcliffe-Trenner of Historic Building Architects, Nathaniel Alcock of the University of York, and Peter Guillery of the Survey of London.

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Section I: Major Bibliographical References

English Vernacular Architecture, Brickmaking, and Brickwork

- Archer, John. *The Literature of British Domestic Architecture, 1715-1842*. Cambridge, MA and London: MIT Press, 1995.
- Ashurst, John; and Nicola Ashurst. *Practical Building Conservation: English Heritage Technical Handbook*. vol.2. "Brick, Terra Cotta & Earth." Aldershot, England, UK: Gower Technical Press, 1988.
- Batsford, Harry; and Charles Fry. *The English Cottage*. London: Batsford, 1950.
- "Brickwork Details." in *The Domestic Architecture of England During the Tudor Period*. (Boston: n.p., 1913.
- Brunskill, R[onald] W. and Alec Clifton-Taylor. *English Brickwork*, London: A Hyperion Book, Ward Lock Limited, 1977.
- Campbell, James W.P.; and Andrew Saint. "A Bibliography of Works on Brick published in England before 1750." *Construction History*. 17 (2001): 17-30.
- Clarke, Linda. *Building Capitalism: Historical Change and the Labour Process in the Production of the Built Environment*. London and New York: Routledge, 1992.
- Cowper, A.D. *Lime and Lime Mortars*. London: Donhead Publishing Ltd., Reprinted 1998. [first published 1927].
- Guillery, Peter. *The Small House in Eighteenth-Century London: A Social and Architectural History*. New Haven and London: Yale University Press, in Association with English Heritage, 2004.
- Hall, Robert deZouche. *A Bibliography on Vernacular Architecture*. Newton Abbot, UK: David & Charles Publishers, 1972.
- Holt, M. "Early Brickmaking in Sussex." *Sussex Notes-Queries*, 17, 5 (1970): 164-165.
- Innocent, Charles F. *The Development of English Building Construction*. Cambridge, UK: University Press, 1916.
- Lloyd, Nathaniel. *A History of English Brickwork, With Examples and Notes of the Architectural Use and Manipulation of Brick from Medieval Times to the End of the Georgian Period*. London: [H.] Grenville Montgomery, 1925; New York: W. Helburn, Inc., 1925.
- _____. *Building Craftsmanship in Brick and Tile and in Stone Plates*. 1929.
- London County Council, and the London Survey Committee. *Survey of London*. vol.1 et seq. London: 1900-.
- Lynch, Gerard C.J. *Brickwork: History, Technology, and Practice*. vol.1. Donhead: House & Home, 1994.
- Maudlin, Daniel; and Herman, Bernard L. [editors]. *Building the British Atlantic World: Spaces, Places and Material Culture, 1660-1820*. Chapel Hill, NC: North Carolina University Press, 2016.
- McKay, W.B. *McKay's Building Construction*. With an introduction by Henry Russell. London: Longmans, 1938. Reprint: Donhead Publications Ltd., 2005. [2 vols. in 1]
- Small, Tunstall; and Christopher Woodbridge. *English Brickwork Details, 1450-1750: A Portfolio of Full-Size Mouldings*. London: The Architectural Press, n.d.; New York: W. Helburn, n.d.
- Vicat, L.J. *A Practical and Scientific Treatise on Calcareous Mortars and Cements, Artificial and Natural*. London: John Weale, Architectural Library, 1837. Reprint, Donhead Publishing Ltd., 2003.

London After the Great Fire

- Kelleher, Elizabeth. *The Birth of Modern London: The Development and Design of the City, 1660-1720*. Manchester, UK and New York: Manchester University Press, 1999.
- Inwood, Stephen. *A History of London*. New York: Carroll & Graf, 1999.
- Reddaway, T.F. *Rebuilding London after the Great Fire*. London: Edward Arnold & Co., 1940.

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Summerson, John. "The Rebuilding of London: The City Churches." chapter 13, in John Summerson, *Architecture in Britain, 1530-1830*. 5th revised edition. The Pelican History of Art series. Harmondsworth, Middlesex, UK: Penguin Books Ltd., 1970.

Contemporary Builder's Literature, Manuals, etc. [in ascending chronological order]

- 1667 Primatt, Stephen. *The City and Country Purchaser and Builder*. 2nd edition, enlarged by William Leybourne, London: S. Speed, 1667; revised 1680.
- 1668 Leybourne, William. *A Platform for Purchasers, Guide for Builders, Mate for Measurers*. London: Thomas Radcliffe and Thomas Daniel, 1668; reprinted 1685.
- 1680 _____. *The City and Country Purchaser and Builder*. 2nd edition. London: 1680.
- 1684 _____. *The Builder's Guide*. London: 1684.
- 1700 _____. *Architectonice or a Compendium of the Art of Building*. London: printed for Richard Mount, 1700; subsequent editions in 1708 and afterward.
- 1703 Moxon, Joseph. *Mechanick Exercises or the Doctrine of Handy-Works*. London: 1703. Reprint 1994, Metuchen, NJ: Astragal Press.
- 1726 Neve, Richard. *The City and Country Purchaser and Builder's Dictionary*. London: printed for John Nutt, 1726; revised 1736.
- 1734 Anon. *The Builder's Dictionary: Or Gentleman and Architect's Companion*. 2 vols. London: 1734. Reprint 1981, Washington, DC: Association for Preservation Technology.
- 1747 Langley, Batty. *Exaction Detected: Or the Prices of Bricklayers Materials and Works* London: printed for Archimedes Langley, 1747; reissued 1748 as *The London Prices of Bricklayers Materials and Works. Both of New Buildings and Repairs*; reissued 1749 and 1750.

Brickwork in the American Colonies

- Brown, Frank Chouteau. *Early Brickwork in New England*. Stamford, CT: "Records of Early American Architecture as Source Material Monograph Series." vol.20, monograph 2. [copy at Avery, NYC].
- Carson, Cary; and Carl R. Lounsbury. *The Chesapeake House: Architectural Investigation by Colonial Williamsburg*. Chapel Hill, NC: University of North Carolina Press in association with Colonial Williamsburg Foundation, 2013.
- Claiborne, Henry A. *Comments on Virginia Brickwork Before 1800*. Boston: Walpole Society, 1957.
- Coffin, Lewis A. and Arthur C. Holden. *Brick Architecture of the Colonial Period in Maryland and Virginia*. New York: Architectural Book Publishing Co., 1919. [copy at Avery Architectural Library, NYC].
- Cortelyou, John Van Zandt. *The Cortelyou Genealogy*. online at <https://archive.org/stream/TheCortelyouGenealogy/Jacques%20Cortelyou%20%28First%20Generation-b.%20about%201625%2C%20d.%201693%29#page/n27/mode/2up> [viewed April 27, 2016].
- Eberlein, Harold Donaldson. *Manor Houses and Country Houses on Long Island and Staten Island*. Philadelphia: J.B. Lippincott Press, 1928.
- Forman, Henry Chandlee. *The Architecture of the Old South: The Medieval Style*. Cambridge, MA: Harvard University Press, 1948.
- Foster, Joseph Arnold, ed. *Contributions to a Study of Brickmaking in America*. 2 vols. Claremont, CA: privately printed, 1962-63.
- Howells, John Mead. *Lost Examples of Colonial Architecture: Buildings that Have Disappeared or been so Altered as to be Denatured*. 1931; Reprint, Dover Publications, Inc., 1965. plate 59.
- Love, Paul V. "Patterned Brickwork in the American Colonies." Ph.D. dissertation, Columbia University, 1950.

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Traditional Patterned Brickwork in NJ MPDF
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Section number I Page 3

McKee, Harley J. *Introduction to Early American Masonry: Stone, Brick, Mortar and Plaster*. Washington, DC: National Trust for Historic Preservation, 1973.

Morrison, Hugh. *Early American Architecture*. New York: Oxford University Press, 1952.

Brickwork in the Greater Delaware Valley

Bennett, George Fletcher. *Early Architecture of Delaware*. 1932. Reprint, Bonanza Books, n.d.

Gillingham, Harrold Edgar. "Some Early Brickmakers in Philadelphia." *Pennsylvania Magazine of History and Biography*. vol.53, no.1, January 1929, pp.1-27.

Glassie, Henry. "Eighteenth-Century Cultural Process in Delaware Valley Folk Building." pp.29-57 in *Winterthur Portfolio* 7 (1972). Chicago: University of Chicago Press, for the Henry Francis DuPont Winterthur Museum.

_____. *Pattern in the Material Folk Culture of the Eastern United States*. Philadelphia: University of Pennsylvania Press, 1968.

Lanier, Gabrielle; and Bernard L. Herman. *Everyday Architecture of the Mid-Atlantic: Looking at Buildings and Their Landscapes*. Baltimore and London: Johns Hopkins University Press, 1997.

Looney, Robert F. *Old Philadelphia in Early Photographs, 1839-1914*. New York: Dover Publications, Inc., 1976.

Southern New Jersey Patterned Brickwork

SOUTHERN NEW JERSEY, GENERAL:

Bassett, William B., comp.; edited by John Poppeliers. *Historic American Buildings Survey of New Jersey: A Catalog of the Measured Drawings, Photographs, and Written Documents in the Survey*. Newark, NJ: NJ Historical Society, 1977.

Berkey, Joan. *Early Wood Architecture of Cumberland County, New Jersey*. Greenwich, NJ: Cumberland County Historical Society, 2015. [see photos of brick houses, passim].

Craig, Robert W. "Patterned Brickwork." p.620, in Maxine N. Lurie and Marc Mappen (editors). *Encyclopedia of New Jersey*. New Brunswick, NJ: Rutgers University Press, 2004.

DeCou, George. *Historical Sketches of Crosswicks and Neighborhood*. [n.p.]: Burlington County Historical Society, 1955.

DeLagerberg, Lars. *New Jersey Architecture, Colonial and Federal*. Springfield, MA: privately printed by Walter Whittum, Inc., 1956.

[Farnum, Dustin.] "Dustin Farnum Images Pattern Brick." <http://www.njbikemap.com/photo/Pattern-Brick.pdf>. viewed 2014 and subsequently.

[Hanson, Jennifer W.] "Patterned Brick Houses in New Jersey."

<https://jenniferwhanson.wordpress.com/patterned-brick-houses-in-new-jersey/> viewed 5/12/2015.

Leaming, Aaron; and Jacob Spicer, [Jr.]. *The Grants, Concessions, and Original Constitutions of the Province of New Jersey, The Acts Passed During the Proprietary Governments, and other material Transactions before the Surrender thereof to Queen Anne*. [Philadelphia: 1758; Reprint, Union, NJ: The Lawbook Exchange, Ltd., 2002]. For the text of the 1683 statute regarding brick sizes, see p.459.

Love, Paul V. "Patterned Brickwork in Southern New Jersey." *New Jersey Historical Society Proceedings* 73 (1955): 182-208.

Maxman, Susan Architects. "The William Trent House, Trenton, New Jersey: Historical Documentation and Strategic Planning Study." 1 January 1997. copy at NJ Historic Preservation Office, Trenton, NJ.

McMahon, William. "The Patterned Brick Houses." *South Jersey Towns: History and Legend*. New Brunswick, NJ: Rutgers University Press, 1983.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

Traditional Patterned Brickwork in NJ MPDF
New Jersey - Statewide

Section number I Page 4

- Pomfret, John Edwin. *The Province of West New Jersey, 1609-1702*. Princeton, NJ: Princeton University Press, 1956.
- Schwartz, Helen, and Margaret Morgan Fisher. *The New Jersey House*. New Brunswick, NJ: Rutgers University Press, 1983.
- Thompson, Robert L. *Burlington Biographies: A History of Burlington, New Jersey Told through the Lives and Times of its People*. Galloway, NJ: Stockton University Center for South Jersey History and Culture, 2016.
- Tvaryanas, Damon. "The New Jersey Quaker Meeting House: A Typology and Inventory." thesis, University of Pennsylvania, 1993.
- _____. "Parallel or Precedent: Patterned Brickwork Architecture and Quaker Needlework." *Folk Art* 29, 1-2 (Spring/Summer 2004): 42-53.
- Veasey, David. *New Jersey's Colonial Architecture Told in 100 Buildings*. Charleston, SC: Arcadia Publishing, 2016.
- Weiss, Grace M. *Early Brickmaking in New Jersey*. Trenton, NJ: NJ Agricultural Society, 1966.

SALEM COUNTY:

- Coward, Marcia. "Fare You Well Old House." *Jerseyvision* 4, 8 (January 1976): cover, 2-3,6. [features artist Harry Devlin's painting of the John and Martha Dickinson house]
- Cushing, Thomas B.; and Charles E. Shepard. *History of the Counties of Gloucester, Salem, and Cumberland, New Jersey* (Philadelphia: Everts & Peck, 1883; Reprint 1974, Woodbury Twp. Historical Society).
- Devlin, Harry. *What Kind of House is That?* New York: Parents Magazine Press, 1969. [see esp. pp.32-33, which reproduces Devlin's painting of the Dickinson house]
- Eberlein, Harold Donaldson. "Early Brick Houses of Salem County, New Jersey." *American Architecture & Building News*. 120:139-48. August 31, 1921.
- Fenwick's Colony: Salem County Pictorial, 1675-1964*. Salem, NJ: Salem County Tercentenary Committee, 1964.
- Gowans, Alan. "The Mansions of Alloways Creek." Reprinted,] pp.367-379 in Dell Upton and John Michael Vlach, editors. *Common Places: Readings in American Vernacular Architecture*. Athens, GA: University of Georgia Press, 1986.
- Humphreys, Edward W. *O the Great Days in the Distance Enchanted: A Collection of Photographs (1895-1930)*. Salem, NJ: Salem County Cultural and Heritage Commission, 1978.
- Johnson, George Walter. *27 in 76: Patterned-Brick Houses of Salem County*. self-published, 1977.
- Knox, Emma Hackett. *The Story of the Old Homestead (The Smith-Hackett Homestead)*. Privately printed, 1937.
- Love, Paul V. "Salem Tenth: The Origins and Development of Its Patterned Brickwork. (1690-1765)" M.A. thesis. Columbia University, 1940.
- Magill, Ronald. "Patterned-Brick Wall Discovered." *Salem County Historical Society Quarterly Newsletter*. (June 1993):4. [re: John and Sarah Mason house]
- Pisarski, Matthew. *One-Room-Deep Domestic Architecture of Cumberland and Salem Counties, New Jersey*. M.A. thesis. University of Pennsylvania. 1999.
- Riesenweber, Julie. "Order in Domestic Space: House Plans and Room Use in the Vernacular Dwellings of Salem County, New Jersey, 1700-1774." thesis, University of Pennsylvania, 1984.
- Sheridan, Janet. "Salem County: Patterned Brick and Beyond." in Robert W. Craig, editor. *Down Jersey, from Bayshore to Seashore: A Guidebook for the Annual Conference of the Vernacular Architecture Forum*. Galloway, NJ: Richard Stockton College of New Jersey and VAF New Jersey, 2014.

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Traditional Patterned Brickwork in NJ MPDF
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_____. "‘Their Houses are Some Built of Timber’: The Colonial Timber Frames of Fenwick’s Colony, New Jersey." Master’s thesis, Univ. of Delaware, 2007.

Shourds, Thomas. *History of Fenwick’s Colony*. Bridgeton, NJ: G.F. Nixon, 1876.

Sickler, Joseph S. *The Old Houses of Salem County*. 2nd edition. Salem, NJ: Sunbeam Publishing Co., 1949.

[Note: In addition to the foregoing, various newsletters and other publications of the Salem County Historical Society, not specifically enumerated, have content relevant to the study of patterned brickwork.]

Quaker History

Brathwaite, William C. *The Second Period of Quakerism*. 2nd edition, prepared by Henry J. Cadbury. London: Cambridge University Press, 1961.

Levy, Barry. *Quakers and the American Family: British Settlement in the Delaware Valley*. New York: Oxford University Press, 1988.

Tolles, Frederick B. *Meeting House and Counting House: The Quaker Merchants of Colonial Philadelphia, 1682-1763*. Chapel Hill, NC: Institute for Early American History and Culture at Williamsburg, 1948.

_____. *Quakers and the Atlantic Culture*. New York: Octagon Books, 1980.

Quaker Influence in Architecture in the Delaware Valley

Chiarappa, Michael. "‘The First and Best Sort’: Quakerism, Brick Artisanry, and the Vernacular Aesthetics of West New Jersey’s Eighteenth-Century Pattern Brickwork Architecture." Ph.D. dissertation, University of Pennsylvania, 1993.

_____. "The Social Context of Eighteenth-Century West New Jersey Brick Artisanry." pp.31-43 in Carter, Thomas; and Bernard L. Herman, editors. *Perspectives in Vernacular Architecture, IV*. Columbia, MO: University of Missouri Press, 1986.

Fischer, David Hackett. *Albion’s Seed: Four British Folkways in America*. New York: Oxford University Press, 1989.

Hayes, John Russell. *Old Quaker Meeting-Houses*. Philadelphia: Biddle Press, 1911.

Herman, Bernard L. "Eighteenth-Century Quaker Houses in the Delaware Valley and the Aesthetics of Practice" pp. 188-211, in Lapsansky, Emma Jones; and Anne A. VerPlanck editors. *Quaker Aesthetics: Reflections on a Quaker Ethic in American Design and Consumption*. Philadelphia: University of Pennsylvania Press, 2003.

Hinshaw, Seth Beeson. "The Evolution of Quaker Meeting Houses in North America, 1670-2000." M.S. thesis, Univ. of Pennsylvania, 2001.

Historic American Buildings Survey, and the Society of Friends, Philadelphia Yearly Meeting. *Silent Witness: Quaker Meetinghouses in the Delaware Valley, 1695 to the Present*. 2002.

Lanier, Gabrielle M. *The Delaware Valley in the Early Republic: Architecture, Landscape, and Regional Identity*. Johns Hopkins University Press, 2005.

_____; and Bernard L. Herman. *Everyday Architecture of the Mid-Atlantic*. Johns Hopkins University Press, 1997.

Lidbetter, Hubert. *The Quaker Meeting House*. 2nd edition. York, UK: 1979.

Moss, Roger William. "The Master-Builders: A History of the Colonial Philadelphia Building Trades." Ph.D. dissertation, University of Delaware, 1972.

Watson, John F. *Annals of Philadelphia and Pennsylvania in the Olden Time....* enlarged and revised by Willis P. Hazard. 3 vols. Philadelphia: Edwin S. Stuart, 1884.

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Historic American Buildings Survey (HABS) documentation

[Note: Approximately 75 patterned brickwork buildings have been documented by the Historic American Buildings Survey. Most were recorded in the 1930s by the New Jersey HABS teams. They are enumerated as follows, in ascending order by HABS identification number.] NJ 54, 70, 71, 77, 78, 79, 82A, 100, 118, 126, 127, 128, 130, 137, 203, 206, 208, 209, 211, 212, 213, 231, 233, 234, 238, 239, 243, 259, 260, 281, 282, 284, 285, 292, 294, 304, 305, 311, 342, 345, 346, 348, 349, 350, 355, 379, 380, 383, 384, 385, 405, 426, 438, 439, 456, 483, 504, 514, 540, 541, 554, 576, 582, 583, 589, 596, 600, 615, 631, 638, 661, 690, 773, 1202.

National Register of Historic Places Documentation

[More than 80 patterned brickwork buildings have been listed in the New Jersey and National Registers of Historic Places. Copies of the corresponding Register nominations may be found at the New Jersey Historic Preservation Office, Trenton, NJ.]

Miscellaneous / Other

- Dorwart, Jeffrey M. *Cape May County, New Jersey: The Making of an American Resort Community*. New Brunswick, NJ: Rutgers University Press, 1992.
- Raabe, Christine R. "Pattern End Brick Houses: Leaving a Family Mark on the Landscape." C69-C72, "Down Jersey Lesson Plan." n.d.
- Ries, Heinrich; Henry B. Kummel, and George N. Knapp. *The Clays and Clay Industry of New Jersey*. vol.6 of the Final Report to the State Geologist. Trenton, NJ: MacCrellich & Quigley, 1904.
- Ring, Betty. *Girlhood Embroidery: American Samplers and Pictorial Needlework, 1650-1850*. New York: Alfred A. Knopf, 1993.
- Wacker, Peter O. "New Jersey's Cultural Landscape Before 1800." *Proceedings of the Second Annual Symposium of the New Jersey Historical Commission ... December 5, 1970*. Newark, NJ: New Jersey Historical Society, 1971.

Section E - Photos

Introduction



Figure 1 Detail of Abel and Mary Nicholson House, Elsinboro, Salem County, NJ, a National Historic Landmark.

Patterned Brickwork in England

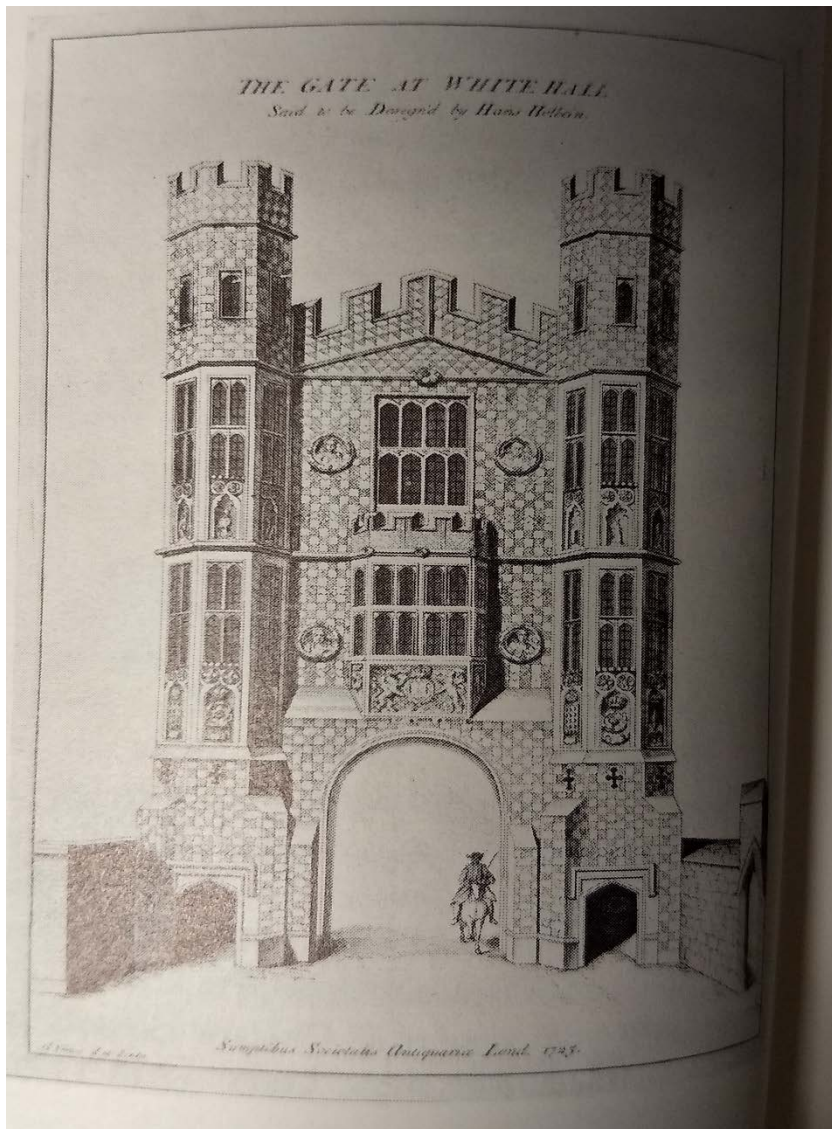


Figure 2 "Holbein" Gate, London, built ca.1530. The checkered effect was achieved with knapped flint.

The Making of Vitrified Brick

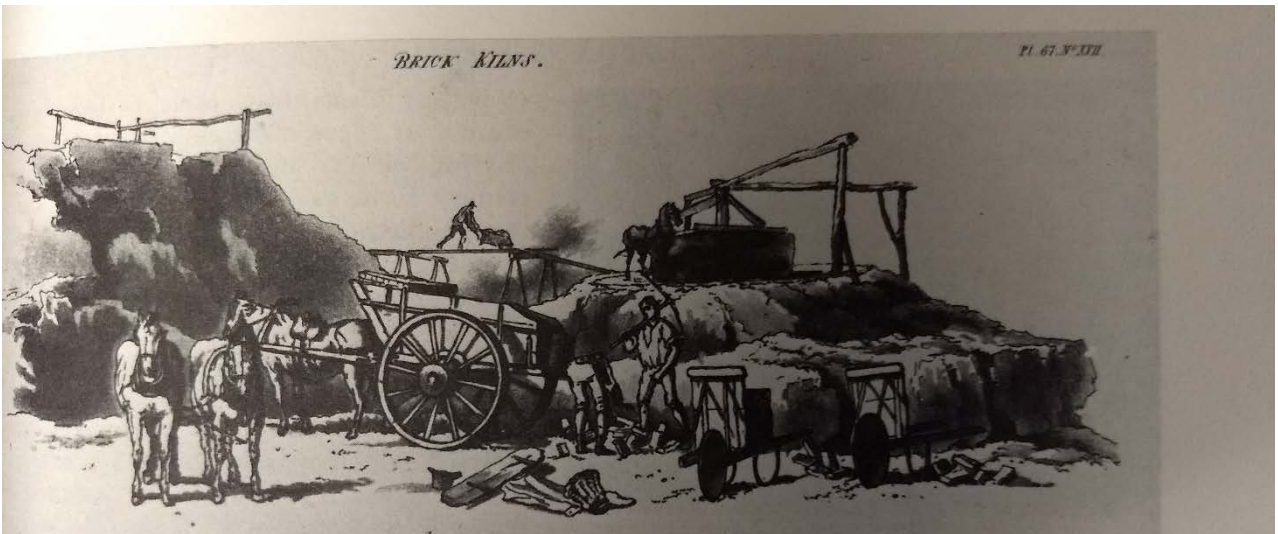


Figure 3 Digging the clay, and “pugging” it in a horse-drawn ring pit, a 17th-century technology.

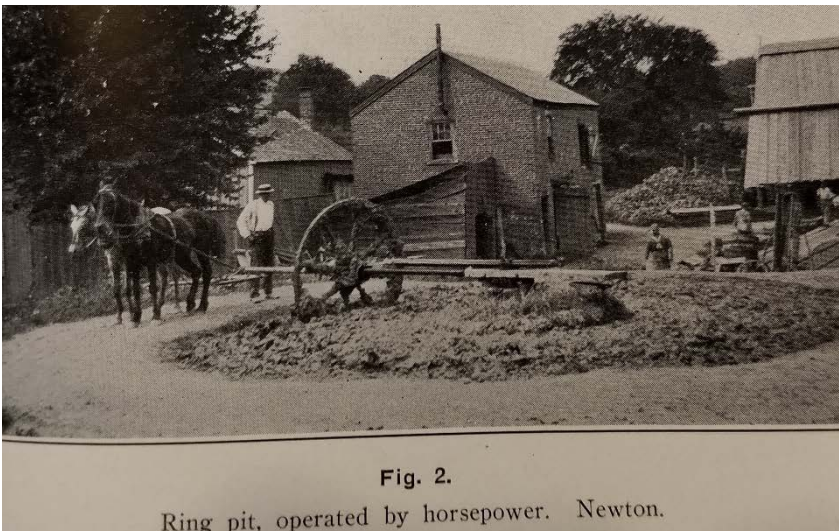


Fig. 2.
Ring pit, operated by horsepower. Newton.

Figure 4 The same technology, still in use in a small, NJ brick operation, ca.1900.

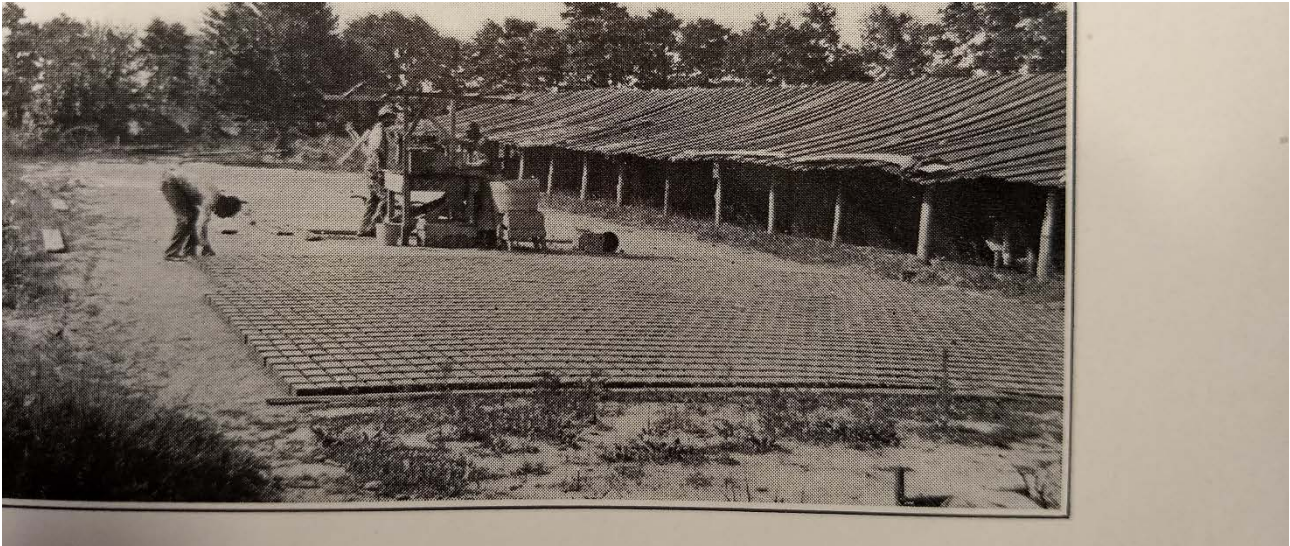


Figure 5 Laying the raw brick to dry, NJ, ca.1900. Note the drying shed in the background.

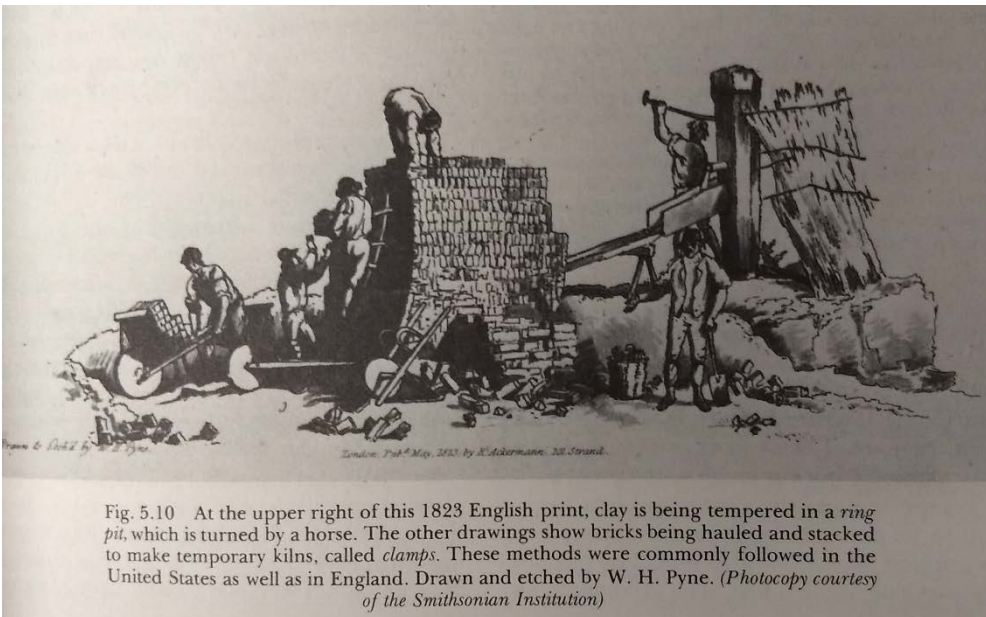


Figure 6 Primitive-type clamp, England, 1823.



Figure 7 Scove kiln (evolution of the "arches"-type clamp), in NJ, ca.1900

Patterned Brickwork in the Delaware Valley



Figure 8 The William Trent House, Trenton, NJ, National Historic Landmark.



Figure 9 Patterned brickwork comes in both formal versions (above) and vernacular ones.

The Spread of Patterned Brickwork in New Jersey



Figure 10 Mount Holly, NJ. Local stone was combined with patterned brickwork in some buildings.

A Spectrum of Colors

[Note: Dark grays, Yellowish/tan grays, and bluish tones were also achieved and used in New Jersey. The Samuel Swing house (1775) used a white brick. All but the white brick exhibit a dark ground color, upon which the colored, glossy finish resides.]



Figure 11 Black vitrified header



Figure 12 Light gray



*Figure 13 Bluish gray. The original color before surface deterioration was much bluer.
(Photo courtesy of Janet Sheridan.)*



Figure 14 Green



Figure 15 White brick - rare!



Figure 16 Off-white bricks, rubbed and gauged in a relieving arch.

Checker and Stringcourses



Figure 17 Flemish checker, above and below the water table, an unusual practice.

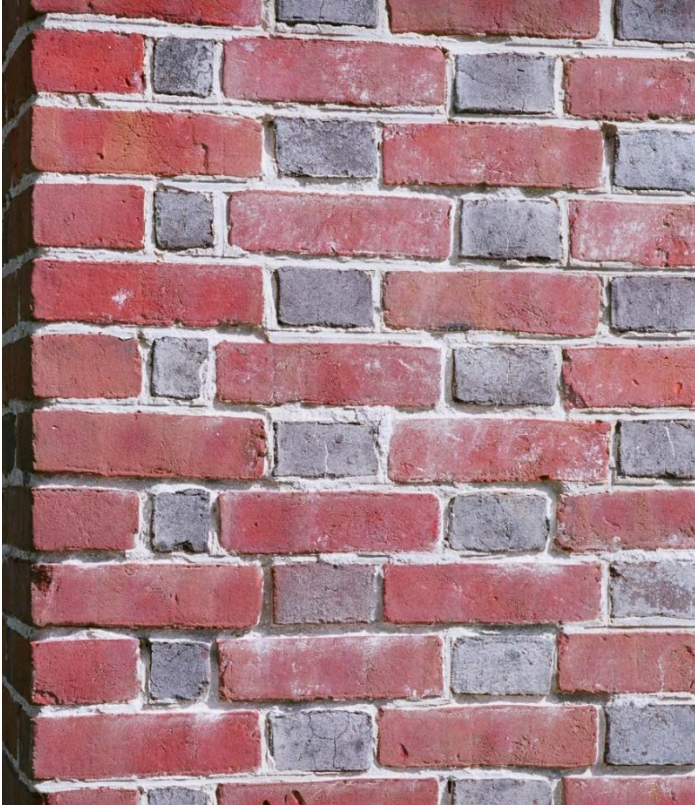


Figure 18 Flemish checker detail at corner.



Figure 19 Flemish checker in the stringcourse.



Figure 20 A variation on the stringcourse: headers, every other one vitrified, above a stretcher course.

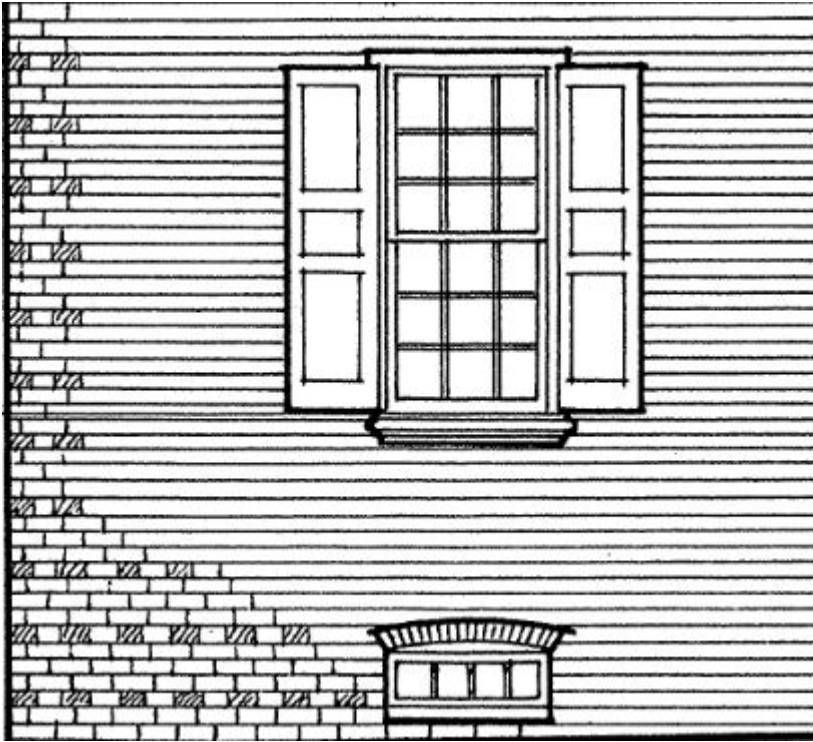


Figure 21 A rare variation on Flemish checker, used only half the vitrified headers. Dwg. from HABS NJ 282

Zig-zags and Banding



Figure 22 Banding, below the water table.



Figure 23 Pediment outline, with hollow diamond at apex.



Figure 24 Diagonals in the Somers Mansion.

Diamonds



Figure 25 Abel and Mary Nicholson House, Elsinboro Township, Salem County, a National Historic Landmark

Coronets and other designs



Figure 27 A simple coronet, with balanced date and owners' initials

Letters and Numbers



Figure 28 The initials are for John and Rachel Rogers. The "I" with two headers in the middle stands for a "J."



Figure 29 The figure on the left appears to be an awkward '5', not a '6.'

Of Cloth, Plainness, and Simplicity



Figure 30 and 22 Samplers and some of their patterns. The lower one was stitched in 1828.



Figure 31 A similar sampler.

Stucco



Figure 32 This part of the Abbott house was built in 1704; what patterned work is the stucco hiding?

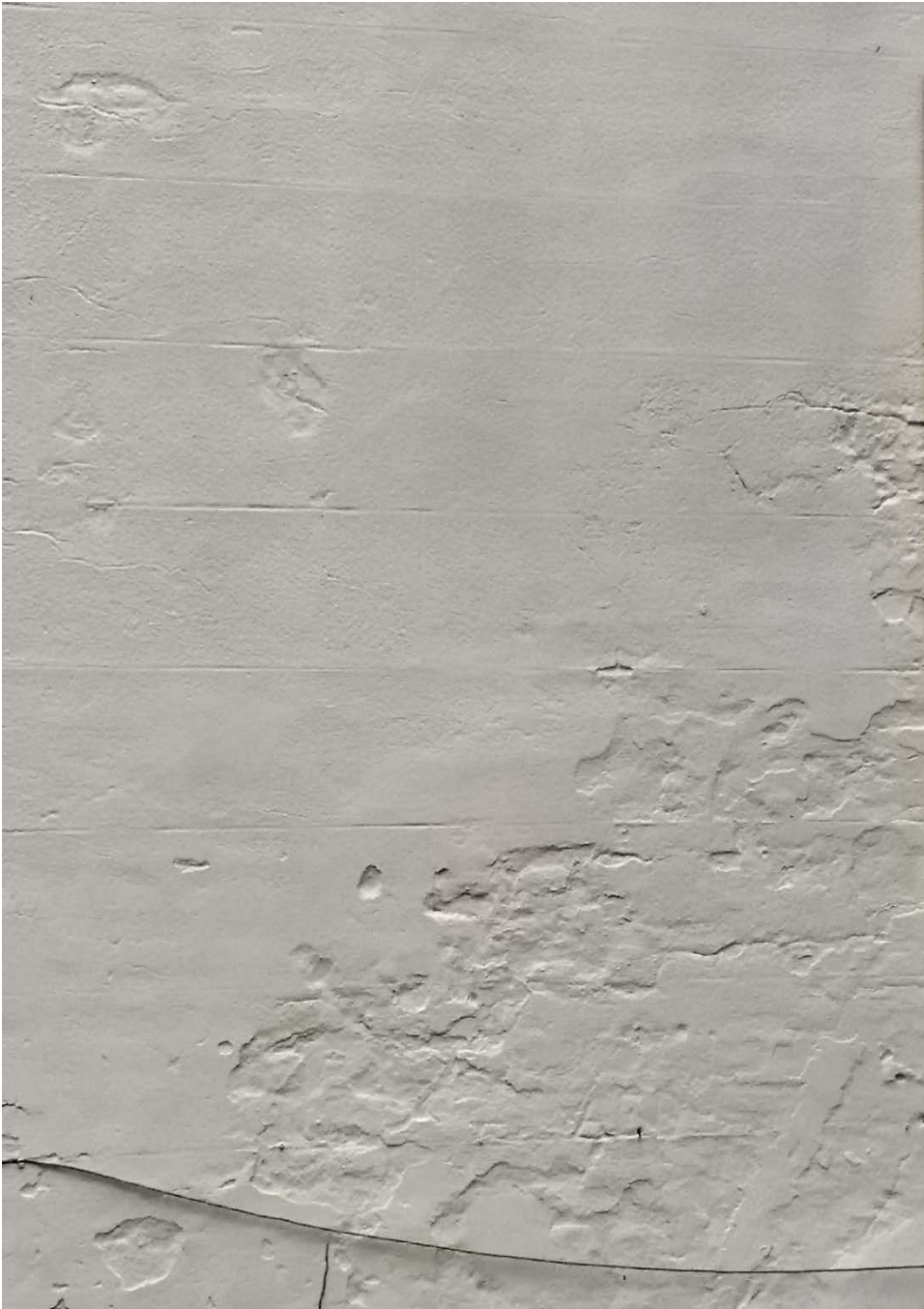


Figure 33 19th-century stucco was often scored to simulate stone masonry.



Figure 34 A stuccoed house from the 1740s, likely to be hiding patterned brickwork.



Figure 35 This Georgian house from about 1765 is believed to be hiding a Flemish checker facade.



Figure 36 This building has Flemish checker lurking under brickface.



Figure 37 Stucco eroding away...



Figure 38 Stucco spalling, slowly revealing a date.



Figure 39 The datestone was carefully carved to send a message; was it what the stucco is covering up?

Section F Photos

Type: Dwellings

Small House Subtype (free-standing variant)



Figure 1 Representative of the small house type. Columbus, NJ.

Small House Subtype (townhouse variant)



Figure 2 Some patterned brickwork townhouses abutted their neighbors.

Gambrel Roof Subtype – 1.5-story principal variant (still retains original form)



Figure 3 The Revell house in Burlington, built ca.1687.

Gambrel Roof Subtype – 1.5-story principal variant (enlarged to two stories)



Figure 4 Vitrified brick shows profile of gambrel roof before enlargement to two full stories.

Gambrel Roof Subtype - 2-story variant



Figure 5 The Somers Mansion, Somers Point, NJ, built in the 1720s.

William Tyler House Subtype



Figure 6 A rare house type, view of rear elevation. This example has a façade of Flemish checker.

Side-Hall House Subtype



Figure 7 Side-hall house, 3 bays wide, 2 rooms deep. Chiefly seen in counties from Camden northward.

Center-Hall House Subtype



Figure 8 Gibbon house, Greenwich, NJ, built ca.1730.

Friends Meeting House Type



Figure 9 Chesterfield Friends Meeting, built 1773, Burlington County, NJ.

Other Building Types

Religious Buildings (other than Quaker)

[photo not available]

[Note: Religious buildings that employed patterned brickwork included at least one Presbyterian church in Salem County that is no longer standing, and probably included some Anglican churches.]

Commercial buildings

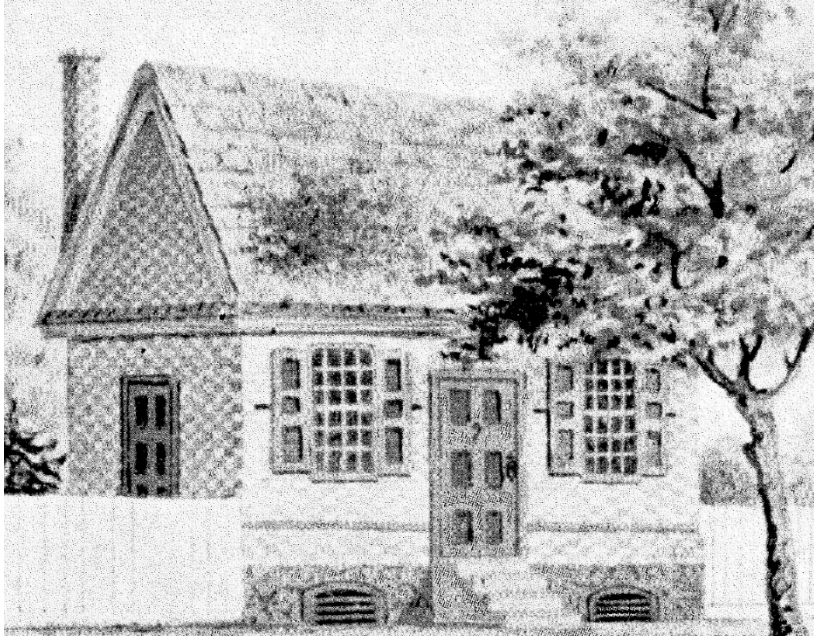


Figure 10. The print shop on High Street in Burlington, built in the 1720s[?], from a 19th-century painting by Francis Collins. Image courtesy of the Burlington County Historical Society. Used with permission..

Residences with accompanying commercial use



Figure 11 Townhouse with likely first-story commercial use. Burlington, NJ.



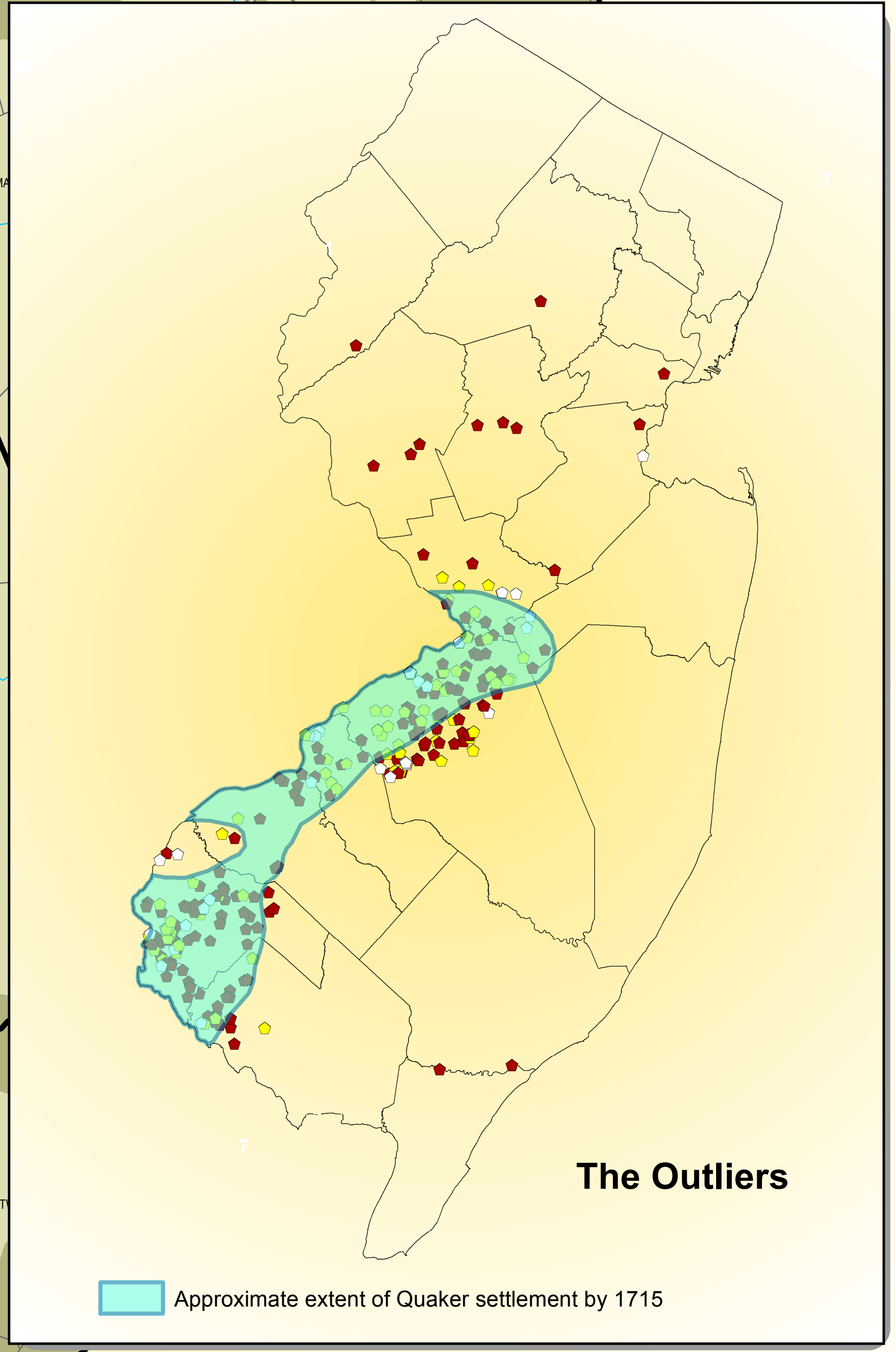
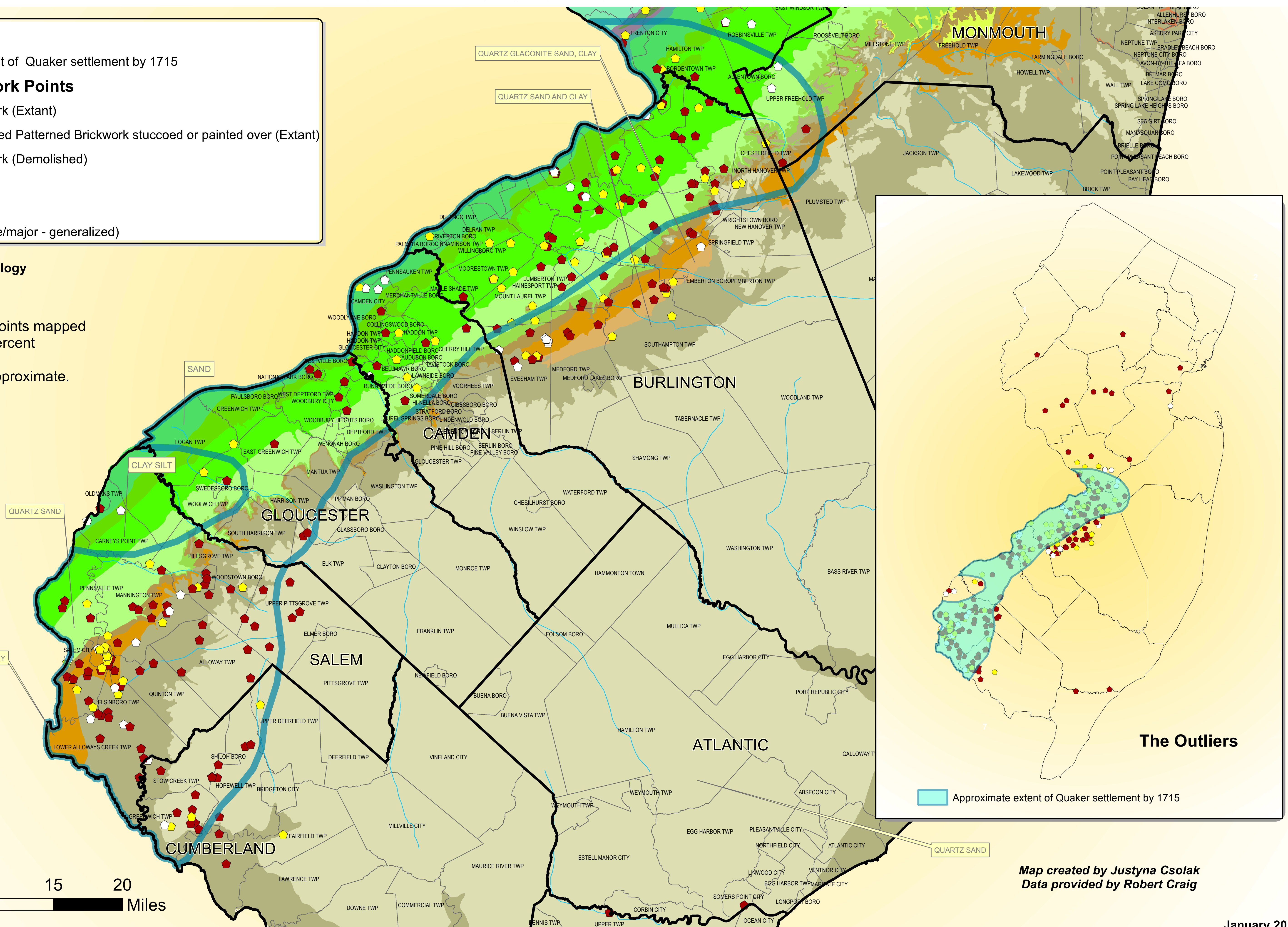
Traditional Patterned Brickwork in New Jersey ca. 1680-ca. 1830

Legend

- Approximate extent of Quaker settlement by 1715
- Patterned Brickwork Points**
 - Patterned Brickwork (Extant)
 - Known or Suspected Patterned Brickwork stuccoed or painted over (Extant)
 - Patterned Brickwork (Demolished)
- Counties
- Municipalities
- Hydrography (state/major - generalized)

Basemap: Bedrock Geology

Note: The number of points mapped represent nearly 80 percent of the actual number. Some locations are approximate.



Map created by Justyna Csolak
Data provided by Robert Craig