2007–2010
Interim Report
on the Preservation Virginia Excavations at Jamestown, Virginia

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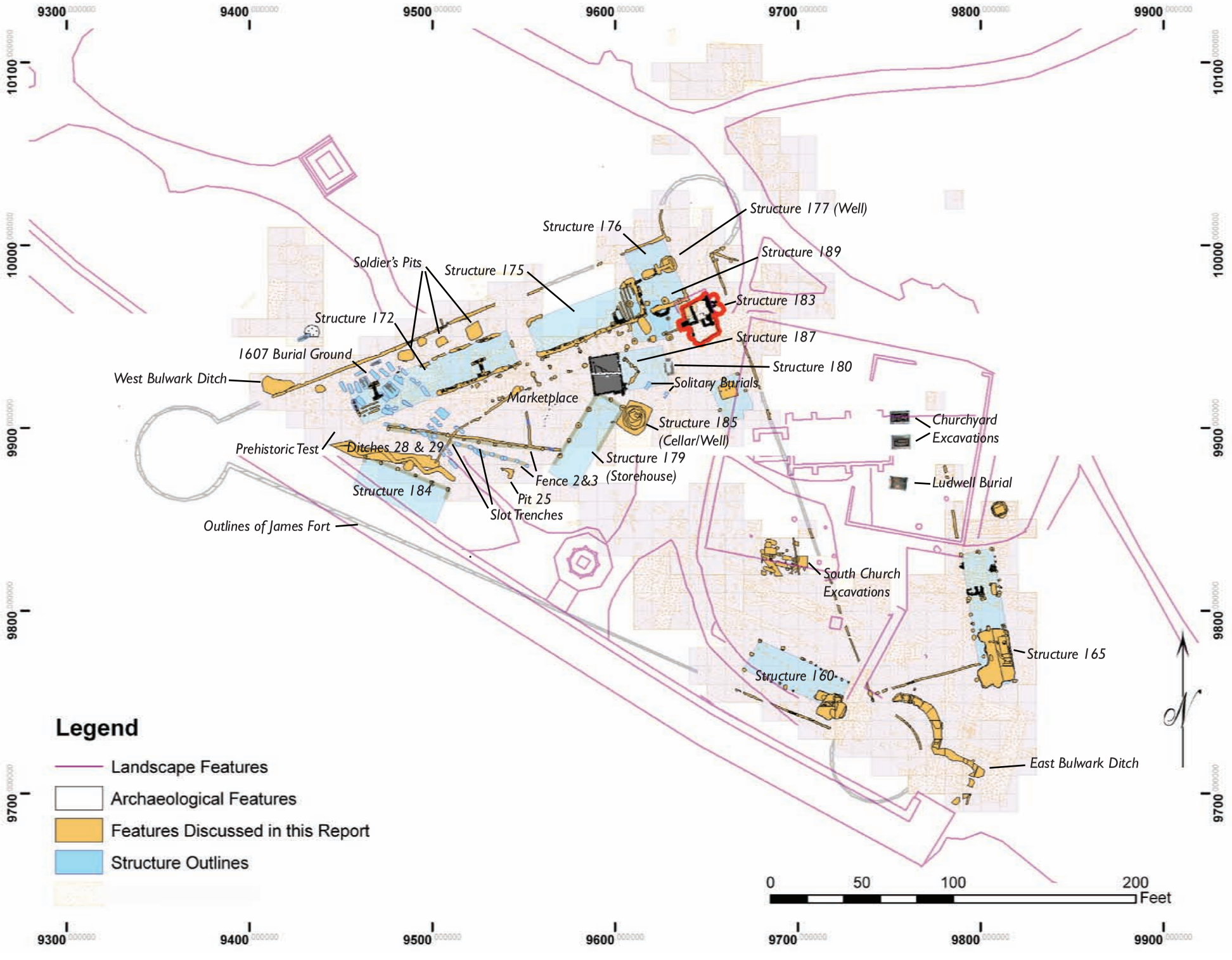
Jamestown REDISCOVERY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Graphics and maps by David Givens and Jamie May
Design and production by David Givens
Photography by Michael Lavin and Mary Anna Richardson

Acknowledgements (2007–2010)

The *Jamestown Rediscovery* team, directed by Dr. William Kelso, continued archaeological excavations at the James Fort site from 2007–2010. The following list highlights some of the many individuals who contributed to the project during these years.

The current *Jamestown Rediscovery* staff, responsible for synthesizing the work of the previous four years, consists of senior curator Beverly Straube; senior staff archaeologists Jamie May, David Givens, and Daniel Schmidt; senior conservator Michael Lavin; conservator Dan Gamble; staff archaeologists Mary Anna Richardson, Don Warmke, and Dan Smith; and assistant curator Merry Outlaw.

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Contents

Introduction

This is an interim report on the partial archaeological excavation of the 1607 James Fort site at Jamestown conducted 2007–2010 by the *Jamestown Rediscovery* team on the property of the Association for the Preservation of Virginia Antiquities (Preservation Virginia). The text and images discussed and presented herein attempt to describe and, to a limited extent, interpret the raw technical field data. Only the artifacts that primarily establish chronology and/or spatial interpretation are discussed. It is important for the reader to know that this report is in reality a collection of individual staff reports edited by William M. Kelso, Daniel W. Schmidt, and Beverly Straube. Therefore, discussion of each of the archaeological deposits stands alone and is usually not intended to be read as a synthesis of what precedes or follows it. In that sense, this document is an encyclopedic reference. Along with the technical reports that preceded it (1994–2006), this report is also part of the initial step leading toward the production of a final comprehensive interpretive account of the archaeological and historical research of the James Fort site. Production of that document must wait until the fort can be comprehensively investigated. This narrative, then, continues the 1994–2006 Interim Report series. It is helpful for the reader of this report to be familiar with *Jamestown, The Buried Truth*; the *Jamestown Rediscovery Series, I–VII*; and *Jamestown Rediscovery 1994–2004*. This report offers descriptions of the significant discoveries of the four excavation seasons 2007–2010 arranged chronologically by deposit date and by feature type: prehistoric, fort architecture, structures, pits, ditches, and post-James Fort. First, by way of introduction, a general description of the *Jamestown Rediscovery* field methodology, and a general summation of the archaeological findings of the entire project to date (1994–2010) are offered to put the newly reported technical data in context.

Field Methodology

The *Jamestown Rediscovery* archaeological program is controlled by a hybrid grid-based, area-excavation process. More specifically, a ten-foot square grid is the initial method for horizontal control during the removal of post 17th-century overburden. Whenever a wide area of 17th-century fill or features can be exposed, the determination of the spatial extent of individual features is defined based on soil color, texture, and/or inclusions. Then sequential excavation register numbers (*Jamestown Rediscovery*, "JR" numbers) are assigned to each discreet feature. Excavation of the features then depends upon the boundaries, orientation, and likely relation to James Fort (1607–1624), usually leaving more recent features mapped but unexcavated. This decision is also dependent upon whether or not an individual feature can be dated or spatially associated with the fort period without excavation. Once it is decided that a feature is likely to contribute to an understanding of the fortified area, its excavation usually proceeds by partial excavation to determine cultural deposition sequence, as shown by color, texture, or inclusion changes in the soil, each of which are sequentially assigned a letter of the alphabet (excluding the letters I, O, and U). In this manner, the JR number and letter establish each individual feature and each layer within it as a distinct context. Then the field drawings, photographs, and feature context data are added digitally to a GIS base map and are thereafter associated with their JR designations. Soil samples of individual layers are also collected and archived. Once features in an area are excavated and/or recorded, that area is covered with a geotextile fabric and backfilled, usually with 1'8" of spoil that has been screened for artifacts. At the time of this publication, about 15 percent of the 17th-century features uncovered have been partially or fully excavated, with the remainder preserved beneath geotextile fabric for future investigation.

1994–2006 Summary

The *Jamestown Rediscovery* Archaeological Project's archaeological research team has located and interpreted much of the 1607–1624 Jamestown fort enclosure, some of its associated buildings, two wells, pits, and burials.

1607–1624 James Fort/Jamestown

The excavations located and analyzed evidence of three upright timber walls (palisades) which once enclosed the one acre fortified settlement. Evidence of cannon emplacements, known as bulwarks, was found at each of the three corners of the triangular enclosure, as well as 1608 alterations to the shoreline bulwarks. Also within the confines of the fort walls, the excavations uncovered a single oversized, deep posthole that likely once held the fort's flagpole, and two early 17th-century wells.

Fort Buildings

Remains of the first fort buildings indicated small lean-tos with crude cellars constructed along the western wall of the fort, large communal shelters supported by a framework of forked trees set in the ground along the east and south walls, and post-supported buildings, including a storehouse and a metalworking/bakery shop. Also found were backfilled, artifact-rich earthen cellars within the post-frame structures, and time-capsule-like deposits of thousands of artifacts lost during the town's first three years. These deposits held caches of arms, armor, ammunition, metallurgical testing equipment, medical instruments, craftsmen's tools, pottery for cooking, serving, and storage, as well as glassware, trade goods, and an extensive collection of Virginia Indian Contact Period pottery, tobacco pipes, stone tools and weapons, and shell beads. Building remains found to date indicate that by ca. 1610/11, carpenters had changed building forms from the crude post-in-ground type construction to more sophisticated multi-storied timber buildings built upon stone and brick footings. These more permanent, long "row houses" were almost certainly built for the resident Virginia Company governors and their councilors; documents show the governor's house was expanded by 1617.

Fort Burials

The excavations uncovered an unmarked burial ground within the fort near the west gate. It contained over thirty-four graves. Archaeological tests of the burials, and their location beneath the footing of the councilors' house, indicate that these are the skeletal remains of the Englishmen who died during the summer of 1607. Also, near a barracks site, two early 17th-century graves were uncovered: a European man who had died of a gunshot wound, and an elderly woman. Nearby, outside a gate of the fort, a single grave of a captain was found. This is very possibly the grave of Captain Bartholomew Gosnold, who died on 22 August 1607.

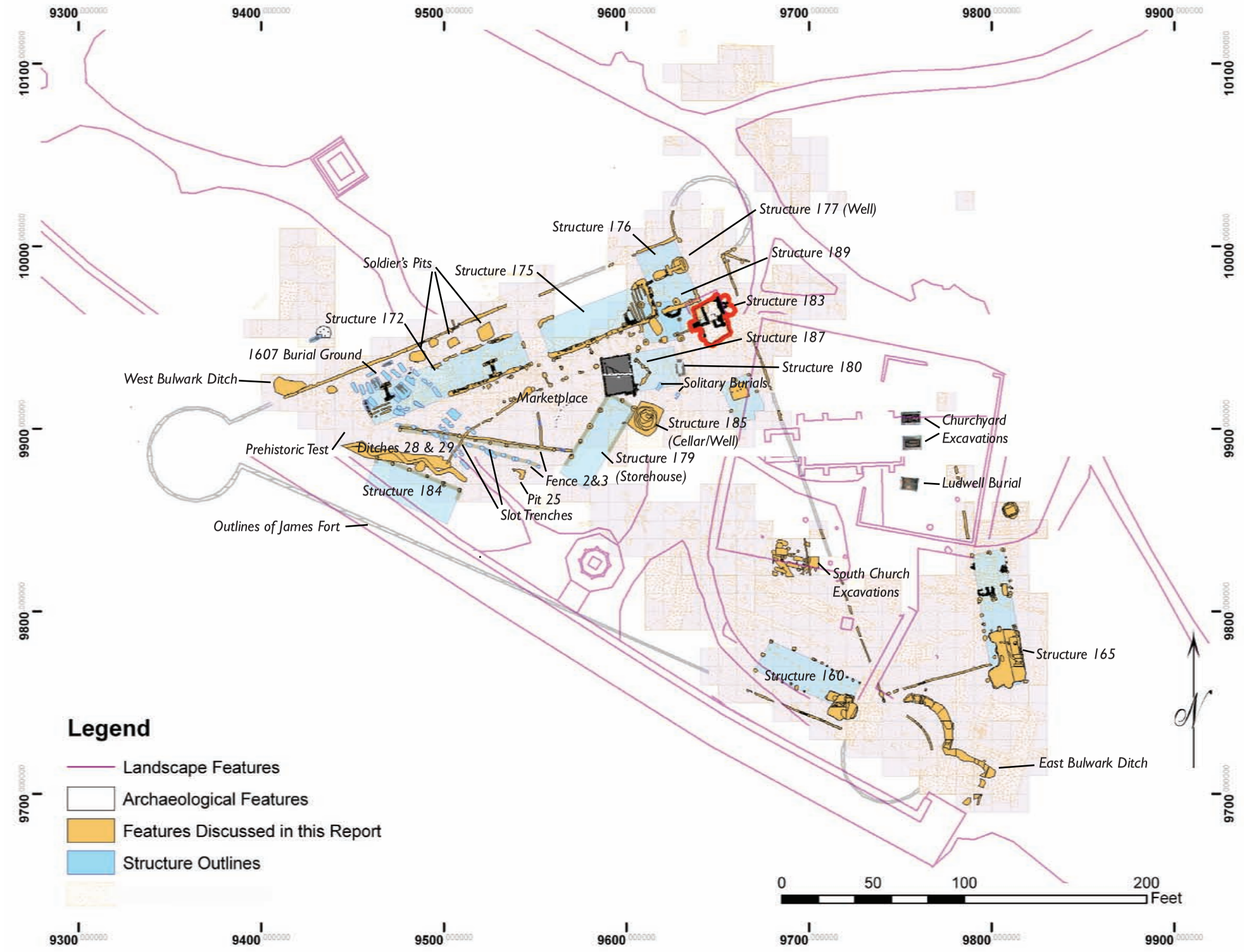
Wells

West of the fort, in a military drill field referred to as Smithfield, a brick-lined well filled with armor, tools, and early 17th-century domestic refuse was excavated. Two other wells were found inside the fort: one that Captain John Smith directed to be built at the center of the fort, and another near the north bulwark as a replacement for the Smith well. The hundreds of thousands of artifacts found in these wells comprise one of the most tightly dated and varied, world class collections of the Late Elizabethan–Early Stuart Period known.

Post-Fort-Period Features

As features from later periods were encountered during the James Fort study, many new ones were recorded, but generally left unexcavated. These include mid to late 17th-century features, Revolutionary and Civil War features, and features associated with more recent agricultural and APVA land use.

William M. Kelso
Jamestown, 1/30/12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Prehistoric Period

During the summer of 2007, archaeologists conducted open-area excavations in the southwestern section of the James Fort triangle in search of any architectural features that had been originally built along the south "street."[1]

To reach the intact 17th-century strata, archaeologists first excavated layers of soil that composed the remnants of Fort Pocahontas, a Confederate shore battery, as well as nearly 1'6" inches of plowed soils.

Removal of the overlaying strata revealed a number of features including building postholes, fence lines, ditches, and graves. In addition, the overburden contained a large number of plow-disturbed prehistoric and proto-historic artifacts that were also noticeably embedded in homogenous and intact layers below the plowzone. Although this intact soil layer had been investigated elsewhere before, the area suggested that plowing had not impacted soil strata as deeply as in other portions of the excavated area within the interior of James Fort.[2]

A one-meter test unit (JR2382) was excavated in 5 cm increments in an area exhibiting a high density of surface artifacts. Previous tests into this stratum had revealed soils composed of deflated organic loam making it difficult to ascertain distinctive cultural layers.[3]

The initial 5 cm of the strata (JR2382A) contained a sizable number (n=26) of prehistoric sherds of various typologies and temporal periods. Two mendable sherds were Varina ware, which is a Middle Woodland ceramic composed of a dense paste tempered with coarse sand or gravel and is generally thought to date from B.C. 500–A.D. 200.[4] The mended sherds show cord-marking on the surface and appear to incorporate the rim, although wear makes this difficult to determine.

Figure 1. University of Virginia Summer Institute students excavating JR2382

Figure 2. Notable artifacts recovered in JR2382: Varina ware type (upper left), Mockley (left, center), Townsend (right), quartzite preform (lower left), and calcined bone (center)

Two of the sherds could positively be identified as Mockley, a Middle Woodland (A.D. 200–900) shell-tempered ware.[5] Both sherds exhibited cord-marked surface treatment but differ in paste color and thickness indicating each to be from different vessels. Thirteen of the sherds from this context were too small to be identified from surface attributes, but most exhibited shell tempering indicative of the Late Woodland. The remaining nine sherds comprised two vessels of Townsend ware, a proto-historic ceramic produced in the Tidewater from the 10th century A.D. until the early 16th century.[6] The outer surfaces of all the sherds are fabric-impressed and two were rim fragments. The rim of the vessel was tapered and slightly excurvate with rim stamping approximately every 7 mm. In addition to ceramics, a number of faunal items were recovered in this initial test as well: two oyster shell fragments and fifteen fragments of bone. Much of the bone was small and some of it calcined, however several examples could be identified as bird. It should be noted that no lithic materials were found.

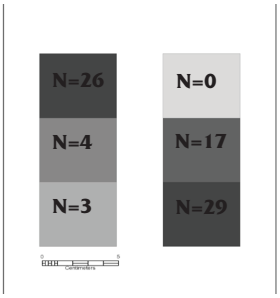

Figure 3. Density of ceramics (left) and lithics (right) by 5 cm layers in JR2382

JR2382B, the next arbitrary layer at 5–10 cm, yielded only four sherds of pottery and fifteen bone fragments. Three of the ceramic fragments were too small to be identified, and the fourth appeared to be Varina ware with unidentifiable surface treatments.

Lithics from this layer consisted of primary quartzite reduction debris (n=3), quartzite secondary debris (n=8), and quartz and quartzite tertiary flakes (n=6).

The terminal layer of the test, JR2382C (10–15 cm), yielded three sherds of pottery and three unidentified fragments of calcined bone. The sherds of pottery were far too small to identify the ware type based on exterior surface treatment. Of the three, one was shell-tempered and the other two appear to have sand or gravel temper suggesting that they are of the Varina ware typology.

There was a marked increase in the density of lithic reduction debris, along with tools and one biface. Three quartzite hammer stones of varying size were found in this layer, as was a quartzite biface in a very early stage of production. Lithic reduction debris found with the tools include primary (n=2), secondary (n=6), and tertiary (n=15) flakes of both quartz and quartzite. Larger cortical core fragments of a quartzite cobble and fire-cracked rock were also recovered.

Test JR2382 indicates the existence of intact layers below James Fort. These strata represent occupation by Virginia Indians thousands of years prior to the settlement by Europeans in the 17th century. Testing also indicated that the sampling strategy of 5 cm levels was fruitful and suggests a rich deposit of cultural material dating from the Late Archaic to proto-historic time periods. The findings of JR2382 are indicative of a pattern of continual occupation for potentially 700 years prior to the arrival of the English.

Additional testing of this deflated soil has the potential to increase our understanding of several aspects of Virginia Indian culture including settlement patterns, food procurement and seasonality, tool production, and local and regional trade patterns.

Endnotes

[1] William M. Kelso et al., *Jamestown Rediscovery VII*. (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 2001), 26.

[2] William Kelso and Beverly Straube, *2000–2006 Interim Report on the APVA Excavations at Jamestown, Virginia* (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 2008), 96.

[3] *Ibid.*

[4] Robert L. Stephenson, Alice L. Ferguson, and Henry G. Ferguson, "The Accokeek Creek Site: A Middle Atlantic Seaboard Culture Sequence" (Anthropological Papers, Museum of Anthropology, University of Michigan, No. 20, Ann Arbor).

[5] https://digitalarchive.wm.edu/bitstream/handle/10288/1247/HaydenAnna2009.pdf? sequence=1. (accessed January 12, 2012)

[6] Keith Egloff, and Stephen R. Potter, 1982 "Indian Ceramics from Coastal Plain Virginia" (Archeology of Eastern North America 10 (1982), 95–117.

James Fort Period (1607–1624)

James Fort Structures

Structure 176: Governor's House Foundation Test (JR2590)

A 2' by 1' test, JR2590A, into the southern foundation of Structure 176 in the fall of 2008 exposed cobblestones and mortar that likely supported a timber sill for a framed structure. A Caribbean andesite and an English flint cobble were present in the foundation trench, which was found to be 3" deep with a level bottom. Other features associated with Structure 176 were discussed in the 2000–2006 Interim Report.[1]

Figure 4. Test JR2590 into the foundation of Structure 176 (facing west)

Structure 176: Southern Addition (JR2331, JR2351, JR2334, JR2369, JR2484, & JR2326)

Excavations in the 2007 field season revealed evidence of architectural elements associated with Structure 176, south of the structure's main body. Three large postholes (JR2331, JR2351, JR2484), a line of plaster 14' long by 8" wide, and several sections of foundation trench were likely evidence of an addition to Structure 176. The plaster, JR2334, was found partially covering two of the postholes and formed a line between them, suggesting that the features were associated. The plaster and posts were oriented in relation to, and 11' from, the southern end of Structure 176. Additionally, a section of foundation connected to the south of Structure 176's southeastern corner foundation was found extending from it. Finally, a small concentration of cobblestones and brickbats, JR2369, may also relate to Structure 176. One of the postholes, JR2484, and a section of the plaster line were constructed on top of Structure 183's backfill, which demonstrated that Structure 183, an earlier cellar, had been filled prior to the construction of this addition.

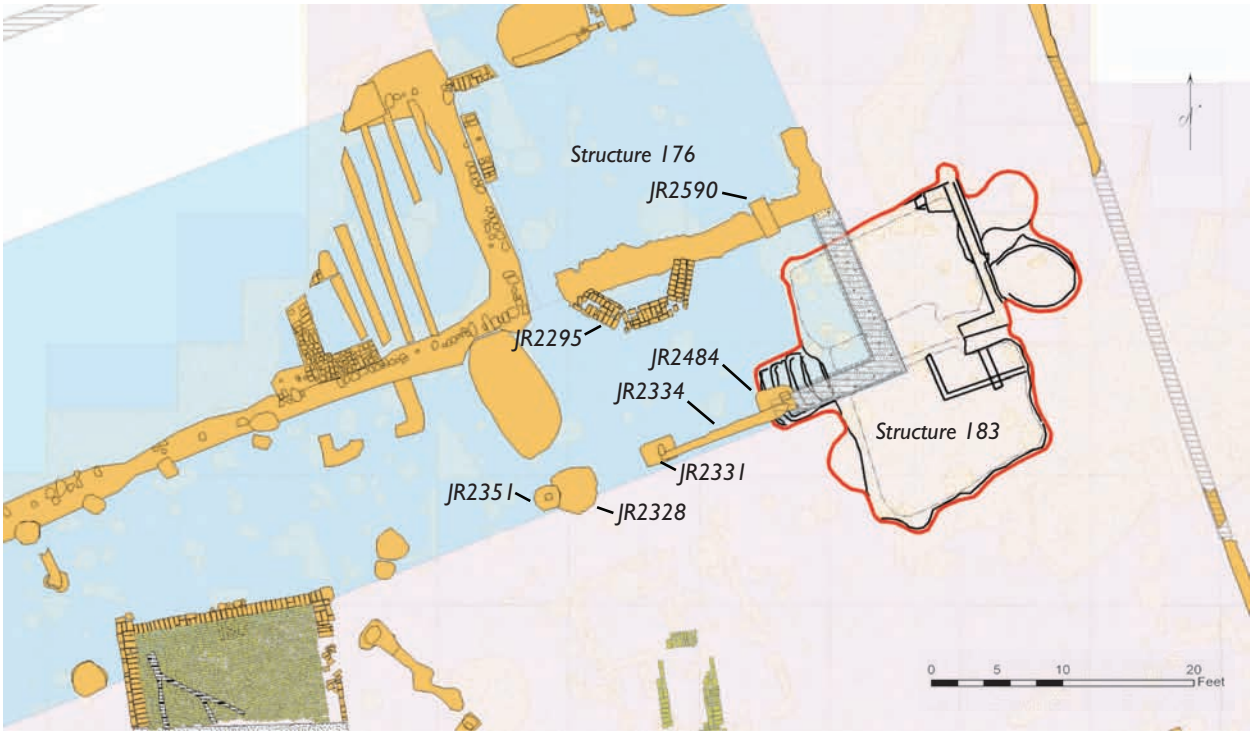

Figure 5. Structure 176 site plan

All three postholes associated with the plaster have been partially excavated. The southern halves of JR2331 and JR2484 were removed. The easternmost post, JR2484, disturbed the subsoil steps of Structure 183, and a section of the posthole was removed to create the former shape of these steps. In plan, the posthole was rectangular measuring 1'9" by 2'4". The circular postmold, JR2484A, was 6" in diameter and consisted of a reddish brown sandy loam. Artifacts included a London distilling dish, lead sprue, and faunal remains. The posthole fill, JR2484B, was a compact clay/loam mix with a yellow/brown appearance. It contained local and English clay tobacco pipes, a sherd of tin-glazed earthenware, case bottle glass, and faunal remains.

JR2331 and JR2351 were similar to JR2484 in shape and size, and had round postmolds. The centers of the postmolds were 9'5" apart. JR2331 had a mold that was 7" in diameter and 2' deep. JR2351 had a postmold 7" in diameter and was roughly 1'6" deep. JR2351 had been partially disturbed by a large posthole, JR2328, from Structure 189, a mid-17th-century post building.

A 4' section of the plaster line, JR2334, above Structure 183's fill was removed. The plaster was 1½" thick, and likely was from the destruction of a wall that had been supported by the two posts. The plaster line may have formed as plaster fell from the decaying wall and settled into a trench that secured lath and/or studs for the wall. In addition to sealing Structure 183's fill, and that of the two postholes, the plaster also sealed the native horizon and an amorphous orange lens of clay, JR2326A. The purpose of this clay feature remains unknown.

Figure 6. Partially excavated posthole JR2484 and Structure 183 steps

Figure 7. Bisected posthole JR2331 (facing north)

The foundation extending south from the southeastern corner of Structure 176 was 1'6" long. This section of foundation appeared connected to, and therefore contemporaneous with, the original structure. The connection suggests this was not an addition, but rather part of the initial construction; the relationship, however, was not exactly clear. The southern branch of the foundation may have once continued; if so, it was interrupted by Pit 16, which impacted this area of the site.[2]

Figure 8. Plaster remnant of decayed wall

The cobblestone and brickbat concentration, JR2369, may also relate to the Structure 176 addition as it was in line with the plaster and two postholes. JR2369 had settled 1'3" into the fill of Structure 183's cellar. Artifacts from this feature include an industrial brick, a ca. 1610–40 English white ball clay tobacco pipe bowl, and two Border ware vessels: a green tripod pipkin and a brown mottled mug.

The probable location of this addition was problematic because it potentially blocked any vista from the three-sided brick foundation, JR2295, found extending from Structure 176's southern wall. JR2295 was interpreted as the foundation of a bay window, balcony, or small gun platform, all three of which would ordinarily require an unrestricted view. If this interpretation is correct, the postholes and plaster are probably not from a large building addition, but are instead from a plastered wall for a small one-story enclosure to the south of Structure 176.

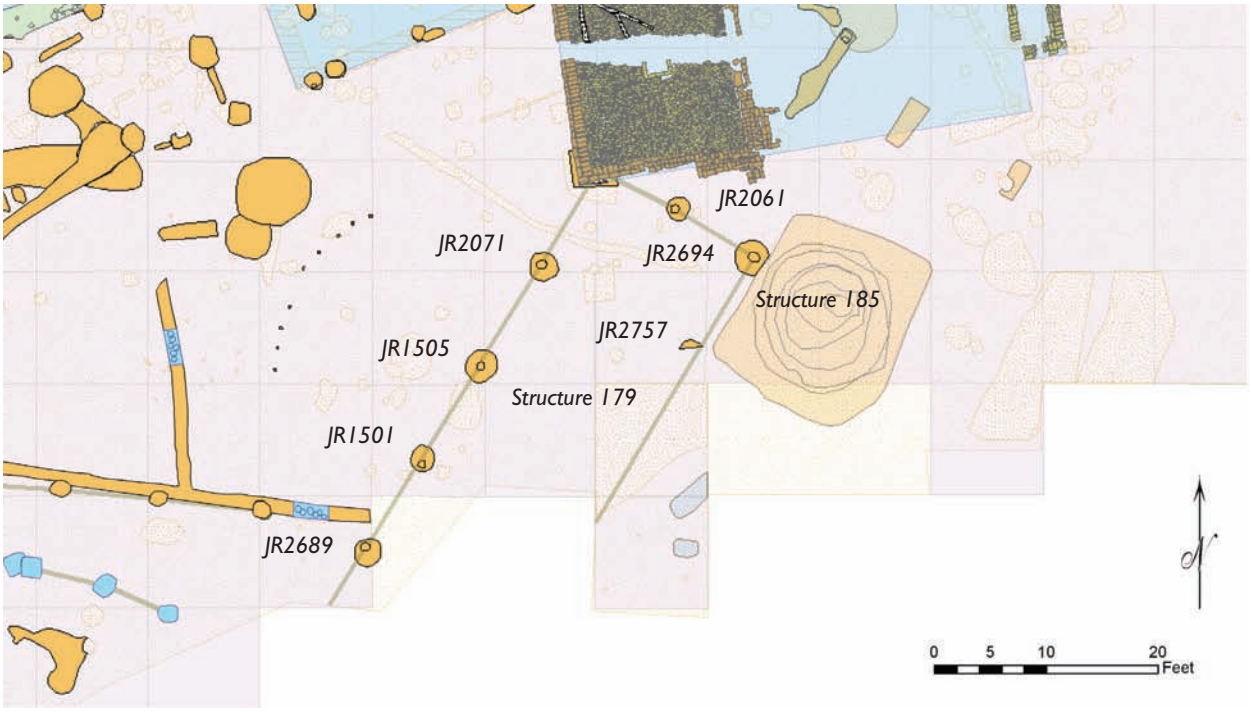

Figure 9. Posthole plan with conjectural building outline

Structure 179: Storehouse

During the field seasons of 2008 and 2009, three more postholes were found associated with Structure 179, the probable storehouse. The discovery of these posts has added considerably to our understanding of the size of the building. Moreover, excavations have revealed a large adjacent cellar/well, Structure 185, presenting the possibility that Structure 179 had a later addition.

In 2008 a large posthole, JR2689, was found on the same line as three postholes (JR1501, JR1505, JR2071) from Structure 179's western wall. JR2689 was nearly identical in fill composition and size to the three previously discovered posts. The top of JR2689 had been impacted by the defensive ditch in front of the Confederate fort, but enough of the posthole remained undisturbed to retrieve the following information. The posthole measured 2'4" in diameter with a mold measuring about 8" in diameter; this posthole was not excavated. The four posts from the western wall were spaced evenly on 10' centers leaving no doubt they were part of the same structure. A fifth post in this line to the north had been lost to the construction of a later 17th-century brick-lined cellar, Structure 180.[3] Structure 179 was at least 40' long. The building may have been longer, but activity relating to the construction of the Confederate earthwork significantly stripped the area south of JR2689 of soil in order to form the earthen mounds used for the 1861 fort.

In the 2009 field season, the field crew investigated a 20' by 10' area to the south of JR2689 in search of more posts. The 10' by 10' grid units assigned to this area were JR2745 and JR2746. No postholes were found in these grid units, possibly as a result of Civil War related actions. The bottom elevations of previously excavated Structure 179 posts were slightly higher in elevation than the level where subsoil was first encountered in the 20' by 10' area of investigation. This fact left little doubt that had the storehouse extended further south of JR2689 (the southernmost post), all evidence of it was gone. The full dimensions of the storehouse now appear likely to remain elusive. The discovery of two more postholes from Structure 179 on the northern end of the building, however, would shed some light on the overall width of the structure and the location of its northern terminus.

Found 8' to the east of JR2061, a previously suspected storehouse post for the northern end of Structure 179, was another unmistakable storehouse post, JR2694. Like all of the postholes found on the western wall of the storehouse, JR2694 was large, measuring 3' in diameter with a 10" diameter mold. Although the posthole was not excavated, the fill composition looked identical to all other posts associated with the structure. The fill on the eastern end of JR2694 had been partially disturbed by the cellar of Structure 185, but the mold remained unaffected. Structure 185 was a contemporaneous structure, and it likely was an

Figure 10. Postholes JR2694 & JR2757, Structure 185 cellar (right)

addition to Structure 179. The location of this cellar due east of posthole JR2694 meant that there were no more postholes associated with Structure 179 on this E/W line, which verified that JR2694 represented the northeast corner post to Structure 179. It also made it apparent that JR2061 had been a center post on the northern end of Structure 179, spaced 8' from JR2694.

The discovery of yet another posthole from Structure 179 to the south of JR2694 confirmed that Structure 179 had been approximately 16'6" wide. This posthole, JR2757, was heavily disturbed by construction of the Civil War moat, but enough remained to be certain that it once had been a sizable posthole. Its fill composition was the same as the other posts, and the projected center of the post was exactly 10' from the center of JR2694 to the north—the same spatial arrangement as the posts on the opposite west wall.

At Jamestown's sister colony from 1607, the Popham Colony in Maine, there is a parallel for a contemporaneous storehouse with dimensions similar to those of Structure 179. The Popham Colony only lasted one year, but during that short time Fort St. George was built. Archaeologists have uncovered the remains of the fort's buildings, which included a storehouse that was 69' long by 19' wide.[4] The posts along the length of the building were spaced at 9'6" centers, which was nearly the same as Structure 179 with a spacing of 10' centers.[5] Furthermore, James Fort's storehouse was similar in width, measuring about 16'6" wide.

The Jamestown storehouse may have been roughly 70' in length like the storehouse at Fort St. George. The only size description of the James Fort structure, however, was from colonist Ralph Hamor, who wrote that it consisted of "three large and substantial storehouses joined together in length some hundred and twenty foot, and in breadth forty."[6] Hamor's dimensions do not at this point match up with the archaeological record. The length of 120' would have the current storehouse practically touching the southern palisade, which does not correspond to what is known about the streets between the fort's buildings and palisades. According to the documents, the principal gate to the fort was located along the south palisade.[7] It would not be practical to have a structure abutting the middle of the south wall, thereby inhibiting traffic flow along that wall. However, a small section of what appears to be part of a robbed-out foundation, Structure 187, lies roughly 20' to the north of the northern end of Structure 179. If this feature was a part of the storehouse complex, and that complex was truly 120' in length, then this scenario would allow for a gap of 20' before the south palisade wall, which would be a more logical distance. JR2709 will be explored further in the 2010 field season. As for Hamor's description of the storehouse being 40' in "breadth," there has been no archaeological evidence for this dimension.

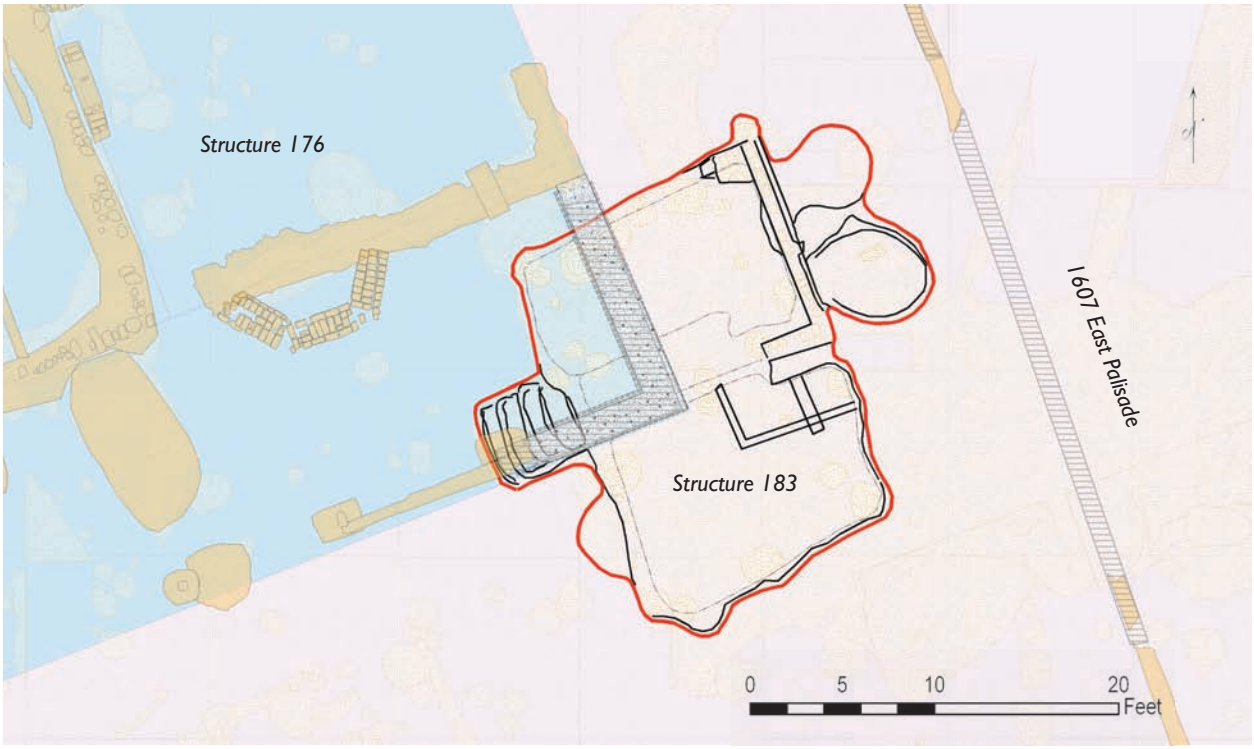

Figure 11. Map of Structure 183

Structure 183: Metalworking/Bakery Shop (JR2361)

In the summer of 2006, archaeologists discovered Structure 183, a James Fort cellar (1607–1617) located in the north end of the fort, parallel to and 10' from the eastern palisade. The structure was rectangular in shape, 16' by 20'. The superstructure of the building was supported by posts set deep in the cellar floor. The stratigraphy of the cellar indicated that its purpose changed several times before eventual abandonment and subsequent use as a rubbish pit.

The fill in Structure 183 was first exposed after the removal of Confederate earthwork fill and plowzone in 10' by 10' grid excavation unit JR2251. A test unit, JR2292, was initiated into the fill maintaining the grid boundaries of JR2251. The purpose of the test was to establish stratigraphic control, and to determine the relationship of the fill to adjacent features. The test unit went to a depth of 2', defining multiple layers. Probing the fill at the 2' depth indicated that it was at least 5' deep. The test revealed that the stratigraphy here was complex and that it was necessary to uncover a larger area of the site to best understand it.

To accomplish this task, the overburden, plowzone, and Confederate earthwork fill in the surrounding grid units were removed. The expanded excavation uncovered the limits of Structure 183 and the other features impacting it. The latest of these features was Ditch 27, a late 17th- or early 18th-century zigzag boundary ditch that ran from north to south through the Structure 183 fill.[8] Pit 6, a large amorphous feature, was disturbed by the boundary ditch and, in turn, disturbed Structure 183's fill.[9] The contexts from Pit 6 that impacted Structure 183 included JR2361B, JR2360A, and JR2360B. The foundations of Structure 176 lay above Structure 183. This building foundation was determined by earlier excavations to be an addition to Structure 176 that may have been built during Captain Samuel Argall's tenure as governor when the "governor's house" was improved upon between May 1617 and April 1619.[10]

Features from Structure 176 that disturbed Structure 183 included an E/W line of postholes. These features include one post (JR2484), a line of plaster (JR2334) that extended between and through the postholes, and a possible section of foundation, which had settled into the cellar. A line of brickbat and cobble rubble, JR2369, may have been the remnants of Structure 176's foundation. Finally, the earliest feature to impact Structure 183 was Pit 16. It was approximately 6' in diameter and appeared to have been used to mix mortar. The contexts of this feature included JR2359A–F, and the pit is believed to have been a late James Fort period feature ca. 1617–24, possibly related to the nearby construction of the probable governor's residence, Structure 176. Excavations of Structure 183's cellar, JR2361, began after the more recent features were removed. The first layers to be excavated were layers of backfill deposited after the cellar was no

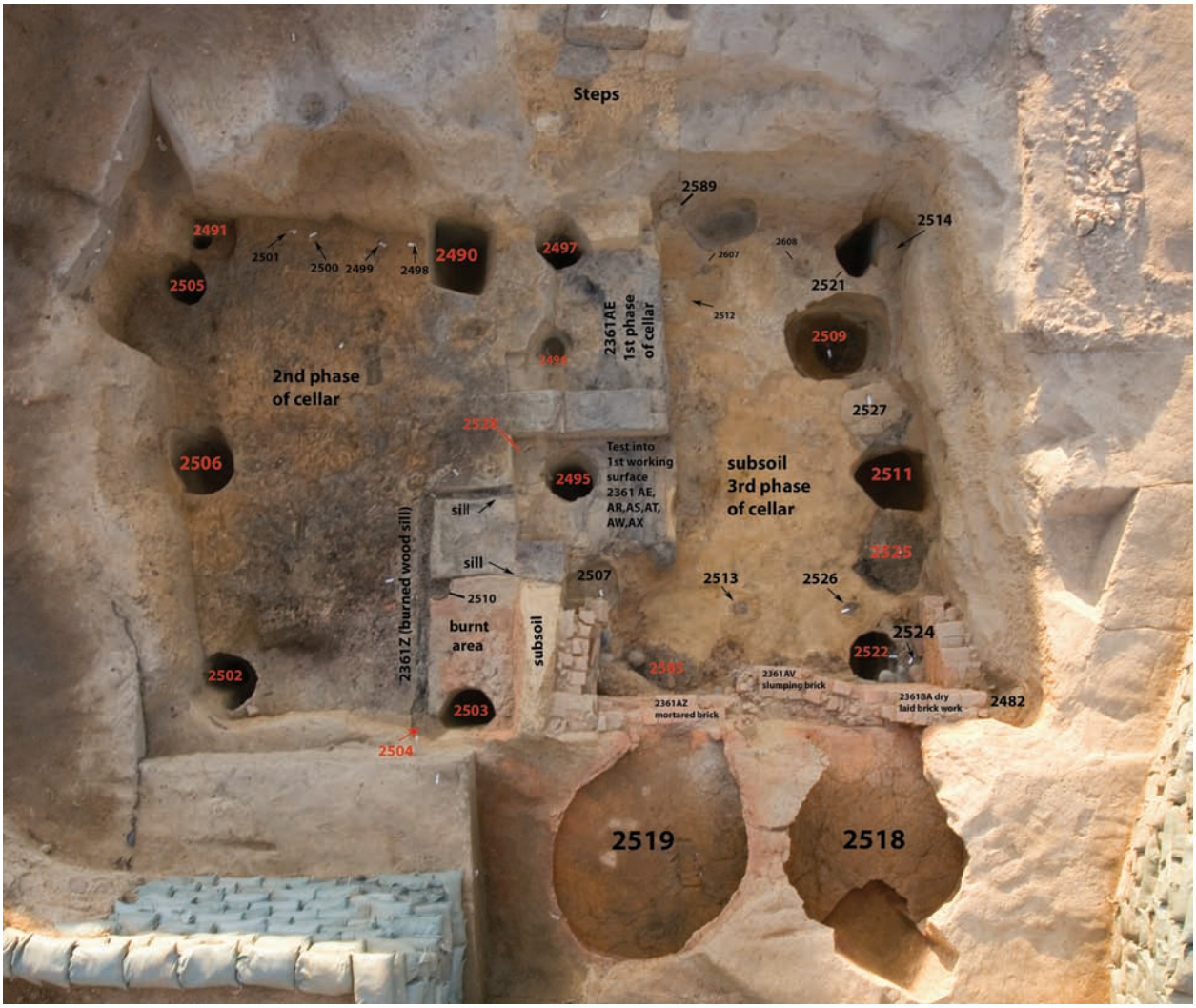

Figure 12. Structure 183

longer in use. All cellar fill was water screened through a 1/8" mesh screen. The following layers made up the bulk of the fill in the cellar: JR2361A, C, D, E, H, J, L, M, N, P, and R. Layers JR2361A, C, and D were the uppermost layers of fill and all three proved to be rich in artifacts. JR2361C, at the top of the cellar fill, was made up of dark brown sandy loam with charcoal, oyster, and brick inclusions. JR2361A was sealed by JR2361C and consisted of a sandy loam with heavy ash concentrations throughout. The next substantial fill layer was JR2361D, which consisted of a waxy loam and clay mix, brown and grey in appearance. Inclusions in this layer were ash, brick, and charcoal. JR2361D was an expansive layer covering much of the cellar. Layer JR2361H, an ashy fill lens, was found within layer JR2361D, and therefore deposited at the same time.

Layers JR2361E, J, P, and R comprised the fill that sealed the cellar's occupation layers. These strata consisted mostly of clay and yielded a substantial amount of brickbats. It would later be determined that the heavy concentrations of brickbats were the remains of a partially collapsed brick flue in the northern half of the cellar. JR2361J had heavy brick concentrations, a result of its proximity to this brick façade. JR2361E covered nearly the entire surface area of the cellar and yielded 207 kg of brick. Evidence of grass tempering could be seen throughout the clay in these layers, suggesting that this mixture was used in the structure's mud walls or as a bonding agent in some other portion of the building.

There were two distinct layers of wash or silt deposits interspersed in the north end of the cellar. These layers, JR2361G and JR2361AK, likely were formed by runoff from heavy rainfall during the period when the cellar was being deliberately filled. An erosion channel, JR2361G, was found at the northwest corner of the cellar.

In summary, the large uniform fill deposits throughout the cellar showed that the cellar likely was filled

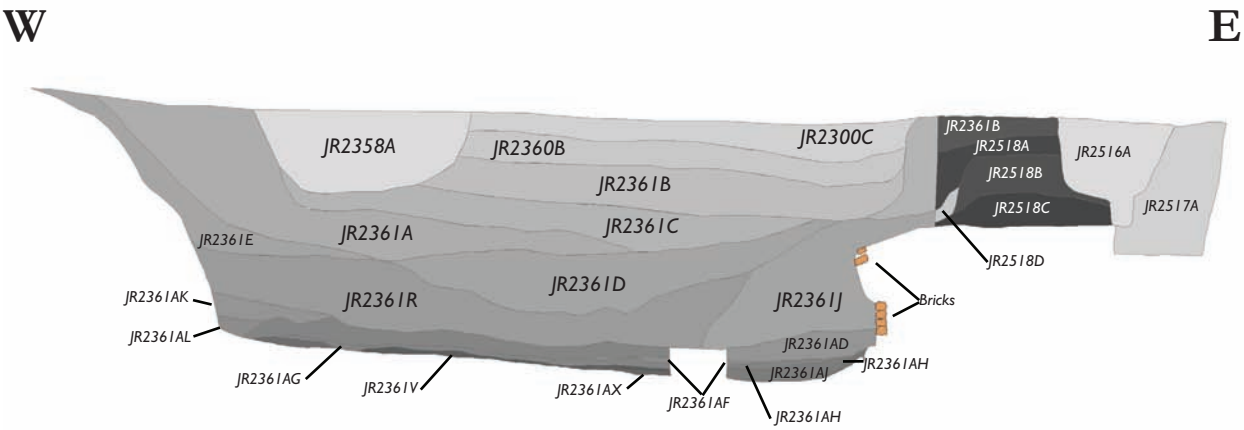

Figure 13. E/W profile map, north chamber and oven JR2518

quickly once it fell into disuse; the colonists probably wanted to continue to make use of the space above the cellar. Supporting the rapid fill deposition theory is the fact that the dateable artifacts in the rubbish phase of cellar fill were all from the James Fort period ca. 1607–24.

Artifacts from these fill layers numbered in the tens of thousands and included objects commonly found in the early James Fort contexts along with some more unique finds. A significant collection of military-related finds came from these layers. These included firearms and firearm accoutrements, edged weaponry, pike heads, and elements of armor. Significant among the latter was a close burgonet helmet represented by its disassembled visor and bevor. These components were presumably removed from the skull of the helmet to make the headpiece better suited for skirmishes with the Indians. This close helmet is the third one to be found in Virginia.[11] In addition, sixteen sword hilts were unearthed, including basket and rapier hilts.

Figure 14. Close burgonet helmet (height 160 mm, length 370 mm)

The ceramic collection from these layers included a wide assortment of European wares, Chinese porcelain, and Virginia Indian pottery. All of the ceramics date to the Virginia Company period of James Fort, ca. 1607–24. English ceramics, including Surrey-Hampshire border wares, London post-medieval redwares, North Devon baluster jars, Essex post-medieval blackwares, and Midlands purple butter pots, made up a large part of the assemblage. Wares from the continent were represented by vessels from Spain, France, Germany, and Italy.

Figure 15. Assorted ceramics from Structure 183

Several of the ceramics from Structure 183 cross-mended with other early James Fort features. In particular there were mends between the cellar and Structure 185 (believed to be James Fort's first well, ca. 1608–10), Structure 177 (thought to be the fort's second well, ca. 1610–17), Pit 12 (an early pit located near the center of the fort), and Structure 165 (the ca. 1610 cellar to a mud-and-stud structure located in the ca. 1608 extension of the fort's eastern wall).

Figure 16. Mother of pearl fish with copper-alloy ring (length 31 mm)

European tobacco pipe fragments were abundant with dozens of London pipe bowls, ca. 1610–40, along with several pipe bowls with tear drop shaped heels ca. 1580–1610.[12] Locally-made tobacco pipes were also common, such as Robert Cotton pipes ca. 1608, including one that appears to have been stamped by a coin or a signet ring. Fragments to a pipemaking saggar were found among these layers, providing firm evidence that pipemaking was underway in the early years of the colony.

The latest dated objects in this feature are two 1613 Harrington farthings that were recovered from JR2361A and D. This, of course, establishes the year after which the cellar was no longer in use and/or the date after which the cellar was filled. Another coin, a silver English half penny ca. 1607–09, was found in JR2361N.

Several unique artifacts were recovered from these layers including a small mother of pearl fish with incised scales, eyes, and fins from JR2361C. The mouth area of the fish is pierced and contains a copper-alloy ring. This relatively ornate object likely served as a pendant or an earring, and the fish appears to resemble a cichlid, a freshwater fish found worldwide, particularly in African, Caribbean, and South and Central American waters. Another unexpected find was a Roman oil lamp from the first century A.D. This item may have been in the possession of one of the gentlemen who had an interest in antiquities.[13]

Figure 17. First century A.D. Roman oil lamp (length 64 mm, width 44 mm, height 26 mm)

Figure 18. Flax linen fabric

Figure 19. Gold gimmel ring (diameter 20 mm)

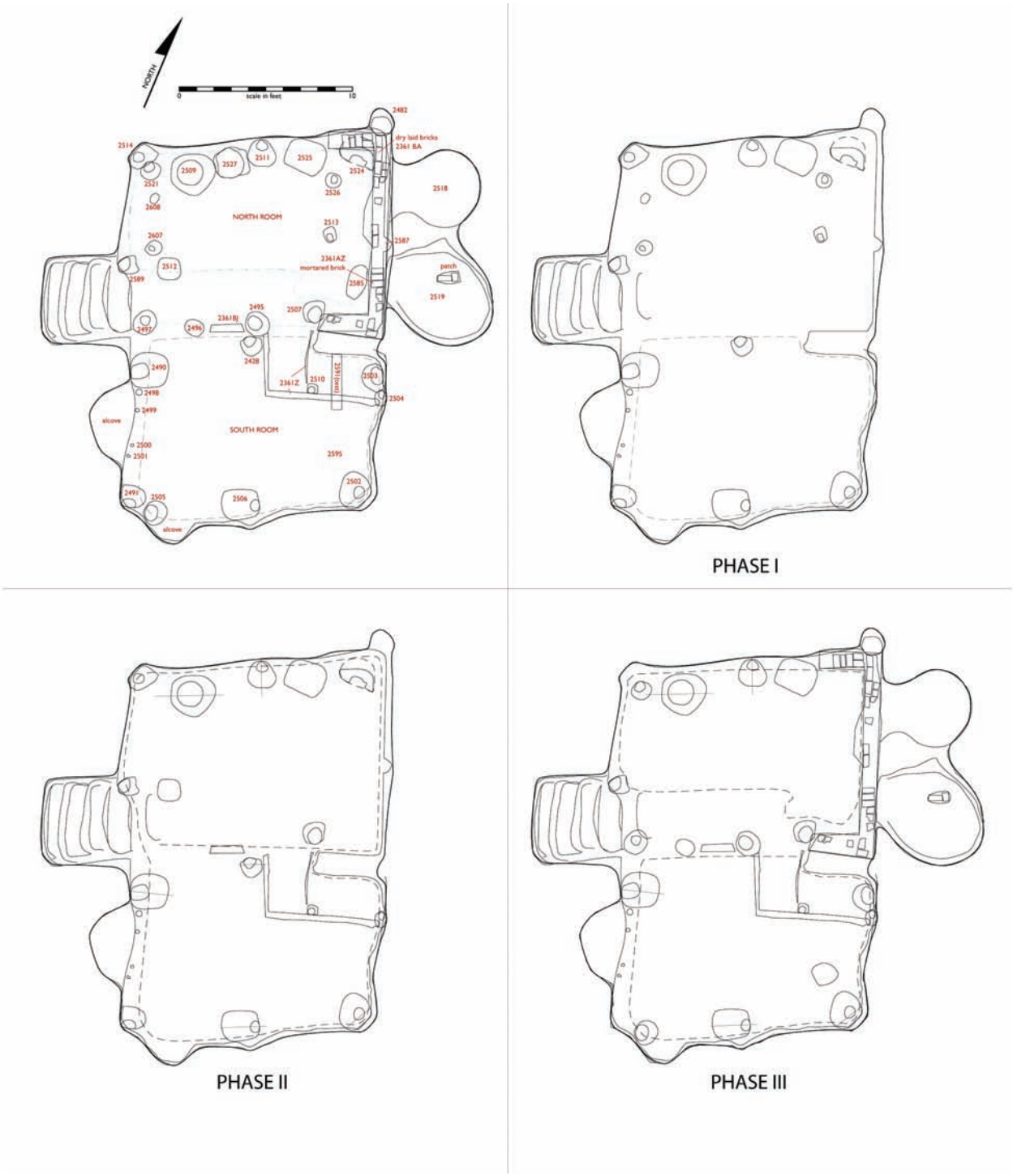

Figure 20. Structure 183's three construction phases

Within the ashy lens of JR2361A, small sections of woven fabric survived, comprising some of the earliest provenanced archaeological textile in North America. Analysis using a scanning electron microscope (SEM) established that the fabric was linen made from the flax plant. The Z-spun fibers are in tabby weave, but it is unknown if the fabric was part of clothing, bedding, packing material, or even a shroud.[14]

Two large pieces of a limestone mortar from JR2361C may be part of the same vessel found in a mortar and flint concretion (JR2361V) associated with Structure 176, a building believed to be Governor Argall's residence ca. 1617. A small gold chain with two and one-half links, a small section of gold wire, and a gold gimmel ring designed as three interlocking wavy hoops complete the list of unique finds in these fill layers.

After the rubbish layers were removed, the cellar's features and occupation layers became visible. The cellar's features included an E/W partition that divided

the cellar into two rooms, steps, numerous postholes, a raised clay floor, an area of red fired clay surrounded by burned wooden sills, a brick façade, two ovens, two sump pits, and two small alcoves carved into the subsoil sidewalls. As the excavations proceeded, it became clear that the cellar's form and function had undergone at least three major changes during its existence. The aforementioned features and occupation levels helped identify various phases of cellar use.

Phase I

With its initial construction the cellar appears to have been divided into a north room and a south room. The rooms were roughly equal in size, each measuring about 10' by 16'. Evidence of a partition between the two areas was suggested by a line of postholes in the floor and different floor elevations on each side. In addition, a 4' by 1' section of a subsoil wall partition that was 2' tall at its highest point was found originating along the eastern cellar limit on the same axis as the line of posts.

Evidence of only one cellar entrance was found: six steps carved into the subsoil along the western end of the cellar. The steps led only into the room north of the partition. While it was difficult to get any definitive measurements of the eroded steps, the best preserved examples indicated that the entryway was about 4' wide.

With the rubbish layers removed, many of the nearly two dozen postholes in the cellar floor became visible. The majority were major structural postholes to support the post-in-ground structure covering the cellar. Structural postholes were found in the corners of, and on an E/W axis through, the center of the cellar, as well as interspersed at midway points along the cellar's perimeter. The postholes were from 2'6" to over 3' deep, and when the postmolds were clearly defined, they showed that the posts were circular and measured between 6" and 8" in diameter. Several of these structural posts had been disturbed by later repairs, which indicated that the cellar was in use for an extended period of time. The southwestern and northwestern corners had two posts each, one original and one repair. The southeastern corner post, JR2502, also had been replaced, but the limits to the repair post could not be established. The likely original north-

Figure 22. Bisected posthole JR2514 (facing north)

Figure 21. Cellar steps (facing southwest)

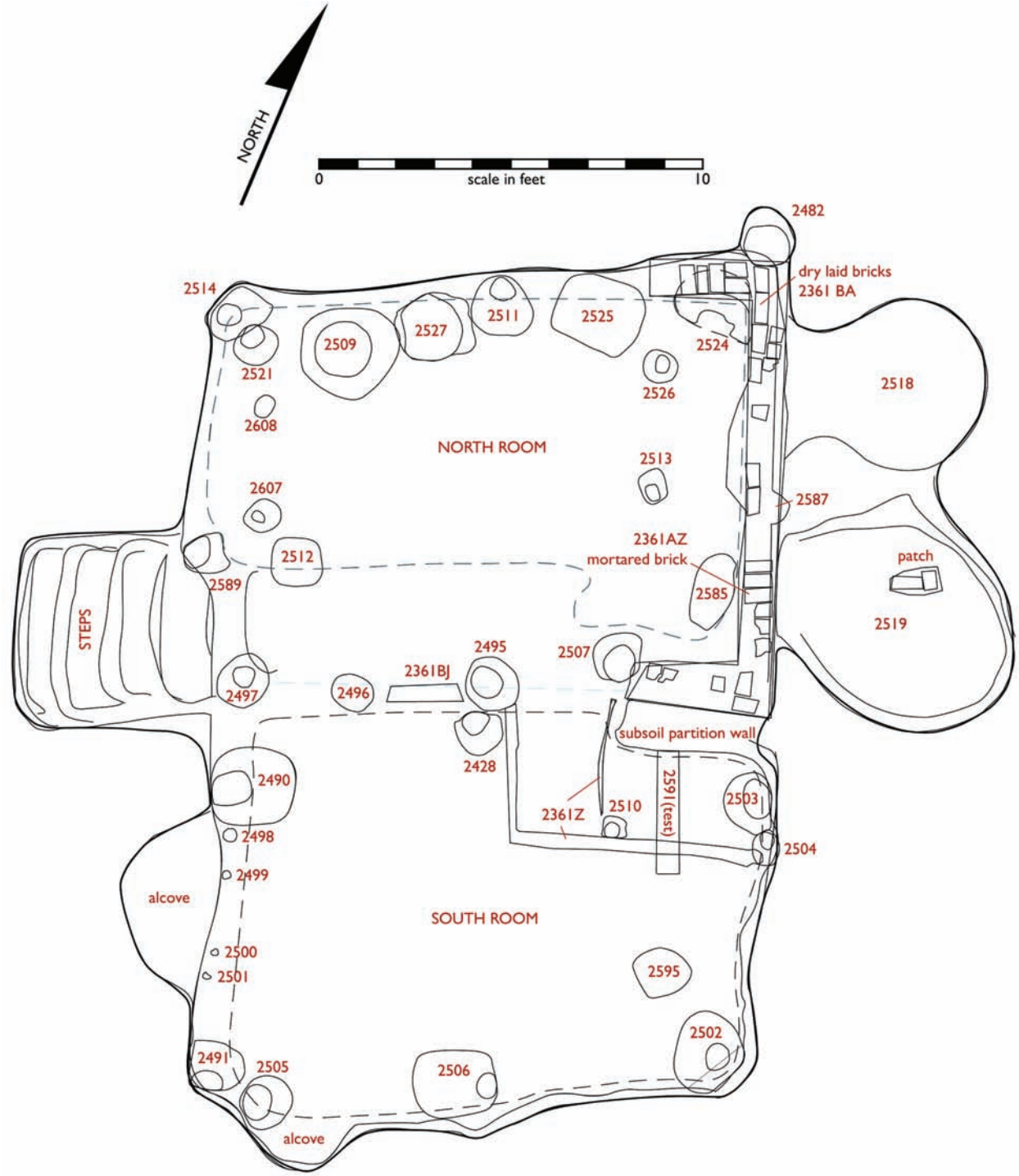

Figure 23. Cellar plan with feature numbers

eastern corner post, JR2524, was later replaced by JR2482 when the cellar was altered with the addition of brickwork. Posthole JR2528 in the center of the cellar also had been replaced by a later post. Not all of the posts showed signs of being repaired, which suggested that the structure above the cellar remained standing despite the need for subsequent repairs. The following postholes were likely from the first phase of the cellar: JR2491, JR2490, JR2514, JR2511, JR2524, JR2502, JR2506, and JR2528. Of the original posts, JR2506, JR2490, and possibly JR2511 remained standing throughout the life of the cellar.

A large 2'6" by 8'6" strip of the original working surface in the cellar shed light on some of the activities that took place during the cellar's initial phase of occupation. This layer, JR2361AE, located along the southern end of the northern chamber, survived beneath a later raised clay floor. Layer JR2361AE probably once spread across the entire northern room, but much of it likely was removed when most of the floor

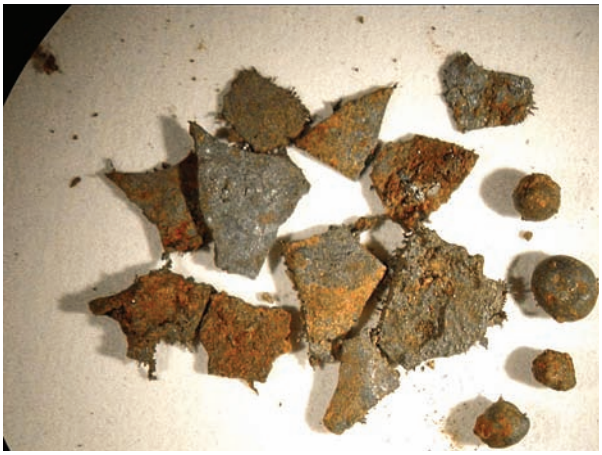

Figure 24. Hammerscale and spherical iron droplets, byproducts of blacksmithing

in that area was later lowered by 1'. Other alterations to the cellar that impacted JR2361AE will be detailed in the discussion of Phases II and III below.

The north chamber's original floor, JR2361AE, was a compact sandy layer with some clay and measured from 2" to 3" thick with a bottom elevation of 8'2". The layer contained numerous hammerscale and spherical iron droplets, byproducts of blacksmithing.[15] This waste is typically made from the sparks created by repeated strikes while working hot metal with a hammer. The presence of nail rod also indicated blacksmithing along with a more curious find: residue from working iron found on the interior of a Native American pot. The iron tuyere (the bellow's nozzle, which concentrates and directs air from the bellows) found in JR2361D also indicated smithing operations that involved working iron rather than producing it, and, although found in the upper layers of debris, may have been used in the cellar's smithing operations before it was abandoned and backfilled. Ceramic or copper tuyeres are used for iron production that employs temperatures high enough to melt iron.[16]

Figure 25. Iron tuyere (length 20 mm, diameter 25.5–58 mm)

As early as 1607, John Smith proclaimed that Jamestown's "best commodity was iron which we made into little chisels."[17] Although no evidence for the production of iron has yet been discovered, it is possible that Structure 183 and the surrounding area were the location of those trials. The colonists may have been operating an iron bloomery furnace in the fort area to produce the iron used in smithing.[18] Pit 17, only 16' west of Structure 183, was filled with heavy concentrations of clinker and charcoal, waste from the process of working iron. Another nearby feature, JR2330, had heavy concentrations of clinker on the surface, but it has not been excavated. No evidence for the location of a bloomery furnace, including the slag it would have produced, has been found to date in the area around the cellar, but such evidence could have been erased by later plowing. Small bloomery furnaces likely were seated only a few inches in the ground, not deep enough for any evidence to survive plow blades that often disturb the soil to a depth of more than 1' in this area.[19]

In addition to blacksmithing during the first phase of cellar use, it also appeared that the colonists were assaying ores and manufacturing lead shot there. The iron-rich cellar floor, JR2361AE, also contained numerous Hessian crucible fragments that may have been used during metallurgical trials. Many of these fragments mended, suggesting that the crucibles broke while being used in the cellar. Several heavy concentrations of lead droplets also were found on the floor in this layer. These droplets could have been produced during the process of making small lead shot by pouring molten lead through a sieve.

A 3'3" by 2'8" section of debris in the northern room was excavated in 4" by 3'3" test strips to attempt to define any separate layers of metallurgical activity. When a possible layer change was identified, a new test strip was begun with a new layer designation. The resulting excavation resembled a small set of steps. Six subtle layer changes were identified: JR2361AE, AR, AS, AT, AW, and AX. All of these layers contained the smithing waste, but in varying degrees of density. While the test did show some changes in the consistency of the smithing waste, it did not yield any clear divisions. It was concluded from the test and subsequent soil profile that the smithing debris was one overall layer. The debris was likely built up over an extended period of time, but because it was the same type of waste, the true divisions could not be deduced. All remaining metallurgical waste in the northern room was recovered as JR2361AE. The unscreened fill from

Figure 26. Metalworking floor tests (facing south)

these test layers was recovered and archived, and the artifacts identified during excavation were removed and catalogued.

With JR2361AE isolated in the northern chamber, a similar layer also sealed by a raised clay floor, JR2361BH, was found throughout much of the southern chamber. Layer JR2361BH had little blacksmithing debris when compared with its counterpart in the northern room. While it does not appear that much smithing took place in the southern room, iron objects worked in the northern room may have been finished in the southern room through some type of filing process. Also present in JR2361BH were abundant lead droplets like those found in JR2361AE and parts of two crucibles. The similar fill in JR2361BH and JR2361AE proved that both of the cellar rooms were in use during the original phase of the cellar. There was, however, an elevation difference between the northern and southern rooms during the cellar's first usage; the bottom elevation of JR2361BH was 4" higher than JR2361AE.

A furnace, a bellows, an anvil, and a flue would have been essential for the smithing operation, and all but the anvil needed for assaying. This equipment was likely in the northern room where the bulk of the metalworking waste was concentrated. Small postholes found on the floor in this room may be evidence of either the flue or furnace base. These holes (JR2513, JR2526) on the eastern side of the northern room were used during the first phase of cellar occupation. The postholes were nearly identical in size and appearance, suggesting they were contemporaneous. JR2513 was 11" wide and 1' deep, with a postmold 5" in diameter, and JR2526 was 1' wide and 1'2" deep, with a postmold 5" in diameter.[20] The holes were separated by 3'5" and were about 3' from the eastern cellar wall. The fill in the postmolds contained hammerscale and iron droplets, similar to the blacksmithing layer JR2361AE. The iron in the postmolds suggested that JR2361AE was the only occupation layer in the cellar when the posts from JR2513 and JR2526 were removed, which allowed for the smithing debris to fill the voids left

Figure 27. Bisected postholes JR2513 & JR2526 (facing east)

Figure 28. Burned floor visible at the bottom of Test JR2591

by the posts. This scenario suggests that JR2513 and JR2526 were in use during the blacksmithing and metallurgical phase of the cellar.

Another possible posthole, JR2587, may have been related to JR2513 and JR2526. JR2587 was located 3' east of JR2513, but only a semi-circular indentation carved in the cellar's eastern subsoil wall remained. This feature may have been from the cellar's first phase because it was bricked in with the later addition of the brick flue foundation. Together, JR2513, JR2526, and JR2587 formed a right angle. There may have been a forth posthole that formed a rectangle with the other three, but later changes to the cellar either removed this evidence or masked it. These three posts likely supported a structure associated with the metalworking, possibly a flue to draw the furnace smoke from the work room.

Two small features, JR2607 and JR2608, were found on the northern room's floor near the western wall. These holes were similar in appearance to JR2513 and JR2536. However, a test of JR2607 determined that it was only 3" deep, which signified that it likely was not intended to hold load-bearing timber. The purpose of these holes remains unknown.

In the northeastern corner of the southern room a small test through the raised clay floor, JR2591, revealed that the earliest subsoil floor had been burned with enough heat to turn it brick red. The extent of the burned floor was not determined because of the presence of a later feature built on top, which was left largely unexcavated. This burned floor area may have been related to the blacksmithing and metallurgical activities, but again the southern room Phase I floor contained significantly less smithing waste than in the northern room.

Several other circular features were found on the cellar floor along the southern wall. These appeared to be four small aligned holes and possibly evidence of a roof drip line. These included JR2498, JR2499, JR2500, and JR2501. The holes were only 2" to 3" in diameter. JR2498 was tested and found to be only ½" deep, far too shallow to support a post.

There were also two larger holes, JR2509 and JR2525, along the wall in the northern end of the cellar that were sump pits for drainage. A barrel-lined sump pit, JR2509, was found near the northwestern corner of the cellar. It was 2'5" deep and contained the remains of a barrel at the bottom. A dark circular stain from the rotted wood survived forming a perfect circle with a diameter of 1'6". Fourteen small iron nails were found in association with the circular stain. Another barrel-lined sump pit, JR2525, was found close to the northeastern corner of the cellar. However, the stain in the bottom of this hole did not form a perfect circle, but rather an amorphous shape. The hole was 2' deep, and the shape at the bottom was roughly 1'2" across when measured from N/S. No nails were present in association with this sump pit. There was no way of knowing during which phase of cellar use these barrel sump pits were constructed because they had no stratigraphic relationships with other cellar features.

Two small "alcoves," possibly from Phase I of cellar use, were found carved into the subsoil walls of the southern room. The larger of the two features was found along the western wall about 4' south of the cellar steps. It measured 3'5" wide and was set 1'8" into the wall. There was a vertical step about 1' above the cellar floor in front of the alcove. This shelf could

Figure 29. Barrel stain in feature JR2509 (facing north)

have served as a seat, or may have been used for storage. The other possible storage alcove was smaller and located along the southern cellar wall only 1' from the southwestern corner of the cellar. The bottom elevation of this feature was level with the surrounding floor. It was about 2'8" wide and was set 1' into the wall.

Phase II

Once the industrial phase of the cellar had concluded, it underwent several major changes. The floor was raised in both chambers with mixed clay, which sealed the preexisting working surface. The orange clay layer, JR2361T, measured 6" to 8" thick and, from the lack of inclusions, appeared to be redeposited subsoil. The clay probably stretched across the entire northern room at one point but, as mentioned above, 1' of the floor in this room had been dug away during the final phase of cellar usage. In the southern chamber the raised clay floor, JR2361BG, formed a contiguous layer with JR2361T, indicating that the floors in both rooms were raised simultaneously with the orange clay. The elevations of the raised floors in the two rooms were nearly the same: JR2361T was 9' and JR2361BG was 9'1". A copper-alloy pendant depicting a man's head in profile was found in the prepared clay floor layer JR2361BG. The pendant is believed to have been produced by the English in the likeness of the paramount chief Powhatan to serve as a badge of safe passage into James Fort for his Indian emissaries.[21]

A major addition to the cellar was found in the

Figure 30. Raised clay floor, JR2361T, above darker metalworking layers (facing south)

Figure 31. Copper-alloy pendant (length 37.5 mm, width 25.5 mm)

northeastern corner of the southern room. This feature consisted of three burned wooden sills, burned clay, burned subsoil, and two small postholes at the point opposite of the subsoil partition wall. In plan, the three sills formed the shape of a capital "F". The sills may have been set in the clay, but it was also possible that the clay floor was constructed around the wooden sills once they were in position. The largest sill ran from east to west and was 6' long and 4" wide. The other two sills were to the north and ran perpendicular to the larger one. One of these was 3'1" long and only 1" wide. This sill abutted the western end of the subsoil partition and continued into the northern chamber. The other sill began at the western end of the larger sill and continued to the north at a 90° angle. This sill was also 4" wide, but only 2'4" long.[22] A 4'5"-long by 7"-wide test, JR2591, was put into the clay floor and through a section of the longest sill. The test revealed that the sill was 2" thick. Samples of the burned wood, JR2591A, were removed and archived. The subsoil partition wall and eastern cellar wall, bounded by the sills, had been heavily scorched from fires. The prepared clay floor, JR2361BG, within the bounds of the larger sill and the narrow sill also had turned red from the heat. The three wooden sills may have been burned by the same fires that scorched the clay because the clay had been burned up to the edges of the sills.

Two postholes found among the sills appeared to be related to the sill structure. One of these postholes, JR2510, was located between the largest sill and the narrow sill. It was 9" deep with a circular mold measuring 5" in diameter. The other post, JR2504, was located between the eastern cellar wall and the eastern

Figure 32. Builder's trench JR2361BD (facing north)

end of the largest sill. This posthole was not excavated, but the removal of a later posthole, JR2503, exposed enough of JR2504 to show that it was 7" deep. Postholes JR2510 and JR2504 may have served as support posts for a smoke hood in this corner of the cellar. This feature remains unexcavated for future investigation.

Several occupation layers, JR2361Q, JR2361Y, JR2361AA, and JR2361AC, were found above the raised clay floor in the southern chamber. They may have been associated with Phase II of cellar use, but they could date later to Phase III. One of these layers, JR2361AC, contained dozens of fragments from delftware apothecary jars. These indicate that the jars may have been used here during Phase II. JR2361AC was made up of a sandy loam with charcoal inclusions and was only 1" to 2" thick. This layer was spread out across most of the western end of the southern room. The eastern end of the southern room contained other occupation layers, JR2361Y and JR2361AA. JR2361Y was a mix of ash and loam with a silty texture. A copper Spanish cuarto from the reign of Charles and Joanna, ca. 1516–56, was found in this layer. JR2361AA was sealed by JR2361Y and consisted of a thin lens of a sandy clay/loam mix with charcoal specks.

JR2361Q was found above the raised clay floor in the northern chamber. This occupation layer, consisting of ashy loam with charcoal and burned daub, also yielded delftware apothecary jar fragments. What appeared to be a filled-in timber-sill mold was found between the rooms at this same level. Only a small section, JR2361BJ, was distinct enough to determine its boundaries for mapping; it was 1'2" long by 5" wide.

Phase III

The third and final use of the cellar included major alterations to the northern room and a few minor changes in the southern room. The northern room evolved into a bakery with the construction of a large brick-flue foundation and two large bread ovens. Other alterations to this room included lowering the floor in most places by nearly 1' and the addition of a gravel floor in the area where the floor had been lowered. The final occupation layers associated with this phase of cellar use were predominately ash generated from the bread ovens, which was spread throughout the floor of the northern room and into parts of the southern room.

The brick flue footing was built along the eastern wall of the northern room prior to the intentional lowering of the floor. This was indicated by the exposed cobblestone sub-footing for the brickwork, which had a been constructed below grade. More evidence for

Figure 33. Builder's trench JR2361BD

Figure 34. Cobble footing, JR2361BE, for brick flue (facing south)

Figure 35. Limestone cobble under the northern end of the brick

this sequence of events was revealed by the survival of a small section of the original floor level that was left intact in the northeast corner of the footing when the floor was lowered. Situated in the corner of the brickwork where the southern cheek joined with the back of the façade, the intact floor level consisted of subsoil and builder's trench fill (JR2361BD). From this sequence of deposits it could be concluded that when the brick footing was built the cobblestones were set in a trench and were not visible because they were sealed by the builder's trench fill and the masonry above.

The cobblestone foundation, JR2361BE, for the brick footing base consisted of native and non-native stones. Several of the cobblestones were removed for identification. The non-local lithics included Carribbean andesite, granite, periodite, and a large limestone cobble that likely had been ship's ballast. A sandstone cobble native to Virginia was also incorporated into the foundation. The large limestone cobble had been placed under the northern end of the brick façade base above a backfilled posthole, JR2524, from an earlier cellar phase. The apparent strategic placement of this cobble may have been a preemptive action to ensure the brickwork did not slump into the loose posthole fill.

The brickwork for the flue footing, JR2361BA, rested directly on the cobblestones and likely served as the base for a chimney that transitioned from brick

Figure 36. Overview of brick façade (facing east)

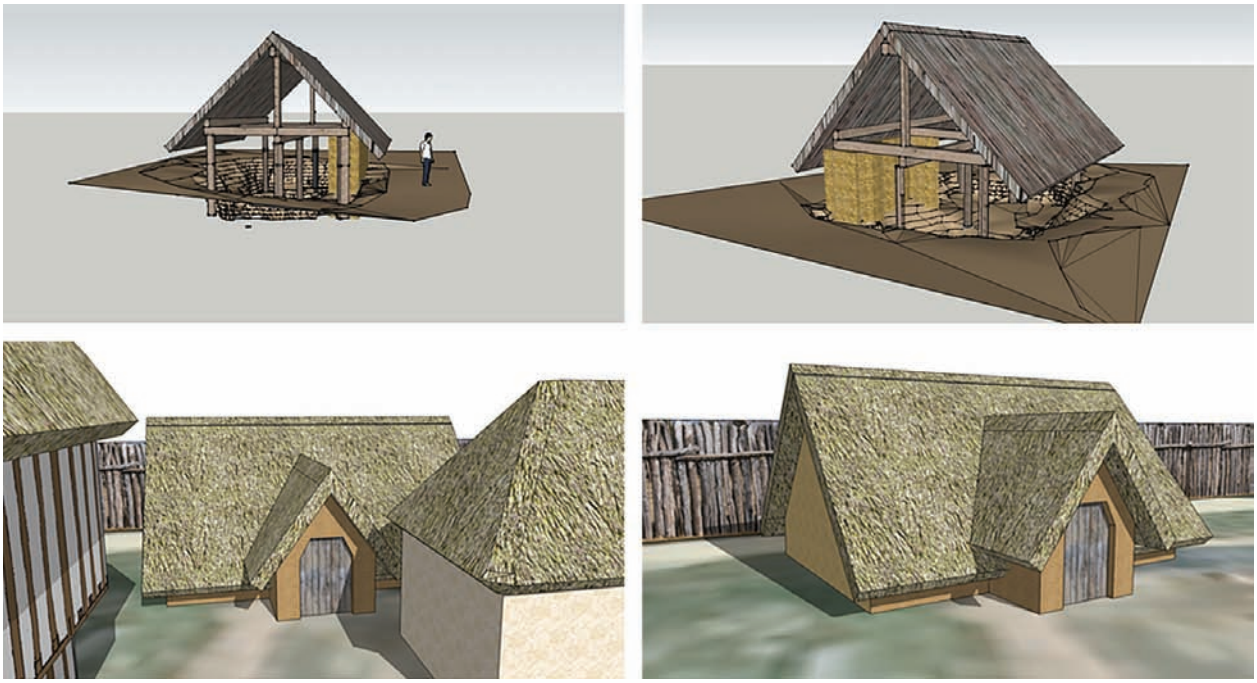

Figure 37. Conjectural reconstructions of structure 183

at the base to timber framed above. The poor bonding and quality of the bricks would not have been sturdy enough to support the weight of an all-brick chimney stack.

The brick structure was in varying states of preservation. In some places it survived to a height of 3'6", or 14 courses, but in other locations it was just over 1' high. The foundation was large with the footing 11'8" wide, from north to south, extending across the entire eastern end of the northern room. The southern cheek of the fireplace was 2'9" in length and was bonded into the back wall, whereas the 2'7" northern cheek was not. It was set directly on subsoil, comprising the only section of the chimney base that was not constructed on a cobblestone foundation. The interior of the flue base was 9'7". Both headers and stretchers were used in the bonding, but there was no discernable overall pattern. Four bricks were laid lengthwise at the bottom of the southern cheek, with a mix of brown sandy clay as the bonding material. The walls were generally two courses wide, measuring about 10" thick in most places, but often brickbats were used as fill behind the façade.

Most of the brickwork was preserved unexcavated, but a large section of the chimney that had slumped slightly forward, JR2361AV, was removed and brick samples were saved and catalogued. The usual dimensions of the bricks from JR2361AV were 9" by 4¾" by 2¼". This brick structure likely served as the base for the flue to vent the smoke produced in the two ovens behind it. The use of brickwork to support the flue structure was more evidence that Structure 183 may have been a story and a half in height. The chimney structure may have been intended to rise high enough above the ground to simply keep the smoke away from the colonists at ground level. If there was no second story to the structure, then it likely would have resembled a Grubenhaus, an underground structure with a roof more or less set at the ground level.[23]

The two bread ovens, JR2518 and JR2519, carved into the eastern subsoil wall behind the brick flue base had been partially disturbed by Pit 6. At one time the ovens were igloo or dome shaped, but their roofs had since collapsed. The subsoil clay walls and surviving roof sections had been burned red to the consistency of brick. It appeared that the northernmost oven, JR2518, was built first since it was oriented with the cellar wall. The adjacent oven, JR2519, likely came second because it was built angled to the south, apparently to avoid disturbing the already existing oven next to it.

In addition to Pit 6's intrusion, the northern oven, JR2518, was disturbed by two later period features: posthole JR2516, and a small rectangular feature, JR2517. Once these intrusive features were removed, excavations concentrated on the oven. The oven was found to be filled largely with its own collapsed dome roof that came to rest on the oven's floor. JR2518B appeared to be a 17th-century layer that had fallen several feet to fill the void when the oven collapsed. The next layer, JR2518C, consisted of the burned segments of the oven's ceiling. Many sections from the ceiling surface were archived because tool marks from the oven's construction were still clearly visible.

Figure 38. Bread ovens cross-section showing collapsed, burned oven roof (facing east)

The surviving walls of the oven and the oven floor also exhibited these marks that were consistently about 4" wide, possibly the width of the pick or adze used to form them.

In plan, the floor of the oven was more or less ovoid, measuring 5'3" from N/S and 5'6" from E/W. The E/W measurement had to be projected because the true eastern end of the oven had been lost to disturbance JR2517. The entrance to the oven remained largely intact and measured about 3' wide. With most of the roof collapsed, it was impossible to determine exactly how tall the ceiling was; however, it was almost certainly over 1' tall, the clearance necessary for the builder to mine out the cavity.

Figure 39. Pick or adze marks from the construction of oven JR2518

The oven floor was relatively level. The most intense heat had been concentrated in the center of the oven where a dark red circular area about 3'6" in diameter had formed. The heat from the repeated use of this oven had turned the subsoil clay red to a depth of 6" below the floor. This was determined by the removal of JR2517, which extended well below the oven floor. Small cracks or fissures were found all across the oven floor. Residue left from cooking in the oven, JR2518E, included charcoal found on the oven floor, but only where it had fallen into the cracks. The oven floor was surprisingly clean, which confirms that there was no fire in the oven at the time of its collapse. The bakers needed to clean the ash out of the oven, once the oven had been properly heated, before inserting the bread dough. After the oven fell in, it appears that the entrance was bricked over, as some remaining bricks partially sealed the opening.

The southern oven, JR2519, continued to be used after the northern oven fell into disuse. All of the ash waste found in the occupation layers, the last deposit of occupation-related fill, was concentrated in front of the door of the southern oven. This oven also showed signs of being used over a longer period of time than the northern oven. A concave groove on the oven floor from the middle of the oven towards the entrance was caused by the repeated motion of dragging something

Figure 40. Brick patch on oven floor (JR2519)

across the oven floor, possibly a tool such as a small shovel used to remove the hot coals. No such groove was found on the floor of the northern oven. Yet other indications that the southern oven was used for an extended period was a hole in the oven floor that had been patched with a brick and brickbats, as well as a mortared brick pad at the oven's opening, JR2361Z. This feature had been incorporated into the brick footing and was held together with the only shell-tempered mortar used in the brickwork. The pad, made of six mortared bricks, likely was built as a replacement for the original bricks that had fallen into disrepair from the repeated use of the oven. A sample of the shell-tempered mortar was curated.

The floor of the southern oven, JR2519, was a full foot lower in elevation than the adjacent oven's (JR2518) floor, and the opening was just over 2' wide. In plan, this oven measured 6' E/W by 5'4" N/S. The fill in JR2519 was similar to JR2518 in that it was mostly made up of the collapsed roof of the oven. However, there were two distinct fill episodes. Near the entrance of the southern oven was a layer that contained a heavy brick concentration, which originally may have formed a brick arch across the entrance. Two brickbats appeared *in situ* on either side of the oven floor at the oven opening, apparent evidence of the arched opening. Another unique layer of fill made up of thin grey clay and charcoal rested on the oven floor.

The lowering of the majority of the floor in the northern room during the third and final phase of cellar usage likely was done to allow the bakers to stand and work the ovens in a more comfortable position. This theory is supported by the presence of an even deeper depression, JR2585, of about 4" in front of the southern oven, JR2519. What had been a height of about 1'9" from the original floor level to the entrance of oven JR2519 became 2'9" after the floor was dropped, a much more manageable space in which to work. The other likely reason for the lowering of the floor was to create more space for ash disposal.

Ash waste from the ovens was spread throughout the entire northern room and into parts of the southern

Figure 41. Relationship of the brick façade and bread ovens (facing east)

Figure 42. Lowered floor in northern room (facing southeast)

room. The material was labeled JR2361S, JR2361AD, and JR2361W. JR2361AD was the same as JR2361S, but JR2361AD was separated from the rest and assigned to the ash fill contained within the limits of the chimney base. This was done in case there were differences in the artifact assemblages from the ash inside and that outside of the chimney base. This did not turn out to be the case. It was clear from the sheer volume of ash, in some places over 1' thick, that the ovens had seen prolonged use; there were multiple lenses of black and white ash bands.

In the northeastern corner of the southern room another heavy ash layer, JR2361W, was found sealing the feature with the burned clay and burned timber sills. JR2361W formed a pile 4" to 5" deep and appeared identical to the other ash layers in the northern room. This ash appeared to have been from a bread oven, and its location demonstrated that at the end of the cellar's life the burned sill feature in the southern room was no longer in use. The ash layers JR2361S, JR2361W, and JR2361AD were the last occupation-layer deposits in the cellar prior to its abandonment, supporting the final use of the structure as a bakery.

It is possible that the bread ovens and the burned sill feature were in use at the same time initially, but it is clear from the archaeological evidence that the

Figure 43. Profile of ash layers from bread ovens (facing east)

bread ovens outlasted the timber sill feature. The ash layer mentioned above, JR2361W, is one line of evidence for this scenario, but a large posthole from the third phase of the cellar (JR2503, located in the northeastern corner of the southern room) cut through the burned clay associated with the timber sill feature. This posthole was structural in nature with a sizable postmold of 9" in diameter and a depth of 2'3". Its location proved that the timber sill feature was no longer in use when the posthole was dug. This post also provided structural support for the superstructure of the building above, in an area where no other postholes were located.

Prior to the addition of JR2503, there were no other structural postholes along the eastern wall of the cellar, except for those at the corners. A test was dug underneath the brick flue footing, where the southern cheek met the fireback, in order to see if there might have been a symmetrically placed post put in during the initial phase of the cellar, but no posthole was found at that location. It makes no structural sense for the entire east wall to go unsupported until the post cutting the floor of the box was established. Possibly a central post on the eastern side of the building rested on the subsoil partition, thereby not requiring a posthole.

A floor surface of pea-gravel, JR2361AG, and a lens of burned clay, JR2361AF, were found below the ash layers streaching across the dropped floor of the northern room. The gravel consisted predominantly of small river-worn quartz pebbles. This layer was thicker closer to the brick footing, and it varied from about ½" to 1" in depth. The gravel may have been strategically placed in this lowest floor level of the cellar as a dry paving to combat wet conditions. Above the gravel in the eastern end of the northern room a 1"-thick burned-clay area (JR2361AF) was found. This layer may have been made up of small sections of burned clay from the interiors of the ovens. Pieces of the clay ovens may have broken off periodically and were discarded on the cellar floor.

Yet another layer of heavy ash was found below gravel layer JR2361AG. While it seemed to be one continuous layer, the ash was separated into two contexts. These were JR2361AJ, the ash within the bounds of the chimney base, and JR2361V, a thin lens across the rest of the floor in the northern room. These ash deposits likely resulted from cleaning the bread ovens, but they had been sealed by the gravel paving episode on the floor and therefore represented ash from earlier episodes of bread-oven firings. A thin compact layer

Figure 44. Posthole JR2503 disturbing burned clay floor in northeast corner of southern room (facing north)

of clay and loam, JR2361X, was below the ash, which sealed the subsoil in the areas of the northern room where the floor had been lowered.

The two sump pits, JR2509 and JR2525, were

Figure 45. Floor paving layers in north chamber (JR2361AG & JR2361AF)

Figure 46. Structure 183, the Memorial Church, and the Tercentennial Monument (facing southeast)

clearly visible at this level. As previously stated, it is unclear when the sump pits were constructed. What is apparent is that the sump pits had remained open at the end of the cellar's use because they had been filled with the ash waste from the bread ovens.

During the final phase of cellar use a few posts were added and some repair posts had taken the place of the original structural posts. These included JR2505 in the southwestern corner, JR2521 in the northwestern corner, JR2503 cutting through the burned sill feature, JR2495 in the center of the cellar, JR2497 and JR2589, both cutting through the cellar steps, JR2507 due west of the chimney base's south cheek, and JR2482 in the northeastern corner just north of the brick flue footing. It is possible that JR2507 was constructed during an earlier phase, but its location abutting the chimney cheek suggests that the two features were contemporaneous.

These repair posts were similar to their predecessors in shape and depth, but two of the posts had some unique characteristics. Posthole JR2482 was situated slightly outside the E/W line of postholes along the northern interior wall of the cellar. Unlike all other structural posts, it appeared 4' above the cellar floor at the level where the brick footing first became visible. This post was located out of line because the brick footing obstructed the original line of posts. The posthole could not be fully excavated without removing the brickwork. Instead, probing to gauge its depth revealed it to be at least as deep as the bottom of the brick footing. The center post, JR2495, was also unique. In the bottom at a depth of 3'4" three cobblestones were found, but left *in situ*. They apparently were placed to prevent the post from sinking into the subsoil, which was found to be moist during excavation, as was typical of the bottoms of the deepest postholes.

During excavation hollow voids were found, hints of the locations of some of these structural posts. These voids likely were formed when the cellar was being backfilled after the stumps of abandoned posts rotted in place.

There were several other features in the cellar, but their functions and dates are unclear. Two holes, JR2512 and JR2527, were found in the northern chamber; neither had post molds. JR2527 was clay filled and measured about 2' in diameter, and when an adjacent feature (JR2511) was excavated, it was revealed to be only 1" deep. JR2527 may have been simply a lower point on the floor where the fill had not been completely removed. JR2512 was located on the floor in front of the steps; it was evident this feature was in the cellar prior to the lowering of the floor as that event disturbed it. At first, JR2512 appeared to be a posthole, but the lack of a postmold led to the

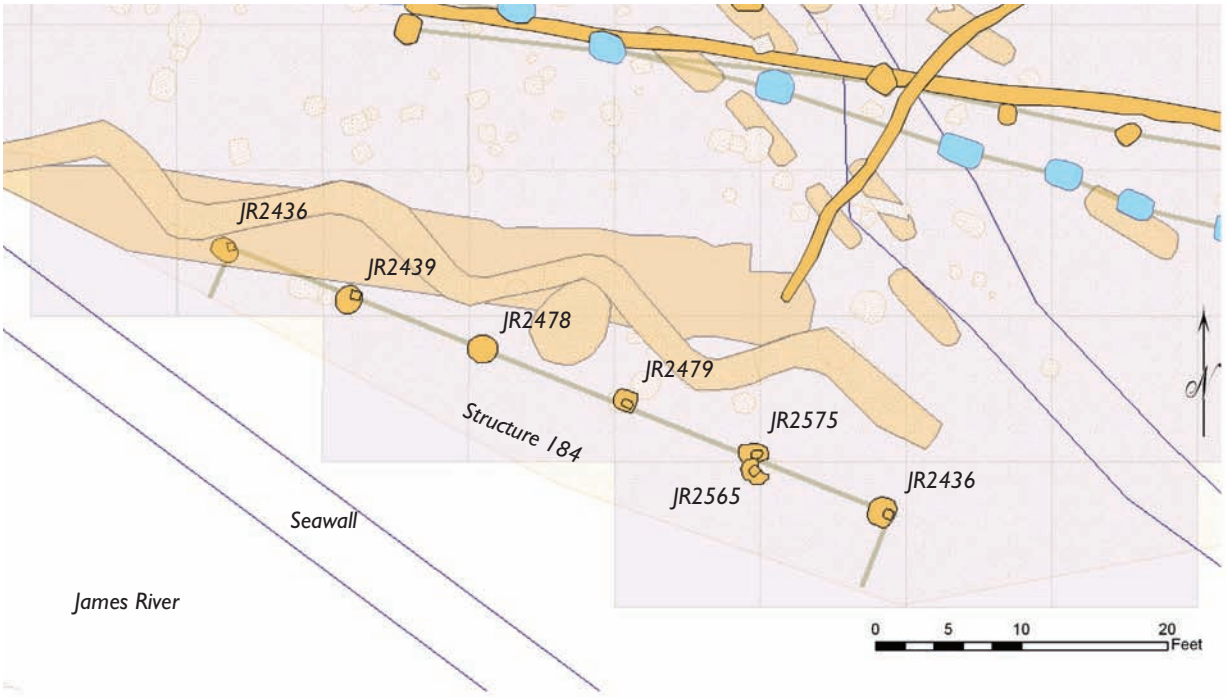

Figure 47. Structure 184 posthole site plan

conclusion that JR2512 was simply a backfilled hole. A similar hole, JR2595, was found in the eastern end of the southern room. This was a circular feature about 1'6" in diameter with a depth of 1'. No postmold was found and the hole was filled mostly with ash, which suggests it was open in the final phase of cellar use when the ash from the bread ovens was prevalent.

Structure 184: Post Building Near Southwest Bulwark

Evidence of a James Fort period (ca. 1607–24) post-in-ground building, Structure 184, was found towards the western corner of the fort. Six postholes, JR2436, JR2439, JR2478, JR2479, JR2575, and JR2561 were found 34' from, and oriented with, the projected south wall of the fort. They likely mark the location of the northern end of a building. The postholes were spaced on exact 10' centers and formed a line 50' in length. The building itself may have been longer, but Ditches 28 and 29 heavily disturbed the area due west of the line of posts, and a 1950s excavation disturbed the area to the east of the line. A seventh repair posthole, JR2565, was found disturbing the fill of JR2575. Although no postholes from a south wall were found, owing to shoreline erosion, it is reasonable to conclude that they did once exist.

The postholes were all circular with diameters from 1'8" to 2'. The visible postmolds were also circular, measuring 7" to 8" in diameter. JR2478 was the only posthole without a clearly defined postmold. The bottom elevations of the seven postholes were nearly the same, ranging from 12'1½" to 12'5¼" above sea level. The 10' spacing between the postholes was unlike the random spacing of the fort's mud-and-stud buildings and suggests that Structure 184 was timber framed. Joinery required even spacing, unlike the mud-and-stud buildings built in other sections of the fort.

Figure 48. Overall view of Structure 184 (facing east)

Plaster from finished interior walls for the structure was found in postmolds JR2439A, JR2478B, and JR2479A. The heaviest concentration was in postmold JR2478B where 379 g were found. The plaster may have found its way into the molds after the building's destruction, with crumbling plastered walls settling into the voids left by rotting or salvaged posts.

Ceramic types from the postmolds were consistent with other early fort-period collections and include Border ware vessels, delftware drug jars, Frechen stoneware jugs, a crucible with residues, a Martincamp flask, and a Merida-type dish. Other early artifacts of note include a ca. 1608 Robert Cotton tobacco pipe and a chevron trade bead.

Structure 184 was for a time believed to be a possible candidate for James Fort's 1608 church; however, excavations during the 2010–11 seasons due north of the John Smith statue found the postholes for that church, Structure 188.

The following are reasons why Structure 184 had for a time been thought to be a 1608 church candidate. The building's orientation was only 20° off the traditional E/W orientation of a church. It also was evident from the even spacing of the posts that the building was constructed with more care and precision than most post-in-ground buildings found in James Fort. Upon arriving at Jamestown in 1610, William Strachey, the secretary of the colony, suggested that the church had been given special consideration when it was constructed; he referred to it as a "pretty chapel." At the same time, however, he referred to the church as "ruined and unfrequented." According to Strachey, the church was then repaired under the direction of newly arrived Lord De La Warr in 1610. Strachey also wrote that the church measured "in length threescore foot, in breadth twenty-four" (60' by 24'). Additionally, Structure 184 may have had a plastered wall or walls. After the church was repaired in 1610, Strachey alluded to the possibility that the church had a plastered interior, which may have functioned to retain light. He wrote the church "is so cast as to be very light within. . . ." [24]

In addition to the evidence listed above, there was reason to believe that Structure 184 was the same width as the 1608 church. The line of posts for the north wall of this structure was 34'6" from the projected southern palisade.[25] Excavations have revealed that the "street" between James Fort's earliest post-in-ground buildings and the palisade was consistently 10' wide, which substantiates Strachey's observation that the fort's houses were a "proportioned distance" from the palisade. If we assume that Structure 184's missing southern wall was 10' from the fort wall, then the building would have been roughly 24' wide, the same width as the church. Other circumstantial evidence for Structure 184's being a church is the fact that it was located just south of the 1607 burial ground, with some graves only 10' away. Furthermore, during 1896 preparations for construction of the seawall, skeletal remains were found "lying in regular order, east and west, about two hundred feet west of the [church] tower ruin," a distance that puts these burials potentially within the limits of Structure 184.[26] However, since the location of the 1608 church, Structure 188, has now been established, the function of Structure 184 needs to be reassessed.

Figure 49. Bisected posthole JR2439 (facing north)

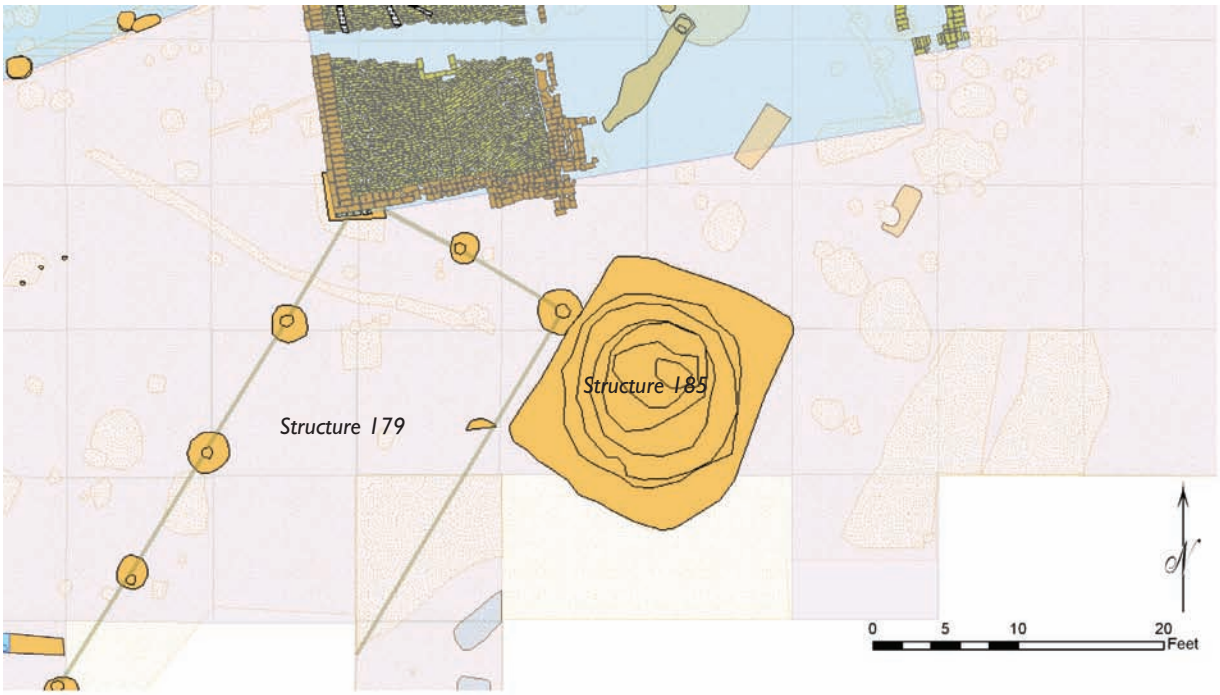

Figure 50. Cellar/well plan view with adjacent storehouse posts

Structure 185: Cellar/Well (JR2718)

Removal of a section of the Jamestown Confederate earthwork (Fort Pocahontas) and the plowzone beneath exposed a sizable concentration of redeposited refuse east of the northern end of the probable storehouse (Structure 179) and close to the geographic center of the triangular section of James Fort. The feature (Structure 185) dated to the early fort period (1607–10) and had served simultaneously as both a cellar and a well. The feature at subsoil level was rectangular in shape measuring roughly 14' on the SW axis by 16' on the NE axis. It was oriented on the same SW/NE axis as Structure 179, which was nearly perpendicular to the south palisade wall of James Fort. There is reason to believe that this feature may have been a later addition to Structure 179. Excavation of the fill determined that the feature was backfilled with multiple layers of strata. Upwards of five hundred thousand artifacts were found in these fill layers.

The cellar/well had been buried beneath plowzone between ca. 1750–1861 and by the Civil War earthwork (Structure 145) in 1861. In addition, a section of the Civil War fort's defensive ditch, JR2744A, disturbed the southern end of the pit. The Civil War ditch remained open until the early 20th century when it was backfilled. The construction of the cellar/well disturbed a storehouse posthole (JR2694), but not the postmold, indicating the post remained standing as the cellar/well was constructed.

Physical description of the feature

The feature extended to a depth of 14' below the undisturbed subsoil level and dramatically changed in shape as it became deeper. What started as a large rectangle became a large circular shape, which dropped to a single wooden cask or barrel for the well lining. The rectangular-shaped portion of the feature, the

Figure 51. Archaeologists removing buckets of dirt from the upper rectangular chamber of the cellar (facing northwest)

Figure 52. Excavated upper chamber, lower circular chamber undergoing excavation (facing north)

upper cellar chamber, reached an average depth of 5' below modern grade. However, it can be assumed that the upper chamber was at least 6' deep because the top 1' of soil had been disturbed by plowing. At this depth small shelves at all four corners had been carved into the clay subsoil, which suggested a base to this portion of the cellar. Also found at this level were two step-ins or shelves carved into the subsoil on the northern and southern ends of the feature. The base dimensions of the rectangular shape were as follows: the east wall 14'2", the west wall 13'10", the north wall 10'2", and the south wall 11'6". While not a perfect rectangle, the cellar's upper chamber dimensions were prepared in a manner that indicated it was dug to hold structural elements.

While no wood survived, it is possible that the cellar was timber framed to support a roof. If so, the roof may have rested on a wooden frame rising from within the limits of the pit as there was no posthole pattern associated with the structure around the exterior of the feature. The subsoil shelves, however, seemed more suited to support a floor only, not an entire structure. Another possibility is that a framed structure supporting the roof had rested on a cobble foundation that has long since been eroded, robbed out, or plowed away, along the outer perimeter of the cellar. Over a dozen cobbles were found 10' into the cellar in layer JR2718X; they may have fallen in from a foundation above. The northern and eastern walls of the cellar appeared somewhat worn away. But the western side adjacent to the storehouse showed little evidence of erosion, likely the result of better protection from the roof of the storehouse. The cellar floor may have had wooden floorboards resting on the clay subsoil shelves. There was no sign of any surviving wooden elements, which suggests they were salvaged by the colonists prior to backfilling the pit.

At a depth of 5', the circular lower chamber became evident at the floor level of the upper rectangular chamber. Measuring about 10' in diameter, the lower chamber continued down for at least 6'6" and into the modern water table. Below the water table, rapid water seepage into the excavation made it difficult to read the soil layers and impossible to determine if the circular form continued any deeper. While the upper cellar component was an open storage space, it was unclear how much of the circular portion was open during that same time period. Several of the major rubbish layers (JR2718M, N, L, W) that had accumulated in the upper cellar space above had cascaded down into large sections of the lower circular chamber. This indicated that the rubbish-filled portions of the circular pit were open prior to the pit's backfilling and abandonment (see profile map). This empty space in the circular pit created a massive void below the rectangular portion of the pit. The presence of this pre-backfill void is strong evidence that the cellar above had a wooden floor. Finally, it seems likely that the void may have provided more space for storage below the rectangular cellar's wooden floor. The lower chamber also appeared to be filled with builder's trench fill and possibly eroded subsoil (JR2718X, Y), some of which may have slumped

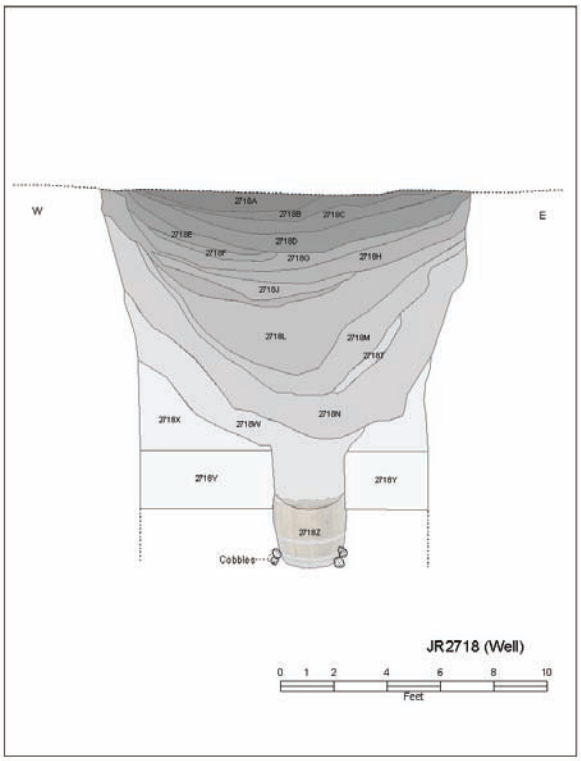

Figure 53. E/W profile, cellar/well

Figure 54. Well-lining cask staves, JR2718AA, in situ

in from above. The fill could have originated behind a wooden frame that may have lined the cellar; it would have collapsed into the pit when the wooden frame was salvaged. It is more likely, however, that most of the builder's trench fill originated from packing fill in the pit around the cask. Subsoil that slumped in from erosion was also likely responsible for some of the make-up of these soil layers.

Over a dozen cobbles were found in layer JR2718X on the western side of the large circular pit's perimeter. Why these cobbles were there is unclear, unless they were once part of a ground-level cobble foundation that eroded into the well pit. Another possibility is that they may have helped hold back silt during the construction of the well. These cobbles were found at 10' below the undisturbed subsoil level, which was about 1'6" above the level of the surviving cask. A probe was used in an attempt to detect additional cobbles, but none were found.

An oak cask was used to line the water reservoir of the well, and wood from the cask's staves, JR2718AA, began to appear at a depth of 11'6". The cask may have been initially as tall as 4', but the top half of the cask had long since decomposed. The diameter of the cask was 2'6" at the depth where the wood was first encountered and consisted of seventeen staves, averaging about 2' in length. The staves were 3/8" thick, and their widths varied from 5¾" to 7". Originally, the well consisted of one cask, the top of which would have been several inches above the floor level of the lower cellar to prevent anything from falling in from the chamber's floor.

Pumps were used to manage water levels as each stave was removed from the mud. A 3 mm (.12") wide croze line was found inside of each stave, 2½" from the bottom. The croze line is a small linear groove into which the head planks are inserted to seal the cask. The head planks had been removed to hollow out the cask in preparation for its use as the well lining. Two adjacent staves had four 1/3"-diameter holes augured through them to secure a wooden batten to reinforce the cask's head with pegs or iron nails.[27] A possible bung hole measuring 16.14 mm (.64") in diameter was found on one of the staves 21½" from the bottom. In addition, the staves contain ten small pegged holes. These were either sampling holes to test for spoilage, or were indications of pilfering. Also of note are two staves with carving on the exterior. One mark is a circle with a possible number within it, and the other is a circle with a line through it and a line beneath.

Wrapped around the bottom exterior of the cask were three wooden hoops used to hold the staves in alignment. The hoops vary in size: two 1" wide and one 1¾" wide. While species analysis is still pending, the hoops are likely hickory, oak, or ash. Several hoop sections were recovered with thin vine or reed strapping used to secure the form of the hoop. A majority of the wooden hoop fragments were recovered.

Figure 55. Cask marks

Several dozen cobbles, JR2718AB, were found directly below the bottom edge of the cask. The stones rested on a natural geological formation of limonite or bog iron, and they may have been used to elevate the cask above the bog iron lens in order to provide enhanced water flow into the well. Most of these cobbles were retrieved by hand, but a few were left in place because of the difficult working conditions below the water table. Some of the cobbles identified from this collection include quartzite, granite, and sandstone, all of which could have been collected locally. In addition to these cobbles were non-local stones that were likely brought from the Caribbean as ships' ballast. These foreign cobbles include andesite, limestone, and an unidentified volcanic tuff. Finally, two coquina cobbles from ancient coral reefs were found. The origin of these cobbles may be the nearby Yorktown Fossil formation, or possibly from the West Indies.[28] Several of the quartzite cobbles appear to have been modified earlier by Virginia Indians.

The muddy fill around the exterior of the cask (JR2718Y) held two sections of the head of a cask, about 6" south of the well cask. The wood, apparently oak, was roughly 2' below the top of the nearby cask and rested in a horizontal position. It is not clear if these head sections were part of the nearby cask, but they may have been used as a platform by the well builders to prevent them from sinking into the mud. The barrel head boards also had sampling holes and a bung hole similar to those found on the staves.

Fill episodes

The cellar/well was filled with multiple layers of strata after its abandonment. The initial backfilling phase went into the open cavity during James Fort's early years and settled throughout the 17th century. Through time the resulting slumped holes at the surface were leveled periodically with additional fill forming a "bulls eye" ringed effect with the most recent layers accumulating in the middle of the feature fill.

The top layer, JR2718A, consisted of slumped-in sandy brown loam plowzone. The layer below the plowzone, JR2718B, contained heavy brick, brickbat, and cobble concentrations. These concentrations were densest through the middle of the feature and about a dozen bricks were aligned on a N/S axis. These may be remnants of a brick walkway related to Structure 180 to the south, a 3rd quarter of the 17th-century building. The brick paving in turn sealed a layer of compact orange clay, JR2718C, averaging about 6" in depth.

Figure 56. Possible Drummond house, Structure 180 (brick walkway (JR2718B) facing north)

This layer held relatively few artifacts, which suggests that it was a rapid deposition of plain fill-dirt to re-level the continually compacting original cellar/well backfill.

A dark brown sandy loam layer, JR2718D, was found immediately below JR2718C, and it appeared to be slumped-in plowzone, based on the extremely fragmented ceramics found in it. The fill layer, on average about 1' thick, may have been plowed elsewhere before being redeposited in the feature, and was probably plowed in the second quarter of the 17th century. The latest artifacts in the layer include Jamestown coarseware, numerous delft tile fragments with ox head corner motifs, and European pipe bowls with the "WC" and "EL" (ca. 1631–41) maker's marks. Together these artifacts demonstrate a deposition date sometime in the 1630s or 1640s. Also from this layer was a cast, copper-alloy plaque depicting a "pelican in her piety": medieval imagery depicting a mother pelican wounding her breast to collect blood for her young, which was symbolic of the passion of Jesus. JR2718D sealed two small layers: a very sandy level with gravel inclusions and light brick rubble inclusions, JR2718E; and sandy fill with heavy mortar and brick inclusions, JR2718F. Both were situated toward the western half of the feature. JR2718F was confined only to the northwest corner of the feature. Layer JR2718G was under JR2718F, a light brown sandy loam fill with light charcoal and gravel inclusions. This layer covered most of the surface area of the feature. Layers JR2718E–G appeared to have been deposited in the 1650s or 1660s and contained Green Spring pottery.

Figure 57. Copper alloy "pelican in her piety" plaque (length 63 mm, width 40 mm)

JR2718H lay below JR2718G, and possibly may have been the top layer of fill when the feature was initially backfilled. JR2718H spread across most of the feature and consisted mainly of loam with some clay pockets and heavy charcoal and ash pockets. Artifacts from this layer dated to the late 16th and early 17th centuries. There were a couple of later artifacts among the thousands in this layer, and in several of the layers below, but these artifacts are likely the result of contamination during excavation. Layer H tilted or sloped up to the surface of the cellar in places along the outer edges, and this positioning put some of the feature's earliest layers in proximity to later layers, making it difficult to distinguish the strata. Layer H had heavy artifact concentrations, including tens of thousands of animal bones. Marine faunal remains were the most widespread, with sturgeon and other fish remains common. Some of the more unusual marine-related finds in the layer include bottlenose dolphin elements, shark vertebrae and teeth, squid beaks, and cuttlefish bones. Historically, cuttlefish bones have been used by jewelers to form casts for jewelry, but there was no evidence for this use with the cuttlebones from the well.

Numerous James Fort period ceramics were represented in the H layer, and there were many crossmends between it and deeper layers in the feature. This strongly suggests that the well and cellar were rapidly filled during the initial backfill phase. Additional crossmends with other early James Fort features listed below suggest that Structure 185 and those features may have been backfilled contemporaneously. A Frechen stoneware jug crossmended to Pit 10, a pipemaking saggar crossmended with Structure 165's cellar,[29] fragments from a delftware drug jar crossmended with the west bulwark ditch,[30] a Midlands purple butter pot crossmended with Pits 8, 9, and 10[31] along with the west bulwark ditch, and, finally, a fragment of London post-medieval redware mended to a sherd from Pit 3.[32]

Like many previously excavated James Fort features, arms and armor were found in abundance in JR2718H. Some of the armor includes a gorget for protecting the neck region, tassets for the thighs, a couter for elbow protection, and numerous cheek pieces to both cabasset and burgonet helmets. Gun parts were common along with sword and dagger parts. The trend of numerous military-related artifacts would continue in the layers below.

Layer JR2718J was both above and below JR2718H (see profile map) and contained heavy burned daub and wood, remnants of a possible structural fire. In the

southern half of the feature, and sealed by JR2718H, was a small concentration of heavy daub, JR2718S.

Layer JR2718K was excavated as a test in the northwest quadrant of the feature where it was difficult to read the soil layers. It was later determined that the JR2718K test had been excavated through three layers, JR2718L, M, and N. JR2718L consisted mostly of clay with few artifacts. It appeared at times that JR2718L was the same layer as JR2718M, but this was never confirmed. JR2718M was sealed by JR2718L, but it had more loam along with ash inclusions mixed in with the clay. JR2718M contained a high quantity of burned daub, possibly from a mud-and-stud cottage. A complete drug jar believed to be Spanish was found in this layer, as were the remains of a hand brush. The possible boar hair bristles were burned, which contributed to their rare survival, and they still contained 24 copper alloy tacks that once attached the bristles to a central wood core.

A layer of loose grey and brown ashy loam (JR2718N) was sealed by JR2718M. JR2718N was the largest layer in the feature by volume, and it was also the most artifact-rich layer. Butchered dog and horse remains were found in this layer, which were tell-tale signs of the "starving time" winter of 1609–10. Aside from the dog and horse remains, and some pig and sheep (or goat) remains, the vast majority of the faunal remains were from wild animals. Turtle and bird remains were common, along with venomous snake vertebrae, and squirrel, raccoon, and woodchuck

Figure 58. Butchered horse and dog remains

Figure 59. Mending sea turtle carapace

bones, to name a few. Several interesting marine faunal specimens were found in this layer, including a non-fossilized whale vertebra and an enormous butchered 4'-diameter marine turtle carapace from a Green turtle, or possibly a Loggerhead. The sea turtle may have been collected in Bermuda by the survivors of the *Sea Venture* shipwreck as there are possible Bermudan cahow bones present in this layer. A one-of-a-kind discovery from layer N was a portion of an elk antler with two of its points still present; it had been modified into a wall hook. Two large holes had been drilled through the antler section, and one nail remained *in situ*.

Near the bottom of layer N was a thin lens of burned organic material, which included multiple types of European fabric along with Virginia Indian reed mat and basket sections. These organic artifacts appeared to have been burned and fused together before being deposited in the pit.

Virginia Indian artifacts were numerous throughout the feature, and layer N had them in abundance. There were several fragments of Virginia Indian pipestems and pipe bowls, along with one complete "cloud blower" style pipe. Thousands of pottery fragments were recovered, and many of these mended to form complete or near complete Indian vessels, suggesting that these pots were being used at James Fort. Part of a bone needle made from deer rib by Virginia Indians was found in this layer, and more similar needles were uncovered in nearby layers. A sandstone nutting stone, with a depression on each side into which nuts were placed for cracking with a hammer stone, was also

Figure 60. Virginia Indian nutting stones, pottery, tobacco pipes, and bone tools

found in layer N. Finally, there were several hundred Virginia Indian-made shell beads in this layer, and over two thousand were found in the next significant layer, JR2718W. The beads, made from the ribbed mussel *Geukensia demissa*, were in various stages of completion. Both finished and unfinished beads were found along with complete mussel shells, suggesting a manufacturing site within James Fort.

There were several crossmends between ceramics in JR2178N, nearby Structure 183, and Structure 177 (thought to be the fort's second well). Vessels from several countries were represented including French and German stonewares, Spanish and Portuguese olive jars, and French, Italian, German, Spanish, and English earthenwares. The English wares are particularly interesting in that they show the usual concentration of Surrey-Hampshire border wares and London-area earthenwares that are typical of the early fort contexts, but there are also numerous vessels from the western part of England.[33] These wares, particularly those from Somerset County, are probably the result of Sir Thomas Gates's fleet of nine ships that provisioned in Plymouth in 1609 before sailing to Jamestown.

Figure 61. Virginia Indian shell beads made from purple mussel shell, beads strung together for photograph

Figure 62. Assemblage of border ware vessels, border ware tripod pipkin (height 123 mm)

Also of note from layer N was a child's silver teething stick.[34] Incorporating a whistle and janglers, the teething section was composed of red coral, a substance thought from Roman times to contain magical protective properties.

Hundreds of fragments of Robert Cotton tobacco pipes ca. 1608 were found throughout the feature, including eight pipestem fragments with the full or partial names of prominent Englishmen stamped into them with printer's type. The named pipes include "CAP

Figure 63. Group of London earthernwares; far right storage jar measurements: height 230 mm, diameter 185 mm

Figure 64. Somerset storage jar (height 375 mm, rim diameter 230 mm)

ARGALL" or Captain Samuel Argall; "E SOUTHAM . . ." or Earl of Southampton; ". . . S NELSON" likely Captain Francis Nelson; "SR WALTER . . . " likely Sir Walter Raleigh; "SR CHARLES HOWWARDE" or Sir Charles Howard; ". . . WARRE" likely Lord De La Warr; "SR W C" likely indicating Sir Walter Cope; and

Figure 65. Child's silver teething whistle with coral, before and after conservation (length 75 mm)

"ROB . . ." suggested to signify Robert Cecil, although unlikely as there is no honorific. These stem fragments are believed to have been from pipes that were broken during the production process, thereby never reaching their intended recipients. Many more individualized pipes probably survived the firing process and made their way to Virginia Company investors and other well-connected Englishmen.

Another unusual find came in the form of a slate writing tablet measuring 127 mm by 209 mm. Both sides of the tablet contained numerous faint inscriptions of animals, humans, and plants, along with both freehand and ruled text. The tablet underwent numerous tests to interpret the images. NASA conducted a micro-CT scan, the Smithsonian Institution used Reflectance Transformation Imaging, and the FBI utilized several methods of high-resolution imagery. A light dusting of chalk over the surface of the tablet was found to be the most useful method for viewing

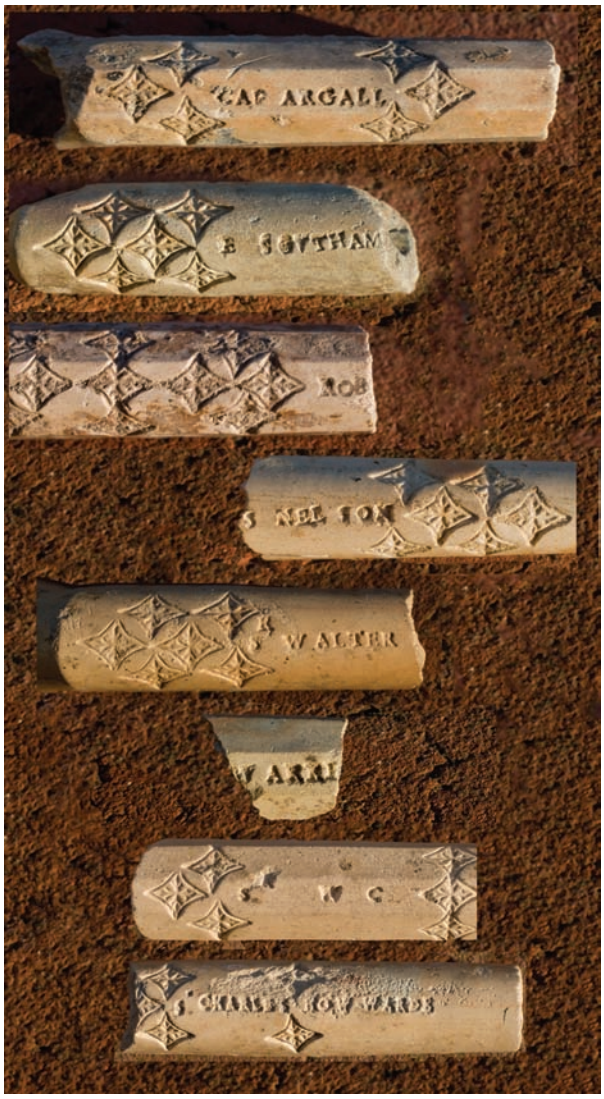

Figure 66. Personalized tobacco pipes impressed with the names of prominent Englishmen

Figure 67. Both sides of slate writing tablet; inscriptions enhanced with chalk dust

the inscriptions.

A massive layer containing oyster shell concentrations (JR2718W) was sealed by JR2718N. This layer was located along the southern and western sides of the pit, which suggested the layer was dumped into the feature from the southwest corner. Layer JR2718W slumped deeply into the feature, stopping a few inches from the top of the cask. It was clear this layer was the first major layer deposited in the feature once the cellar/well was abandoned. Tens of thousands of oyster shells

Figure 68. Oyster shell layer JR2718W

were recovered from this layer. Interspersed among the shells were thousands of artifacts with large amounts of marine fauna including sturgeon, dolphin, blue crab, shark, and numerous other fish and shellfish species.

A layer of orange clay and sand, JR2718P, underlay JR2718N and was concentrated along the northern end of the feature and above the area where the subsoil stepped in. Relatively few artifacts were found in this layer, indicating it may have been the remnants of builder's trench. A layer consisting of orange clay and sand mix (JR2718X) was sealed by JR2718N and W. This layer appeared nearly everywhere across the entire surface area of the feature as it sloped in from just above the bottom of the rectangular portion of the pit. JR2718X was found in the area directly above the cask and, as mentioned previously, JR2718X likely had been builder's trench. Below JR2718X, an arbitrary break in the soil layers (JR2718Y) was made when it became too difficult to read the soil changes in the mud surrounding the cask. While the majority of JR2718Y must have been deposited or redeposited builder's trench fill set in around the exterior of the cask, there was probable contamination from JR2718W, which had mixed into the mud and was impossible to separate during the rapid inflow of water.

The bottom layer of fill found in the feature, JR2718Z, was in the cask and consisted of a concentration of bluish/grey clay. Unlike the artifact-rich bottom contexts of other fort-period wells, there were only a few artifacts in the bottom of this well. Among these objects were several small tree branch fragments, a falconet artillery shot, and 22 fragments from a Virginia Indian pot. The other James Fort period wells (Structures 170 and 177) held dozens of artifacts that had fallen into the shafts while the wells were still in use.[35] The sheer quantity of artifacts suggested that the wells had been open for a long period of time and/or that they were serving a great number of people; both scenarios would likely increase the chance of accidental losses and perhaps purposeful discards. Conversely, the relative lack of artifacts in the cellar/well cask suggests this well was not generally accessible to the entire James Fort population and was probably somehow enclosed. As mentioned above, there is a possibility that the cellar/well had been added to the adjacent storehouse, Structure 179, where the cape merchant controlled access to the Virginia Company goods. If the cellar/well building was an extension of the storehouse, it can be assumed that the water supply was kept under guard and that access was limited. In any event, the cask fill (JR2718Z) may have simply been formed by natural silting during the use of the well, or possibly

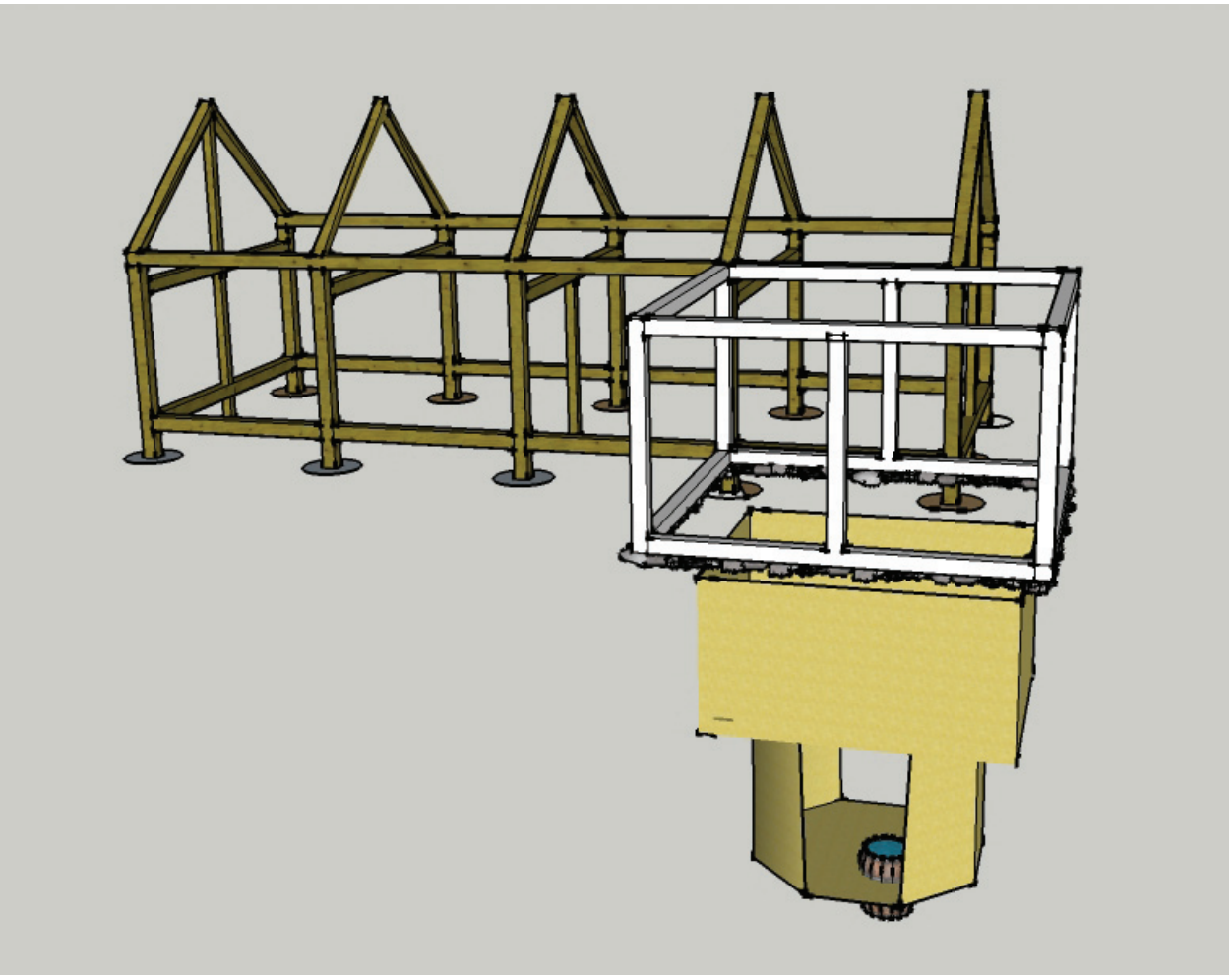

Figure 69. Conjectural reconstruction of cellar/well

after its abandonment.

Storehouse connection and well timeline

There was reason to believe that Structure 185 had been added to the storehouse. First, the two structures abutted each other. Second, the archaeological evidence interpreted in light of original documentation strongly suggests that the two structures were in use at the same time. A storehouse was built sometime in 1607; it was damaged when the fort burned in early January of 1608,[36] and then repaired shortly thereafter.[37] A storehouse remained on the landscape for at least one decade.[38] According to John Smith, the first well in the fort appears to have been constructed in either late 1608 or early 1609. Smith wrote they dug "a well in the fort of excellent sweet water, which till then was wanting. . . ."[39] Secretary of the Colony William Strachey likely refers to the same well over a year later after first observing the fort in May of 1610; he finds the well failing and contributing to disease.

> *"James Town . . . hath no fresh water springs serving the town but what we drew from a well six or seven fathom deep, fed by the brackish river oozing into it; from whence I verily believe the chief causes have proceeded of many diseases and sicknesses which have happened to our people. . . ."*[40]

Therefore it seems logical that this contaminated well was abandoned shortly after Strachey saw it in May–June 1610. The 1610 backfilling date of the cellar/well, established archaeologically, supports that conclusion.

The heavy concentrations of garbage and trash in the cellar/well dating to the starving time winter of 1609–10 suggests this refuse went into the abandoned cellar/well as a result of a massive clean-up phase at the fort, which occurred in June after Lord De La Warr's arrival on 10 June 1610. De La Warr wrote on 11 June 1610, "I set the sailors awork to unlade ships and the landmen some to cleanse the town. . . ."[41]

The written record and archaeological evidence leave little doubt that the cellar/well (Structure 185) and the storehouse (Structure 179) coexisted, and that Structure 185 was added onto Structure 179. As mentioned previously, the original cellar/well excavation disturbed the eastern end of a storehouse posthole, JR2694. While the cellar cut some of the posthole, it

did not impact the post itself, which was 9" from the edge of the cellar. Furthermore, with the cellar likely lined with wood, builder's trench fill would have been packed against the edge of this post, thereby compensating for any support lost when the posthole was disturbed. Part of another storehouse post, JR2757, was found 10' south of JR2694 and adjacent to the southwest corner of the cellar. It had been partially destroyed by the construction of the Civil War earthwork moat. It is logical to conclude that an entrance from the inside of the storehouse into the cellar/well probably once existed between these two posts. The positioning of the well on the northern end of the cellar also suggests that the location of the entrance was on the west between the two posts. Access to the cellar would require steps or a ladder which needed a solid footing on the cellar floor, fully clear of the open well head. With this arrangement, the well would have been located a few feet to the left of anyone walking down the stairs. This left ample space to maneuver water buckets, or store and retrieve items stored in this space. It is also possible that this entrance was the only access point to the cellar and well, which would provide the greatest amount of control and security over the water supply. There was no other archaeological evidence suggesting any other access points.

No archaeological evidence survived to indicate how the roof was constructed, but the location adjacent to the storehouse suggests possibilities. It is likely the roof was somehow tied into the east wall of the storehouse and expanded to cover the entire cellar. This may have been built in the manner of a lean-to, sending rainfall to the east, well beyond the edge of the cellar. The roof of the cellar also must have had a significant overhang to keep water away from the north and south earthen cellar walls. Finally, the portion of the east cellar wall that did not abut the storehouse likely would have had a small section of roofing over it sloping to the west (see Figure 69). The roof structure would have needed to be only a few feet above early 17th-century grade, deep enough to provide head clearance in the cellar.

In sum, it appears the water supply in the cellar was controlled, and possibly only accessible through the storehouse. If the cellar and well were indeed accessible only through the storehouse, then securing it would require fewer guards. It also seems likely that part of the intended purpose of having a well in a cellar would have been for cold storage. Ambient temperature at 6' below the 17th-century grade would have been consistently cooler, helping to preserve semi-perishable foodstuffs, and the lower circular chamber beneath the floor would have been cooler still. Finally, the location of the well was nearly in the center of the fort, which may have been intended as a matter of convenience. By the time the cellar/well was constructed, it is likely that the main body of the storehouse was already occupying a considerable space at the exact center of the original triangular-shaped fort. In that case, at the time the area was chosen for the cellar/well, that space was as central to the fort as possible.

Figure 70. Example of level of preservation of artifacts from Structure 185

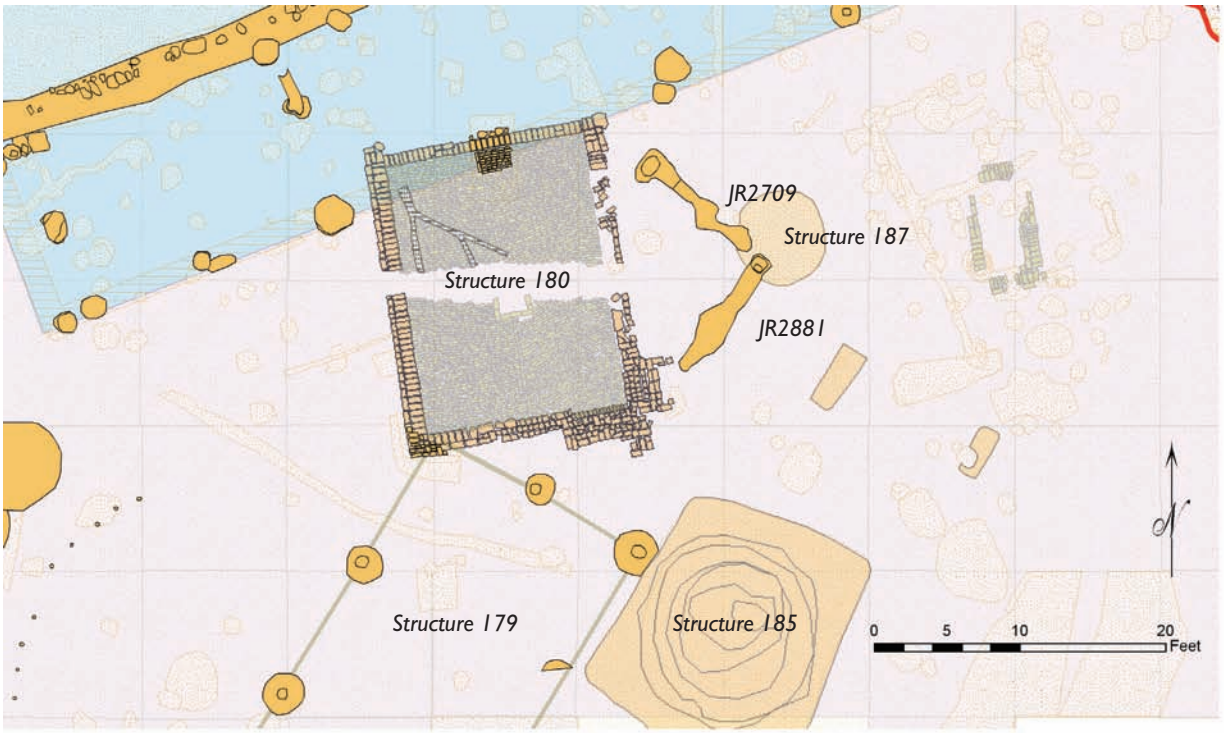

Figure 71. Structure 187 site plan

Structure 187: Storehouse Addition

Excavations in 2008, north of the possible storehouse (Structure 179) site, revealed two seemingly related foundation trenches, JR2709 and JR2881, which appear to be wall segments for a fort-period building (Structure 187). The trenches were predominately clay-filled and punctuated with some isolated loam-filled depressions, suggesting that a cobble foundation was possibly constructed and removed within the trenches. JR2709 was oriented NW/SE and measured approximately 8' long by 10" wide and 9" deep. The other trench (JR2881) was NE/SW and about 9' long by 9" wide and 9" deep. The trench segments were perpendicular to each other, but a later pit (Pit 20, JR2710) almost certainly severed any original direct joining of the two segments. Tests into each trench confirmed they both have a flat bottom and contain similar fill deposits. This indicates they are related and likely composed the east corner of a 10'-wide structure.

In 2010 three tests were excavated into Structure 187 in order to establish construction techniques, the date of construction, and possibly the length of time it existed. A 1' by 9" test (JR2877) into a portion of JR2709 identified four layers of fill. The top layer was a brown/tan loam with charcoal flakes (JR2877A), which may have been soil that filled a removed cobble foundation cavity. Another layer, JR2877B, consisted of orange sand with very few inclusions. This sealed JR2877C, a layer of grey loam with some clay inclusions. It contained a heavy mixture of burned wood, slag, two copper aglets, lead shot, four fragments of turtle bones, and a piece of coral, probably Caribbean. JR2877D, the bottom layer, was mainly a subsoil wash and was void of artifacts.

The test into JR2881 (JR3076) involved removal of the entire trench, which contained the same stratigraphy as the fill in Test JR2877. Layer JR3076C had considerable amounts of burned wood. Unlike JR2877C, the wood was more articulated and suggested that perhaps the trenches' original purpose was to support horizontal 5" wide, squared timbers that ultimately were destroyed by fire. A Surrey-Hampshire border ware pipkin crossmended with sherds in Structure 186, a building to the east (see the forthcoming 2011 Interim Report). The sherds, which were recovered from a wall foundation (JR2844), suggest that both

Figure 72. Structure 187 foundation trenches JR2709 (right) & JR2881 (left) with half excavated Pit 20 in the foreground (facing west)

Figure 73. Profile in test JR2877 into trench JR2709; layers JR2877A–D visible (facing northwest)

Structures 187 and 186 were early fort period and may have been contemporaneous.

The removal of JR3076D revealed a posthole (JR3090) at the projected east corner of the building. Another test (JR3092) into the north corner in trench JR2709 revealed another posthole (JR3091) positioned 10' from JR3090. Layers JR3092B and C revealed several ceramics including a Hessian crucible, a Surrey-Hampshire border ware pipkin handle, and the base to a Chinese porcelain bowl.

Postholes JR3090 and JR3091 were both approximately 1'6" in diameter and had about the same depth with bottom elevations of 11'4" and 11'8", respectively. However, JR3090 had a clearly defined postmold, while JR3091 appeared to have been backfilled with the sandy/clay layer and had no mold. The difference between fill in posthole JR3090 and JR3091 may have been caused by an alteration made to the structure sometime after initial construction.

Other evidence suggests there were indeed two phases of construction. The trench-laid squared timbers acted as sills between corner posts, or as an underground barrier to keep moisture from seeping into the interior. However, that technique only protected the building's eastern end. As Test JR3076 revealed, the bottom of the trench inclined in elevation as it headed southwest toward Structure 179. Evidence suggests that the second phase of construction involved removing the corner posts, filling the trenches with sandy clay, and laying cobbles for the foundation of a second building.

The total length of Structure 187 could not be determined because the construction of the mid-17th-century cellar of Structure 180 removed any evidence of foundation trenches toward the west. The fact that the trenches are basically oriented with, and in proximity to, the possible storehouse suggests they are partial remains of a 10' by 20' north addition to that structure. The artifacts found in the trenches, and Structure 187's orientation with surrounding structures, indicate that it dates to the early fort period.

Figure 74. Chinese porcelain bowl fragment in JR2709

Endnotes

[1] William M. Kelso and Beverly Straube, eds., *2000–2006 Interim Report on the APVA Excavations at Jamestown, Virginia*, (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 2008), 55–63.

[2] Ibid., 101–102.

[3] Ibid., 71.

[4] Jeffrey Brain, Fort St. George: Archaeological Investigation of the 1607–1608 Popham Colony, (Augusta: The Maine State Museum & The Maine Historic Preservation Commission, 2007), 60.

[5] Ibid., 42.

[6] Ralph Hamor, "A True Discourse of the present estate of Virginia" in *Jamestown Narratives: Eyewitness Accounts of the Virginia Colony: The First Decade, 1607–1617*, ed. Edward Wright Haile (Champlain, VA: Roundhouse, 1998), 827.

[7] William Strachey, "A True Reportory . . . by William Strachy, esquire," in *Jamestown Narratives*, ed. Haile, 429 – 430.

[8] Kelso and Straube, 2000–2006 Interim Report, 96.

[9] Ibid., 101–102.

[10] Ibid., 55.

[11] Two close helmets were recovered from a ca. 1620–22 context at Martin's Hundred, a settlement about ten miles downriver from Jamestown (Ivor Noël Hume and Audrey Noël Hume, *The Archaeology of Martin's Hundred* (Williamsburg, VA: The Colonial Williamsburg Foundation, 2001), 393–397.

[12] D. R. Atkinson and A. Oswald, "London clay tobacco pipes," *Journal of the British Archaeological Association* 32 (1969), 171–227.

[13] Beverly A. Straube "A Roman Oil Lamp Illuminates Seventeenth-Century Jamestown," in *Ceramics in America* 2008, ed. Robert Hunter (Milwaukee: The Chipstone Foundation, 2008), 279–283.

[14] Kathleen Wilson, personal communication, 2008.

[15] Noel Broadbent of the Smithsonian Institution, personal communication, 2007.

[16] Michael D. Lavin, "Captain John Smith's Chisels," presentation, Society for Historical Archaeology Annual Conference, Austin, TX, 2010.

[17] John Smith, "A True Relation," in *Jamestown Narratives*, ed. Haile (Champlain, VA: Roundhouse, 1998), 149.

[18] Steve Mankowski of the Anderson Blacksmith shop at Colonial Williamsburg, Virginia, personal communication, 2007,

[19] Observations of experimental iron bloomery done by employees at the Anderson Blacksmith shop in Colonial Williamsburg, 2007, 2008.

[20] These posts were likely originally 1' deeper because they had been located in the area where the floor had been dropped over 1' during the final phase of cellar usage.

[21] Bly Straube, "In Praise or Damning Caricature? An Early Seventeenth-Century Identification Badge," *Colonial Williamsburg Journal* (Winter 2010).

[22] This sill may have extended further north, but its true length may have been lost during excavation before its identity was realized.

[23] Jamie May, "Discovering European American Vernacular Building Tradition at James Fort," presentation, Society for Historical Archaeology Conference, Austin, TX, 2011.

[24] William Strachey, "A True Reportory" in *Jamestown Narratives,* ed. Haile, 429.

[25] The southern palisade had also eroded at this location, and the measurement of 34'6" was based on conjecture under the assumption that the eroded part of the southern palisade had continued on the same axis as the remaining section of that palisade.

[26] Samuel H. Yonge, *The Site of Old "James Towne,"* (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 1904), 72.

[27] Jonathan Hallman, cooper with Colonial Williamsburg, personal communication, 2010.

[28] Steven Clement and Jack Kane, geologists, personal communication, 2010.

[29] Kelso and Straube, 2000–2006 Interim Report, 41–43.

[30] Ibid., 3–8.

[31] Ibid., 19–23.

[32] Seth Mallios and Beverly Straube, 1999 Interim Report on the Excavations at Jamestown, Virginia, (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 2000), 17–19.

[33] Beverly A. Straube, "'Captain John Smith's Pots': a Brief Survey of the First English Pottery Brought to Jamestown, Virginia," in *This Blessed Plot, This Earth: English Pottery Studies in Honour of Jonathan Horne* (London: Paul Holberton Publishing, 2011), 159–171.

[34] Bly Straube, "Jamestown's Lost Colonists: Finding Traces of Unnoticed Children in the Settlement's Archaeological Record," *Colonial Williamsburg Journal* (Autumn 2011), 69–71.

[35] Kelso and Straube, 2000–2006 Interim Report, 67–69, 75.

[36] Francis Perkins, "Letter from Jamestown to a Friend, 28 March 1608," in *Jamestown Narratives*, ed. Haile, 133–134.

[37] Edward Maria Wingfield, "A Discourse of Virginia per Edward Maria Wingfield," in *Jamestown Narratives*, ed. Haile, 196.

[38] John Smith "The General History, Book 4," in *The Complete Works of Captain John Smith*, ed. Philip L. Barbour, (London: 1986, Vol. II), 262.

[39] John Smith "The General History, Book 3," in *Jamestown Narratives*, ed. Haile, 319.

[40] William Strachey "A True Reportory," in *Jamestown Narratives,* ed. Haile, 430–431.

[41] Lord Delaware "Letter to Salisbury, rec'd September 1610," in *Jamestown Narratives*, ed. Haile, 466.

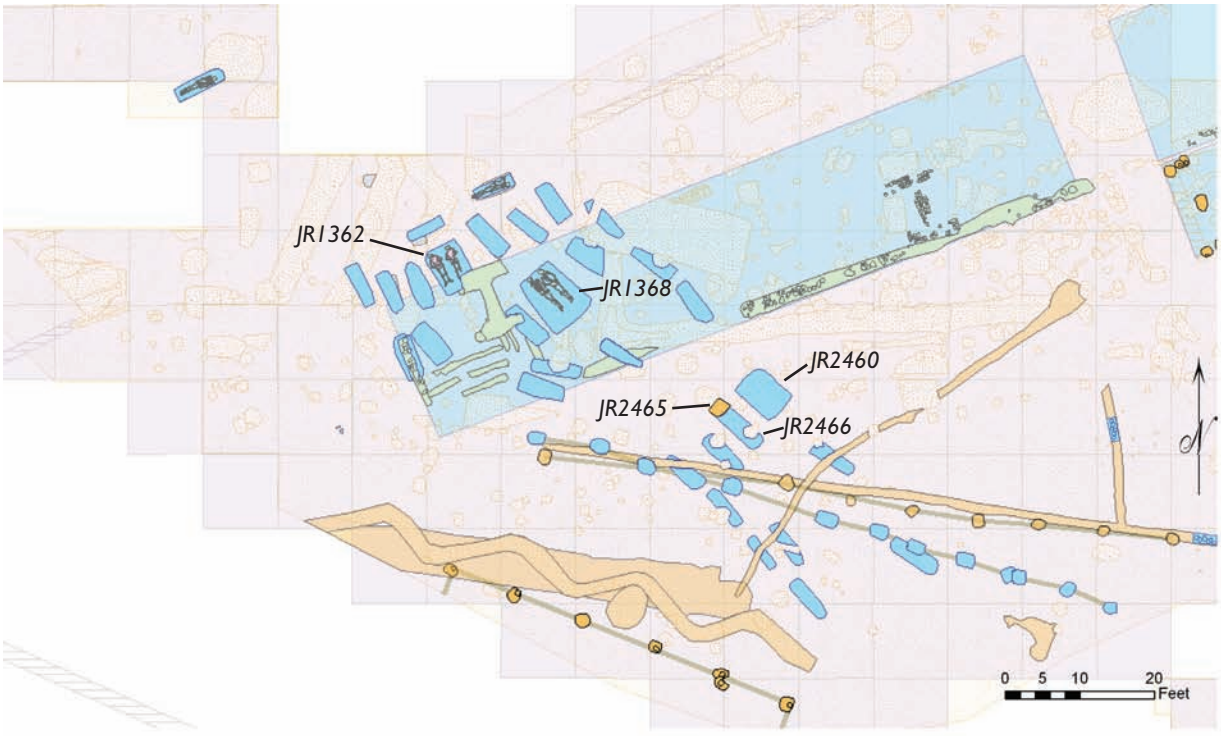

Figure 75. Excavated 1607 burials labeled

Fort Period Burials

1607 Burial Ground

Excavations in the western end of James Fort during the 2007 and 2008 field seasons revealed ten burial shafts to the south of, and associated with, the already identified early fort-period burial ground (ca. 1607–10). These burials were all oriented on a NW/SE axis, the same axis as the majority of the previously discovered burial shafts.[1] One of the burial shafts, JR2460, was 4'8" wide, much wider than the others. This almost certainly indicates that this burial

Figure 76. Open-area excavations showing additional 1607 burials

Figure 77. Burials discovered during the 2007–08 field seasons (facing east)

contains two individuals, similar to burials JR1362 and JR1368 excavated in 2004.[2] All burial shafts were over 5' in length, which suggests they held adults. The discovery of the additional ten grave shafts brings the total number of individuals buried in the area to thirty-three. A square-shaped posthole, JR2466, was found at the northern end of burial JR2465. This posthole abutted the grave fill and was oriented with the grave shaft, suggesting that it may have supported a burial marker. None of these ten burials disturbed any other features, which may indicate that the burials were the earliest English features in this part of the fort. This was also the case with the twenty burials found from 2003 through 2005.

A gap of about 8' existed between the nine burial shafts found in 2007 and 2008 and the twenty burial shafts found from 2003 through 2005. This gap may indicate that a road or path once led through the burial ground. The burial ground measured 78' by 30' at its widest point and 17' wide at its narrowest point. To date, only three burial shafts have been excavated, which were discussed in the 2000–2006 Interim Report.[3]

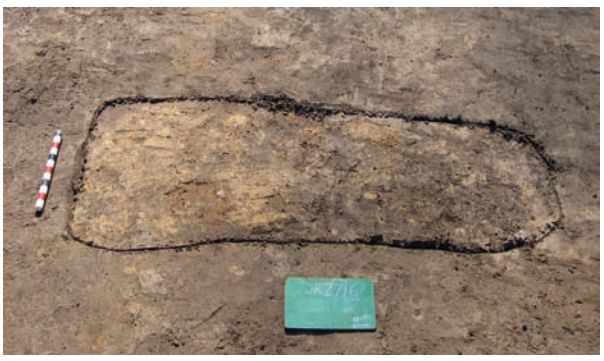

Figure 78. Burial JR2716 (facing east)

Solitary Burials (JR2716 & JR2730)

A probable burial shaft designated JR2716 and left unexcavated was found near the center of James Fort. The shaft measured 4'5" long by 1'10" wide and was disturbed by one small circular post, JR2717. The grave was located over 130' from the fort's southern palisade, but it was oriented perpendicular to that palisade, suggesting the two were contemporaneous. The grave fill at the surrounding subsoil elevation consisted of orange clay with dark loam inclusions. No historical artifacts were found in the fill at this level, possibly indicating that this feature dates to the earliest years of fort occupation. Located 10' to the ESE of JR2716 was another possible burial, JR2730. This possible grave shaft measured 3'6" by 1'4" and may be the resting place of a child.

Endnotes

[1] William M. Kelso and Beverly Straube, *2000–2006 Interim Report on the APVA Excavations at Jamestown, Virginia*, (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 2008), 31–32.

[2] Ibid., 32–35.

[3] Ibid., 32–36.

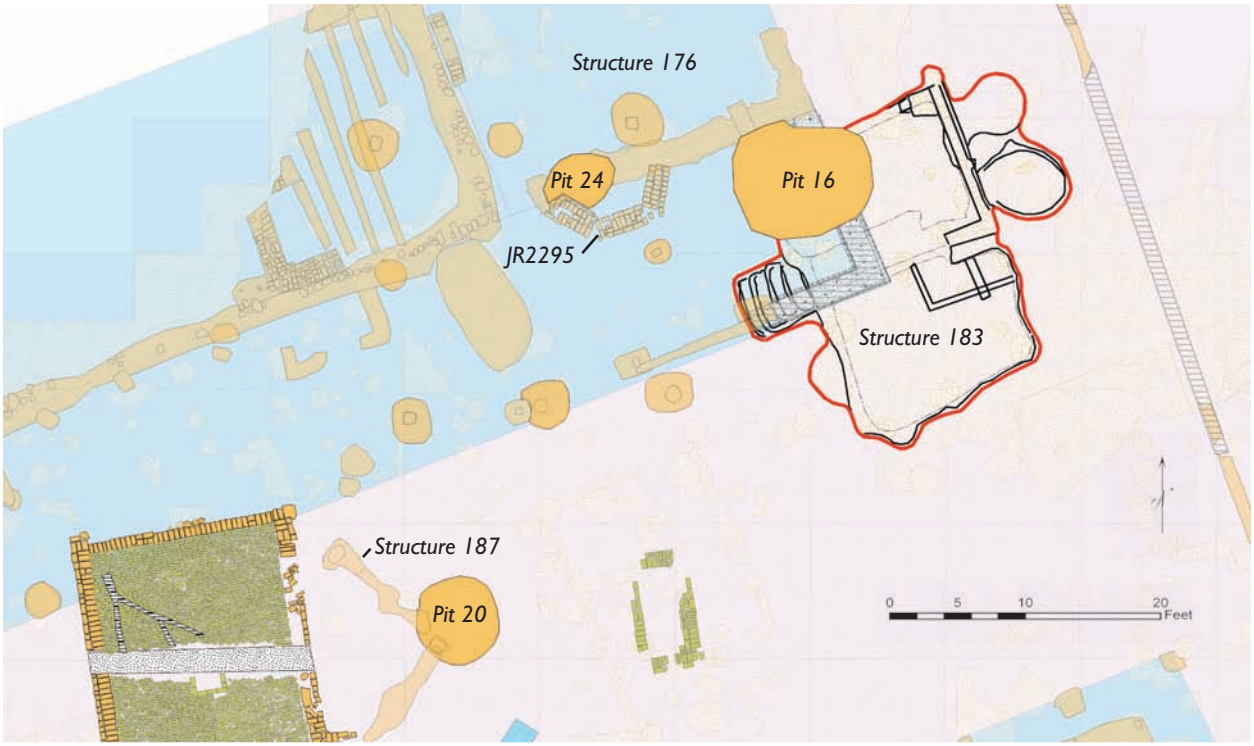

Figure 79. Site plan showing Pit 16, Pit 20, & Pit 24

James Fort Pits

Pit 16: Mortar Mixing Pit (JR2336, JR2359)

Pit 16 (JR2336, JR2359) was a mortar mixing pit found in the fill of Structure 183's cellar. The pit was bowl shaped, circular, roughly 6' in diameter, and about 8" deep. There were six layers of fill (JR2359A–F), mostly consisting of sandy loam with brick and mortar inclusions. The bottom of the pit contained two distinct 1"-thick mortar concentrations (JR2359E, JR2359F). In addition to the brick and mortar, layer JR2359F contained a lens of burned clay.

Figure 80. Mortar layer in Pit 16 (facing north)

Figure 81. Lennox round coin (diameter 15 mm)

The top soil layer (JR2359A, same as JR2336A) was likely a plowzone colored brown and red from high concentrations of disintegrated brick. An English patent farthing was found in JR2336A. Known as a Lennox round, it is the type of coin issued by the Duke of Lennox between June 1614 and February 1624. JR2359A also yielded several vessels—a jug, bowl, pan, jar, and porringer—made in the south Somerset area of England. The porringer was scratched on the exterior base with a broad arrow, a symbol used since

Figure 82. Broad arrow mark on porringer (base diameter 82 mm)

the 14th century to signify property of the English crown. Use of certain marks on stores was restricted by British law, and it is still a misdemeanor crime to use the broad arrow mark on goods without authority.[1] The mark on the Jamestown porringer may indicate it was purchased for use by the Royal Navy; on the other hand, the mark may be a way of personalizing the vessel. A number of vessels associated with eating and drinking found on the 1545 English warship the *Mary Rose* also contained crudely applied marks, some appearing as broad arrows. It has not been determined whether these marks indicate an official issue of the ship, or the owners or makers, or if they are symbols of superstition for protection or good luck.[2]

Although not confirmed by chemical analyses, visual inspection of the fabrics suggests that the south Somerset vessels were made in or near the village of Donyatt and are wares known as Donyatt Pottery Type 7. This ware type was produced in the 17th century and has been found on a number of Virginia and Maryland sites.[3] The brushed slip spiral design on the interior of the bowl from JR2359A was produced while the pot was rotating on the potter's wheel, a technique used by Donyatt potters in the early 17th century.[4]

Layer JR2359B, a loam/clay mixture, directly sealed the portion of the mortar lining that survived. It contained single sherds of ware types that represent the early James Fort period (1607–10), including Surrey-Hampshire border ware, tin-glazed earthenware apothecary jar, Midlands purple butter pot, and Siegburg stoneware. Layer JR2359D also sealed the mortar lining and produced a copper Irish halfpenny dated 1601. Other material from layer D, such as a German crucible with residues from use and a London distilling dish, also reflect an early 17th-century date.

Figure 84. Mortar (diameter 156 mm)

Figure 83. Interior of slipped bowl (base diameter 122 mm)

Unusual among the iron objects from the context is the basal section of a mortar, which may have been used for alchemical experiments, or to process comestibles. Although layers JR2359E and JR2359F were primarily composed of white oyster shell mortar, there were several other artifacts, including two ceramic vessels that crossmended with both Pit 6 and Structure 183. One of the vessels is a Somerset pipkin, the other is a Roman oil lamp from the first century A.D. The latter object is discussed in the report for Structure 183.

In addition to *in situ* artifacts providing chronological evidence, the location of Pit 16 in relation to some of the surrounding features may offer insight into its

date of use. A late 17th-century ditch (Ditch 27) cut through the eastern limits of the pit. Structure 176, the probable 1617 addition to the governor's residence, did not intersect Pit 16, leaving their relative chronology undetermined. Because of the pit's location just south of Structure 176's south foundation wall, however, it is probable that mortar mixed in Pit 16 was used in that structure's construction.

Pit 20 (JR2710)

Pit 20, JR2710, is a circular pit near the center of James Fort. The pit measured approximately 6'6" by 6'2" in plan, with an average depth of about 1'. The western half of the pit was excavated in 2010, and the eastern half remained unexcavated. Pit 20 consisted of one fill layer from top to bottom, JR2710A. JR2710A contained a mix of brown loam and clay. Below this layer were subsoil and the remains of two trench features, JR2709 and JR2881, which had been disturbed by Pit 20. These trenches were likely part of a James Fort period (1607–24) building, Structure 187. Pit 20 was also disturbed by two later postholes, JR2714 and JR2715. JR2715 had to be excavated in order to dig the western half of Pit 20. This posthole, which contained a lead cloth seal, dates to the early 17th century.

Pit 20 appears to be early based on the large number

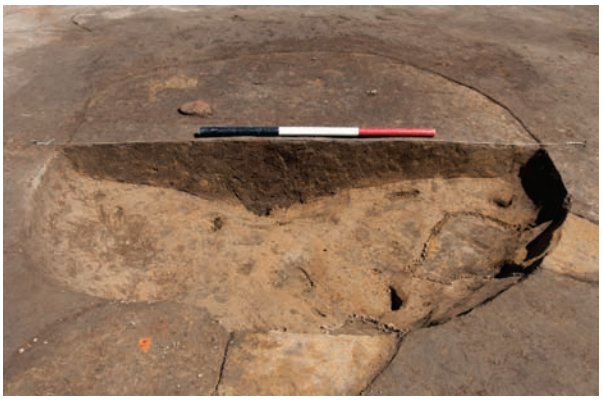

Figure 85. Pit 20 bisected (facing east)

of prehistoric materials relative to artifacts from the colonial period. The latter consisted of several nails, an unidentified iron object, and a mammal rib bone. The prehistoric artifacts included an archaic point, quartz and quartzite flakes, and pottery.

Pit 20 bears a resemblance to another fort pit of the same period, Pit 12, located 49' WSW of Pit 20.[5] The pits were both circular and similar in size with a more or less bowl-shaped bottom contour. The initial functions of these pits remain unclear. There were no associated structures with either pit, and the absence of flat bottoms suggests they were not used as storage pits. Both pits contained relatively few artifacts when compared to other backfilled fort-period pits, and the fill compositions of both features were also similar in appearance.

Pit 24 (JR2302)

Excavations along the southern foundation of Structure 176 revealed a small, fort-period trash midden, JR2302, located to the north of the three-sided brick foundation JR2295.[6] The midden's northern limits were sealed by the plowzone in the 10' by 10' unit JR2234. Structure 176's foundation, JR2294, and a portion of JR2295's western side directly sealed the feature and obscured its southern limits. Prior to excavation, the visible portion of the midden's surface was comprised of a large deposit of oyster shells.

Artifacts from the pit's surface (JR2302A) included

Figure 86. Plan view of brick foundation (JR2295) associated with Structure 176; note oyster shell concentration in Pit 24 (bottom right)

two tobacco pipe fragments from the Jamestown pipemaker Robert Cotton (ca. 1608), which is consistent with other early James Fort period (ca. 1607–10) features.

In order to investigate the midden further, a test approximately 2'5" by 4" (JR2302B) was excavated. This deposit was composed of a very sandy, grey/brown loam with a heavy concentration of oyster shells. The test revealed that the midden layer, JR2302B, sat on a gritty, yellow sand layer and was 1½" to 2" thick. It was uncertain whether or not the sand layer was related to the midden or was part of a separate, earlier feature. The layer was left intact. Artifacts found in JR2302B also indicated this was an early James Fort feature. These include Indian pottery sherds, a Midlands purple butter pot fragment, and several iron plates from body armor called a jack-of-plate. The faunal

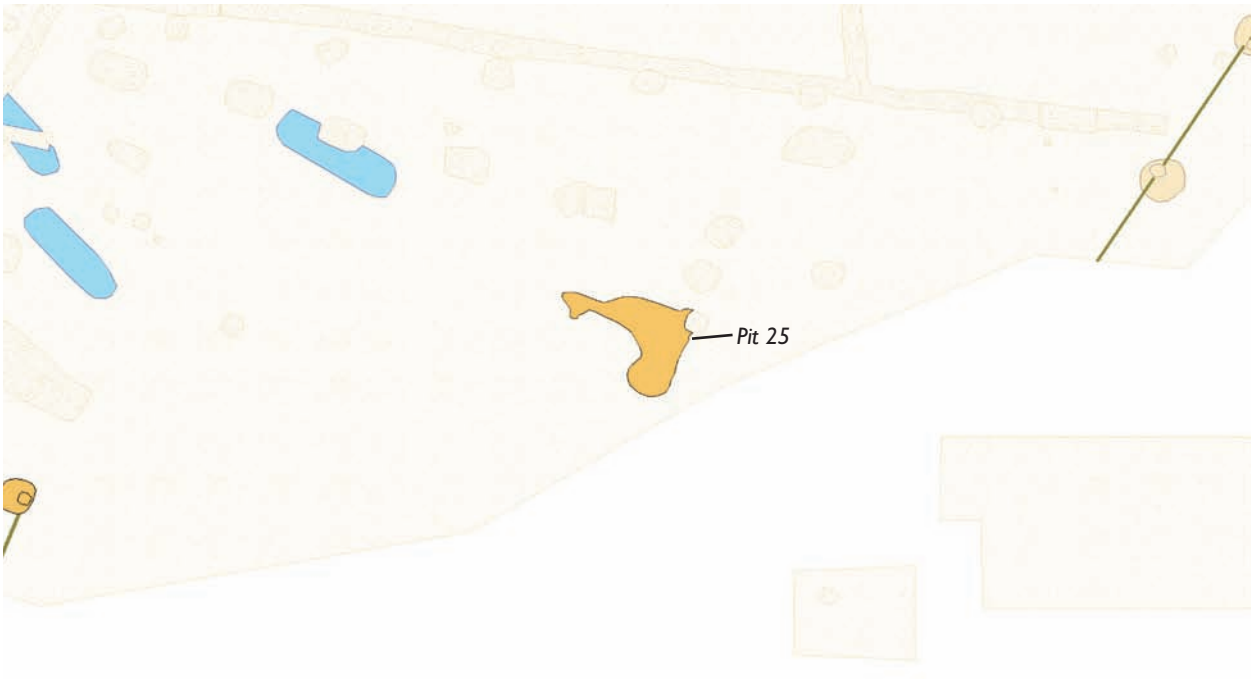

Figure 87. Site plan with Pit 25

assemblage contained several dozen oyster shells, some mammal bones, and fish remains, including several sturgeon scutes.

It was evident that the midden (JR2302) lay under Structure 176 and therefore predated it. Scarring from plowing in the 18th and 19th centuries left some oyster shell mortar fragments from the structure's foundation in place, but revealed the midden under areas where the plow blades had removed the foundation.[7] Based on the stratigraphic sequence of JR2302, JR2294, and JR2295, the midden dates prior to Structure 176's construction date of 1617–19.[8]

Pit 25 (JR2661)

In the summer of 2008, a small amorphous-shaped feature, Pit 25 (JR2661), was found near the center of James Fort. A six-pound iron shot of demiculverin size was found at the surface of the feature. The feature was sealed by plowzone and disturbed by posthole JR2663. The southern half of the feature was excavated as JR2661A and consisted of a light brown sandy loam with an average depth of about 6". The purpose of the feature is unknown.

Figure 88. Six-pound shot found in JR2661

Endnotes

[1] See Public Stores Act 1875, Section 4 and Schedule 1 (http://www.legislation.gov.uk/ukpga/Vict/38-39/25/enacted; accessed 1/11/2012).

[2] Rosemary Weinstein, Julie Gardiner, and Robin Wood, "Official Issue or Personal Possession?" in *Before the Mast: Life and Death Aboard the Mary Rose*, ed. Julie Gardiner, Micheal J. Allen, and Mary Anne Alburger, Vol. 4, *The Archaeology of the Mary Rose* (Portsmouth: The Mary Rose Trust Ltd., 2005), 489–496.

[3] Richard Coleman-Smith, R. Taft Kiser, and Michael J. Hughes, "Donyatt-type pottery in 17th- and 18th-century Virginia and Maryland," *Post-Medieval Archaeology* 39/2 (2005), 294–310.

[4] R. Coleman-Smith and T. Person, *The Donyatt Potteries* (Chichester: Phillimore, 1988), 85, 183–188.

[5] William Kelso and Beverly Straube, *2000–2006 Interim Report on the APVA Excavations at Jamestown, Virginia* (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 2008), 25–26.

[6] Ibid., 57–58.

[7] Ibid., 56.

[8] Ibid., 55.

Figure 89. Marketplace area site plan

James Fort Marketplace

During the field seasons of 2007 and 2008, a roughly 1,600 sq ft section inside James Fort was found with no fort-period (ca. 1607–24) features. The area is located near the center of the fort and borders Structure 184 to the south, Structure 179 to the east, the fort burials to the west, and the "scattered post" structures to the north.[1] The lack of fort-period features in this open space may suggest the location of the fort's early marketplace. However, a large section of James Fort remains unexcavated and more open spaces may be found.

It appears from surviving documents that the marketplace was centrally located in the fort during the first few years of the colony. In fact, prior to the settlement at Jamestown, the Virginia Company of London instructed the colonists to set up a marketplace towards the center of the fort.

> *And seeing order is at the same price with confusion it shall be adviseably done to set your houses even and by a line, that your streets may have a good breadth, and be carried square about your market place, and every street's end opening into it, that from thence with a few field pieces you may command every street throughout, which market place you may also fortify if you think it need full.*[2]

William Strachey, secretary of the colony, tells us that the marketplace was located inside the fort in 1610: "In the middest is a marketplace, a storehouse, and a corps du guard, as likewise a pretty chapel…."[3]

Future comparative analysis of the plowzone from this area, as well as several other small open areas, may shed light on the location of the marketplace.

Endnotes

[1] William Kelso and Beverly Straube, *2000–2006 Interim Report on the APVA Excavations at Jamestown, Virginia* (Richmond, VA: The Association from the Preservation of Virginia Antiquities, 2008).

[2] "Order in Council", in Alexander Brown, ed., *The Genesis of the United States*…, vol. I (London: William Heinemann), 84–85.

[3] William Strachey, "A True Reportory…," in Edward W. Haile, ed., *Jamestown Narratives: Eyewitness Accounts of the Virginia Colony* (Champlain, VA: Roundhouse, 1998), 429.

Figure 90. Structure 180 site plan

17th- and 18th- Century Features

Structure 180: Drummond House

In the fall of 2008, archaeologists refocused excavations on Structure 180's cellar after uncovering a chimney base, JR2723, and a shallow foundation 20' to the east. The alignment of the chimney base with the cellar left little doubt they were the remains of the same building. The overall dimensions of the building were 40'10" by 20'9". The cellar itself was 14' by 19'. Burned timber in the cellar indicated that the building was timber framed and set upon a brick foundation that had been plowed or robbed away. The structure was oriented E/W on the same axis as the late 17th-century brick church tower to the southeast, suggesting that the two structures stood at the same time. Structure 180 may have been a casualty of the

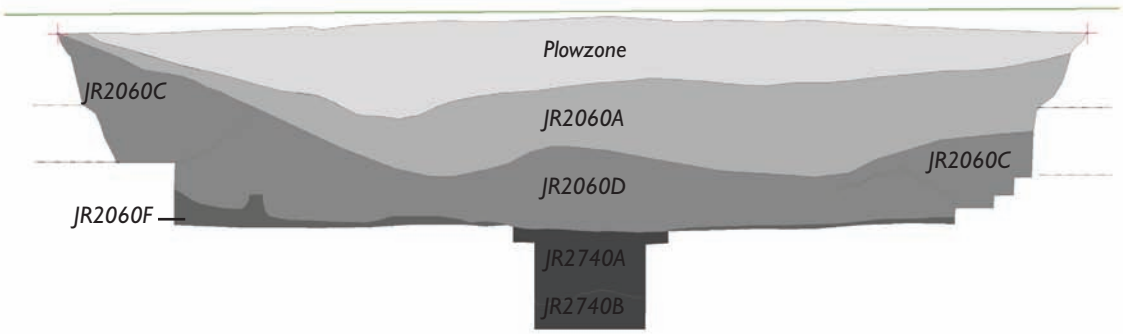

Figure 91. Profile, Structure 180 cellar E/W

Figure 92. Copper French liard dated 1656, from disturbed builder's trench, Structure 180

intentional burning of Jamestown in 1676 during Bacon's Rebellion. In 2005 two test excavations were conducted into the feature that determined this was a cellar: one test along the northern edge, JR1971, and one at the southwestern corner, JR2164.[1]

The cellar fill contained distinct depositions that were the result of several major events. The cellar fill was first divided into two halves separated by a 1'6" balk on the E/W grid line. The top layers consisted of slumped plowzone that had settled into the abandoned cellar. This was removed in 10' by 10' grid units. These included JR1898E, JR1919E, JR1931E, JR1948C, JR1960C, JR2000D, JR2605D, JR2626C, and JR2336C.

A thick deposit of domestic refuse, JR2060A, was found across the entire cellar below the plowzone. The consistency of this layer was similar to that of plowzone with sandy brown loam. Unlike the plowzone, however, there was a heavy concentration of charcoal, brickbat (295 kg), and roofing and flooring tile (29 kg). Layer JR2060A was arbitrarily divided with half designated as JR2060B, but it was later decided that the two fill deposits represented a single episode.

Artifacts from this context date predominantly to the latter half of the 17th century and the beginning of the 18th century. Ceramics include Virginia-produced wares dating to this time period including Challis, Green Spring, and William Rogers. The most common local ware is Green Spring coarseware, which dates ca. 1660–80. Most of it shows signs of being exposed to fire suggesting that it relates to the September 19, 1676 burning of Jamestown during Bacon's Rebellion. Jamestown coarseware, ca. 1630–50, is also present, as is an English tobacco pipe bowl dating ca. 1640–60, suggesting that the context is mixed. Three complete English tobacco pipe bowls provide dates between ca.1680 and 1725. The locally-produced red-clay tobacco pipes include products of makers known as the "Starmaker," the "Carver," and the "Bookbinder" dating ca. 1630–70.[2] The glassware substantiates the ceramic dating with late 17th-century wine bottles, a ca. 1685–1705 quatrefoil goblet stem, and a 2nd half of the 17th-century optic blown beaker with thin-cut trails.

The fill layer below JR2060A (JR2060C) ringed the interior of the cellar. This layer was orange/brown in appearance with mottled clay/loam fill and some light brick flake inclusions. It was apparent that JR2060C was made up of a collapsed builder's trench, which had been exposed to erosion as the cellar's bricks were being robbed. Other non-builder's trench fill deposits likely mixed in with the collapsed builder's trench as it eroded slowly into the cellar. The only place where JR2060C was not found was in the southeastern corner of the cellar where steps were located. It was evident that no builder's trench fill had been exposed to erosion here because the bricks from the steps had not been robbed out.

Again, Green Spring pottery is the most common ceramic in this context, which also includes Jamestown coarseware and Portuguese faience. A firm terminus post quem is provided by a copper French liard of King Louis XIV dated 1656. Worth three derniers, or three English pence, the liard circulated as currency in the Austrian Netherlands but would have been accepted as small change in the colony.

A layer of heavy brick rubble, JR2060D, was found beneath the collapsed builder's trench fill, which extended across the entire cellar. This layer was made up

Figure 93. Brick rubble, JR2060D; likely broken bricks discarded during a salvage operation (facing southeast)

Figure 94. Wine bottle ca. 1675–90, possibly lost when building burned

Figure 95. Westerwald jug with a manganese background

of discarded broken bricks rejected by those salvaging complete bricks from the cellar's foundations. The sheer volume of brick, 4,900 kg, as well as the relative absence of complete bricks in JR2060D, supports that scenario. Heavy whitewashed plaster, brick flooring tile fragments, and some ceramic roofing tiles were also found in this rubble. JR2060E was treated as a separate layer, but it was ultimately determined to be part of JR2060D.

Artifacts from layers JR2060D and E include a European pipe bowl with the maker's mark "L E" produced by Bristol pipemaker Llewelyn Evans ca. 1661–88, and a nearly complete ca. 1675–90 wine bottle. The ceramic assemblage was predominately local in origin with Green Spring pottery and Jamestown coarseware prevalent throughout. Other ceramic types represented in this assemblage include fragments from Challis, Italian standing costrel, Spanish olive jar, a South Somerset chafing dish, Surrey-Hampshire border ware, a Portuguese maiolica plate, sprig-molded Westerwald jug with a manganese background,

Figure 96. Burned layer, JR2060F, covering cellar floor (facing east)

Figure 97. Burned cask head

Frechen stoneware, and a Dutch tin-glazed wall tile depicting a man in armor with a cape.

The final layer that covered the brick floor of the cellar was a dense burned layer, JR2060F, which confirmed that the superstructure over the cellar had burned. JR2060F contained the charred remains of timber framing and the structure's contents. The burned timbers from a collapsed framed wall above had fallen into the cellar from the northern end of the building. The charred remains of six upright casks, two bucket bottoms, and a small wooden box with an iron lock plate were found in the debris along the southern and western walls. The presence of the above objects shows that the cellar was being used for storage at the time of the fire. Dry goods likely were kept in the upright casks because liquid-tight casks were generally stored on their sides with the tap at one of the heads.[3] The diameters of the burned cask bottoms ranged from 1'4" to 2'4". Two small, burned wooden planks were found on the cellar floor, possibly part of furniture or floor boards from the room above. Dense nail concentrations and building and furniture hardware were found scattered across the floor. These include a burned stocklock key, a door lock still containing its key, a shutter pintle, a charred copper-alloy keyhole escutcheon from a chest, and an iron cabinet hinge.

Other artifacts found among the burned debris include a charred, fractured, yet complete Frechen stoneware jug ca. 1650–80, sherds of a ca. 1680 manganese and blue Westerwald jug, fragments of a

Figure 98. Charred Frechen stoneware jug ca. 1680 (height 190 mm)

Figure 99. Tobacco pipe with signs of charring (length 118 mm)

ca. 1640–60 trumpet-based brass candlestick, molten case bottle glass, and burned tobacco pipe fragments. Pieces of an English pipe bowl with a "W E" circular cartouche on the bowl made by pipemaker William Evans ca. 1660–82 were found. An almost complete ca. 1660–80 tobacco pipe showed signs of charring. A complete fossilized scallop shell, *Chesapecten jeffersonius*, from the Early Pliocene period, 4 million years old, was found on the floor. This was probably collected from along the banks of the James River where sections of the Yorktown fossil formation can be found eroding from the river's banks. Three pieces

Figure 100. Fossilized scallop shell and cannon ball in situ *on the cellar floor*

Figure 101. Iron shackle and chain

of jewelry were on the floor: two pieces of twisted silver wire and a square cut jewel in a gold setting. The latter may have been part of a brooch or dress ornament. A shackle or animal fetter with an attached chain was present. There is a parallel to this object in the Museum of London that was found in North Finchley. Although it is described as ironwork for chaining convicts, there were no prisons in the area of the English find, and there is a certain amount of uncertainty about whether this artifact was used to restrain humans or animals.[4] The exact locations of many of the aforementioned artifacts were plotted.

The fill between the bricks on the floor (JR2060K, deposited during the cellar's use) contained several pipestems, fragments of delftware, and some of the broken pieces to a case bottle. These items may have fallen into the cracks between the bricks during the life of the building, and they may suggest that the space was used not only for storage, but also may have been used for social gatherings.

The removal of the fill layers revealed the brick foundations or cellar walls, the builder's trench for these walls, a brick floor, a sump pit, and two sets of steps. The cellar walls, JR2060M, which also served as foundations for the superstructure, had been disturbed by the salvaging of the bricks at the end of the 17th century. The *in situ* bricks were the same size, 8¾" by 4¼" by 2½", and had been fired to the same consistency. This indicated that they were made specifically for this cellar, and not recycled bricks from an earlier building. Shell-tempered mortar was used between the bricks. The western and northern cellar walls that remained were constructed of brick only. The base of the southern wall's foundation was a mix of large cobbles and heavy mortar, which were used to create a level surface for the brick wall above. The base of the eastern wall foundation was a mix of roofing tiles, cobbles, and brickbats; complete bricks were then laid on top of this makeshift mix of rubble. Compared to the other walls of the cellar, the east wall was poorly

Figure 102. Large limestone cobble found in the builder's trench, northeastern corner of the cellar (facing north)

built, likely because it did not have to bear the full weight of the structure's exterior walls. This wall may have supported a partition or simply been just a cellar wall. Conversely, the other walls were more substantially built because they did support the weight of the structure above. All walls were a course and a half wide measuring 1'1½" thick, except for the northern wall, which was only one course wide measuring 8¾". The northern wall had a dense concentration of cobbles in the builder's trench, and it is possible that before the robbing of the wall, half a brick course sealed these stones, making this wall the same width as the others.

The builder's trench, JR2060J, was generally 8" to 9" thick as found between the brick foundation and the subsoil walls of the pit. The fill was compact orange clay with some loam. The western, eastern, and northern walls all had builder's trenches, but the southern wall did not as it was built tightly against the subsoil wall. Cobblestones were found throughout the builder's trench fill; these were mostly local quartzite, but also several non-local limestone cobbles and an andesite cobble from the West Indies were found. None of the stones were removed, and their reason for being in the builder's trench is puzzling. In the northeastern corner of the cellar, several sizable limestone cobbles were situated in the builder's trench. These must have been placed there for the stabilization of the structure's northern wall where it bonded into the grade-level foundation of the rest of the building (now plowed away) beyond the cellar.

In several places the builder's trench fill had not collapsed from behind the robbed-out brick foundation. Where this occurred, the fill was excavated and screened through 1/8" mesh. Diagnostic artifacts from this feature indicating a ca. 1630–50 date for construction of the building include spattered manganese delftware, Jamestown coarseware, and a North Italian marbleized slipware bowl. Furthermore, the building likely was built prior to 1662[5] because it did not fully conform to a 1662 Jamestown building initiative, which stipulated

> That the towne to be built shall consist of thirty two houses, each house to be built with brick, forty foot long, twenty foot wide, within the walls, to be eighteen foote high above the ground, the walls to be two brick thick to the water table, and a brick and a halfe thick above the water table to the roofe, the roofe to be fifteen foote pitch and to be covered with slate or tile.[6]

Structure 180 does not conform to this initiative because it consisted of a timber frame constructed on top of a brick foundation, not a solid brick wall.

The brick floor, JR2060L, was laid after the construction of the walls. It was constructed mostly of bricks laid in a soldier course (on edge), but contained several cobbles and brick floor tiles set on end. The bricks were various sizes, had been fired in differing conditions, and some were whitewashed, which indicated that the material for this floor had been laid with recycled bricks. The floor was dry-laid with no mortar. All of the bricks were oriented roughly E/W, but there was an exception with a single soldier course running N/S down the middle of the floor. The bricks to the west of this line were well oriented with the cellar, but those to the east were not perfectly aligned. It appeared that the builders intended for the floor bricks to align with the walls, but that the varying sizes of the bricks made it difficult to retain that pattern across the entire floor. Many of the resulting rows of bricks undulated or curved dramatically on this side of the floor.

The sump pit, JR2740, located in the center of the cellar, was brick lined with a brick bottom. The northern half of the sump pit was not excavated as it lay under the unexcavated 1'6"-wide E/W balk. The southern half of the sump was excavated and contained two distinct fill episodes, JR2740A and JR2740B. JR2740A at the top of the sump pit was a continuation of JR2060D, the heavy brick rubble generated from salvaging the foundation bricks. Likewise, JR2740B

Figure 103. Brick-lined sump pit with the southern half excavated

was a continuation of JR2060F, the burned destruction debris from the structure. The presence of these layers showed that the sump pit was open at the time of the fire. The sump was rectangular in plan, 2' wide, and 1'10" deep below the floor. The entire brick floor of the cellar gently sloped towards the sump pit to facilitate drainage, keeping the cellar dry.

There were two sets of cellar steps, both located at the southeastern corner of the cellar. The wider set of steps, located along the southern wall, was a 4'-wide

Figure 104. Two sets of cellar steps (facing southeast)

Figure 105. Nosing sockets for wooden treads, cellar stairs (facing south)

exterior entrance. This width allowed for larger containers, like barrels, to be loaded into the cellar. The stair treads were brick and once had wooden nosings that had burned or rotted away. The second set of steps was located along the eastern wall near the southeastern cellar corner. These 2'-wide steps connected the cellar to the interior of the main structure. They were steep, and some charred sections of the wooden nosings survived. A hole left between the brickwork along the side of the steps revealed where a wooden nosing had been secured.

The remains of the cellar, the destruction debris on the floor of the cellar, the chimney base, and a small section of surviving foundation, all provided clues to a theoretical reconstruction of the structure. As mentioned above, the cellar contained the remains of a burned timber-framed wall in the destruction debris, JR2060F. This confirmed that the structure had been timber framed above ground.

This section was part of the collapsed northern wall, and included three studs and a cross member. The interior of the wall was face down on the brick floor. A lens of burned plaster was found under these wooden beams, suggesting this interior wall had

Figure 106. Plaster with lath imprints and burned plaster beneath charred wooden wall beam, in situ, *Structure 180 cellar floor*

Figure 107. East chimney foundation, JR2723, Structure 180 (facing west)

been plastered. Also, much of the burned plaster found in JR2060F had lath imprints, which showed that the space between the studs had been lathed.

Most of the brick foundation in the cellar was missing due to robbing and to plowing in the area between the cellar and the chimney base. The cellar walls were only 3'6" deep from the top of the surrounding subsoil to the bottom of the cellar. The original brick wall was likely 6' high or more, which would have allowed for a more workable distance from the floor of the cellar to its ceiling. The timber frame would have rested on top of this wall with wooden joists and floorboards traversing the area above the cellar. The subsoil level was 1' below the 17th-century ground level, assuming that the top of plowzone was the grade 400 years ago. This implies that likely 1'6" or more of the brick footing of the structure sat above ground when the building was first constructed. Other than the brick cellar foundations, one other section of the building's foundation walls survived: a small section of the south foundation, JR2724, the southeastern corner of the structure. This feature contained several bricks placed on end and oriented with the building. The bricks and the fill in the feature extended for 7'6" and averaged about 1'6" wide. The western half of this feature was excavated and found to be 2" deep.

The absence of slate or ceramic roofing tiles in the destruction debris on the cellar floor, and the relative abundance of burned wrought nails on the floor indicate that the roof to Structure 180 likely was covered with wooden shingles or clapboarding. While many of these nails may have been used in securing the shingles or clapboarding to the roof structure, possibly some may have been used for securing lath to the frame and for attaching floorboards to the joists. A dense concentration of window glass was found in the destruction debris, JR2060F, on top of the exterior steps, suggesting a window was located along the southern wall above the steps.

The exterior chimney base, JR2723, located at the eastern end of the structure, was represented by the bottom course of the chimney foundation and the bottom course of a hearth pad. The brick in the base was predominately laid in soldier course with shell-tempered mortar. The back of the chimney foundation measured 8'10" N/S by 1'2¾" wide. Two chimney cheeks abutted this foundation and were 1'1¾" wide and extended 2'8" from the chimney's back wall. Un-

like the chimney base bricks, all of the bricks for the hearth were laid flat. This chimney could only have heated the eastern half of the building. During the 2011 field season, the chimney base was deconstructed to reach a James Fort period building (Structure 186) below. When the bricks were removed they were found to have been resting on a 3"-thick pad of compact clay, JR2723C. The clay likely was present prior to the construction of Structure 180; it was found outside of the Structure's limits and therefore not solely associated with the building.

No exterior chimney foundation was found in place at the western end of the building where there had been deeper plowing. However, destruction debris at the center of the western end of the cellar contained large brick paving tiles that may have been from a collapsed hearth. These tiles, which would have fallen through the floor as the building burned, sat atop some of the burned debris, but they were sealed by charcoal and ash. This confirmed they were in the building, or were part of it, prior to the fire. Two complete tiles from JR2060F measured 8½" by 8½", and they were just over 1" thick.

Artifact evidence found among the destruction rubble fits with a destruction date of 1676 for Structure 180. The land plats from this period show that either Richard Lawrence or William Drummond owned the property during this time period. Structure 180 seems to be located along the property line between the two plats making it unclear whose property the building belonged to. Both Lawrence and Drummond were co-conspirators with rebel leader Nathanial Bacon during Bacon's rebellion, and both burned their own homes during the sacking of the town to set an example for the other rebels.

> *Here resting a few daies they concerted the burning of the town, wherein Mr. Lawrence and Mr. Drumond owning the two best houses save one, set fire each to his own house, which example the souldiers following laid the whole town (with church and state-house) in ashes, saying, the rogues should harbour no more there.*[7]

If Structure 180 was the home of one of these men, the relative lack of artifacts in the destruction rubble would make sense. Valuable possessions may have been removed prior to setting the fire. If the structure had been torched intentionally, that might explain the presence of the large cask found burned at the foot of the cellar's two sets of steps. It may have been placed purposely to hinder access to the cellar, or perhaps used as an accelerant for the fire.

Figure 108. Broken brick paving tiles, possibly from a collapsed hearth, in situ *in the charred remnants of Structure 180; apparent evidence of a western exterior chimney*

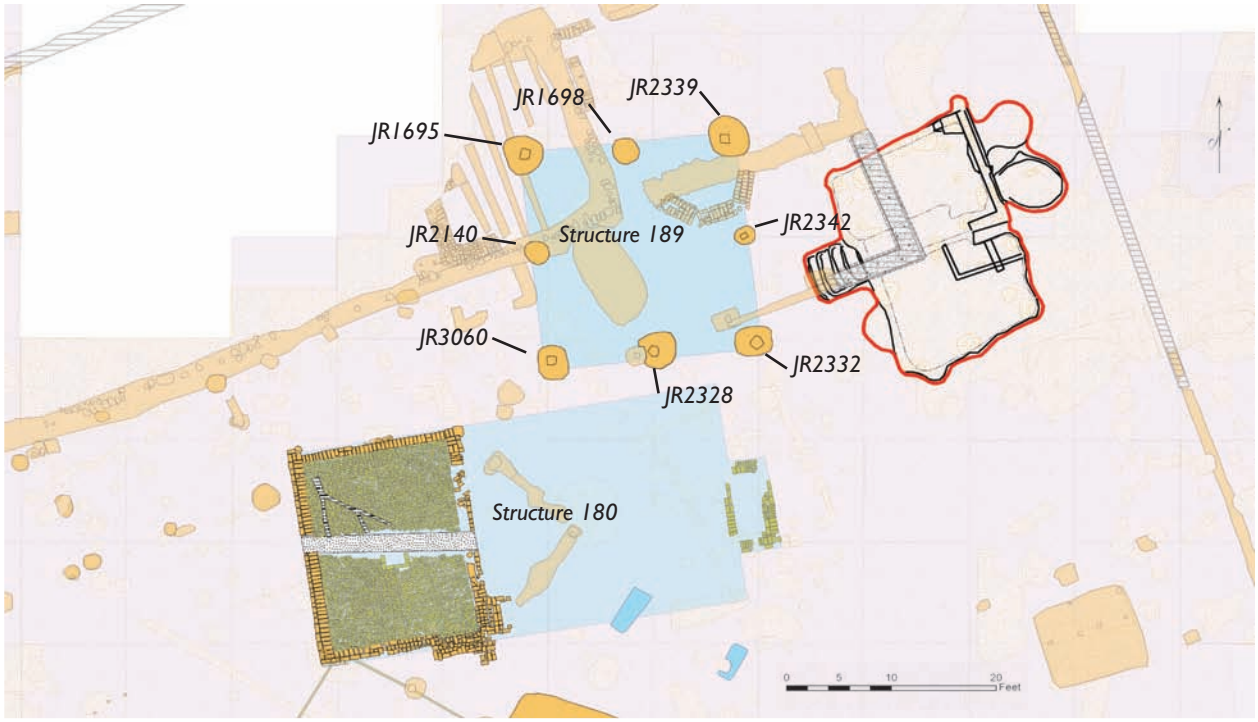

Figure 109. Structure 189 site plan

Structure 189: Prescott Storehouse

Excavations during 2004–10 discovered the remains of Structure 189, a second quarter 17th-century post-in-ground structure located in the northern corner of James Fort. The building remains consisted of eight large postholes spaced evenly on 10' centers delineating a 20' by 20' building. The postholes (JR1695, JR1698, JR2140, JR2328, JR2332, JR2339, JR2342, JR3060) were aligned N/S and E/W, and Structure 189's south wall was approximately 5' north of a mid-17th-century building, Structure 180. The proximity of the two structures suggests that Structure 189 was likely an outbuilding for Structure 180, perhaps used for storage. Also of note, each of these postholes cut through fort-period features, including Structure 175 and Structure 176.[8]

Of Structure 189's four corner postholes, three (JR1695, JR2332, JR3060) were cross-sectioned, with the south half removed in order to gather structural details and chronology. This determined that the northeast corner post (JR1695) was square and cut through two of the floor-joist trenches in the east room of Structure 175, which clearly indicated that Structure 189 postdated the deconstruction of that structure. Although there currently is no evidence that provides the date when Structure 175 was dismantled, its construction date was ca. 1611.[9]

Prior to excavation, an arbitrary 2" layer of soil (JR1695A) was removed to locate the postmold. The mold, JR1695B, was 1'2" square and composed of dark brown loam with many large brickbat inclusions. It produced an English white ball clay tobacco pipe bowl fragment, straight pins, a complete low-fired brick, clay floor tile, and large fragments of oyster shell plaster, such as was found in association with Structure 176. The posthole fill (JR1695C) was approximately 3'6" in diameter. It contained a mix of loam and clay and had brick bit and mortar inclusions throughout. The posthole and mold were 2'3" deep, with the contours of the posthole sloping in to form a rounded bottom. Finds from the C layer included two local tobacco pipestems of the type made through the second and third quarters of the 17th century, and a pipe bowl with fine rouletting infilled with white slip, possibly a Virginia Indian product. A ca. 1650–60 date for this

Figure 110. Northeast corner post JR1695 bisected (facing north)

layer is indicated by the presence of sherds of Dutch tin-glazed wall tile, and Green Spring and Jamestown pottery.

The southeast corner post (JR2332) and southwest corner post (JR3060) were also bisected. Both of these posts measured the same size and depth and had soil compositions similar to JR1695. The molds for each post (JR2332A, JR3060A) were approximately 1'2" in diameter and were composed of brown sandy loam with large brick fragment inclusions. Providing a 2nd quarter of the 17th century temporal reference for these contexts are sherds of Jamestown pottery and a complete English white ball clay tobacco pipe bowl marked "WC" on the heel. Pipes with this maker's mark have been found in late 2nd quarter of the 17th century contexts at nearby Martin's Hundred and Kingsmill.[10] The fill for each posthole (JR2332B, JR3060B) was oval-shaped, 3'6" in diameter, and consisted of compact orange clay/loam with brick bit and mortar inclusions. Ceramic fragments from JR3060B included Jamestown coarseware, Northern Italian slipware, a local pipe bowl rouletted with a chevron motif, and a complete ca. 1640–60 English white ball clay tobacco pipe bowl. JR2332 was 2' in depth, and JR3060 was 1'10" deep. These postholes each had a relatively flat bottom contour as compared with the rounded bottom of posthole JR1695.

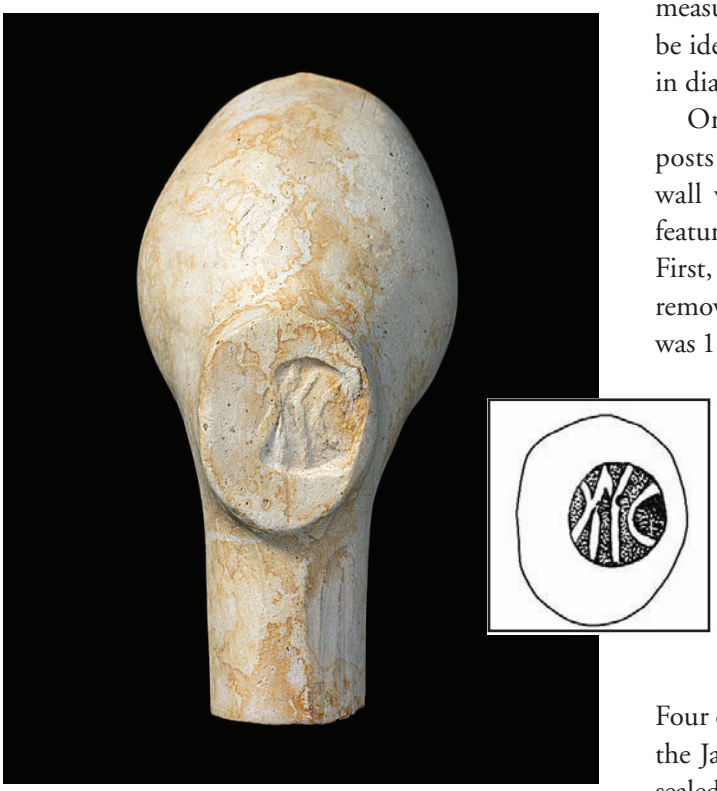

Figure 111. English tobacco pipe with "WC" maker's mark on the heel (length 45 mm)

The northeast corner post, JR2339, and three of the other posts, JR1698, JR2140, and JR2342, were left unexcavated. In contrast to those excavated, none of them disturbed and inhibited analysis of any fort-period features. The corner post, JR2339, was approximately the same size as the other corner posts: 3'5" in diameter. It was located within the limits of Structure 176 and was just inches north of that structure's southern foundation. The visible fill composition for the post was similar to the other corner posts and had heavy inclusions of brick bits and mortar. Both of these inclusions are materials used in the construction of the Structure 176 wall foundations. The posthole's location within the bounds of Structure 176 further implies that JR2339 and, consequently, Structure 189 postdated this building. The remaining postholes (JR1698, JR2140, JR2342) were central wall posts and measured about 2' in diameter. Only one mold could be identified, JR1698A, and it was approximately 8" in diameter.

One center post (JR2328) between the corner posts (JR2332, JR3060) of Structure 189's south wall was excavated. It disturbed three fort-period features: JR2330, JR2351, and Ditch 30 (JR2842).[11] First, JR2328 was cross-sectioned and the south half removed. This defined the mold (JR2328A), which was 1'2" wide and filled with brown, sandy loam with brick bits, mortar, and oyster shell fragments.

The posthole (JR2328B) was 3'5" in diameter and 1'7" deep. It consisted of a clay/loam mix similar to the other posts. This deposit produced sherds of Green Spring earthenware ca. 1660–80, a Frechen stoneware Bartmann jug medallion with the arms of Amsterdam, and a mid-17th-century Dutch tile. This context also contained a glass Type IVb35 bead.[12] Four other beads of this type have been found during the James Fort excavations, but none from the early sealed contexts, suggesting that it is a later type. After it was sectioned, this posthole was completely excavated because the features disturbed by it were also under investigation.

The owner of the property on which Structure 189 and Structure 180 stood prior to 1662 was Edward Prescott.[13] The artifacts related to Structure 189 and Structure 180 suggest the buildings were constructed during the period Prescott, a ship captain and merchant, owned this plot (ca. 1650–60). Further evidence that the two buildings are likely contemporaneous includes their proximity and spatial orientation. The fact that Structure 189 is square with large timbers

at the corner posts suggests it was at least two stories tall. Perhaps this structure served the adjacent house (Structure 180) as a granary or a storehouse for goods like tobacco or even molasses, both of which Prescott may have traded. Examples of outbuildings built close to the main houses, which are similar to Structure 189, were found at the Littletown (ca. 1641–1700) and Utopia (ca. 1660–1710) sites.[14]

Endnotes

[1] William M. Kelso and Beverly Straube, *2000–2006 Interim Report on the APVA Excavations at Jamestown, Virginia* (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 2008), 83–84.

[2] Al Luckenbach and Taft Kiser, "Seventeenth-Century Tobacco Pipe Manufacturing in the Chesapeake Region: A Preliminary Delineation of Makers and Their Styles," in *Ceramics in America* 2006, ed. Robert Hunter (Milwaukee, WI: Chipstone Foundation, 2006), 160–177.

[3] Jonathan Hallman of the cooper shop at Colonial Williamsburg, Virginia, personal communication, 2008.

[4] http://www.museumoflondon.org.uk/postcodes/places/N12.html (accessed November 12, 2008); Jackie Keily, Museum of London, personal communication, 2009.

[5] This structure likely was built by Edward Prescott who owned the land prior to 1662; after that date the land passed to his sister, Sarah Prescott, who married William Drummond.

[6] William Waller Hening, *The Statutes at Large; Being a Collection of all the Laws of Virginia from the First Session of the Legislature in the Year 1619*, vol. 2 (New York: R. & W. & G. Bartow, 1823), 172.

[7] http://memory.loc.gov/ammem/collections/jefferson_papers/tm.html (accessed February 19, 2009). This is in *Forces Tracts* (1896), 1:8:21.

[8] Kelso and Straube, *2000–2006 Interim Report*, 54–63.

[9] Ibid., 52–55.

[10] Ivor Noël Hume and Audrey Noël Hume, *The Archaeology of Martin's Hundred* (Williamsburg: The Colonial Williamsburg Foundation, 2001), 544–545.

[11] Each of these features cut by JR2328 related to the James Fort period (1607–24). JR2330 is an area of clinker from blacksmithing activities. JR2351 is a posthole for an addition to Structure 176 along its south wall. Ditch 30 is a shallow ditch oriented N/S, which drains into Pit 17. These features will be discussed in a future report.

[12] Kenneth Kidd and Martha Kidd, "A classification system for glass beads for the use of field archaeologists," *Canadian Historic Sites: Occasional Papers in Archaeology and History* (Ottawa: Parks Canada, 1970), 1:45–89. Reprinted in *Proceedings of the 1982 Glass Bead Conference, Research Records 16* (Rochester: Rochester Museum and Science Center, 1983), 219–258.

[13] Nell Marion Nugent, *Cavaliers and Pioneers: Abstracts of Virginia Land Patents and Grants, 1623–1666* (Richmond: 1934; reprint ed., Baltimore: 1974), 560.

[14] William M. Kelso, *Kingsmill Plantations, 1619–1800: Archaeology of Country Life in Colonial Virginia* (San Diego: Academic Press, Inc., 2003), 73.

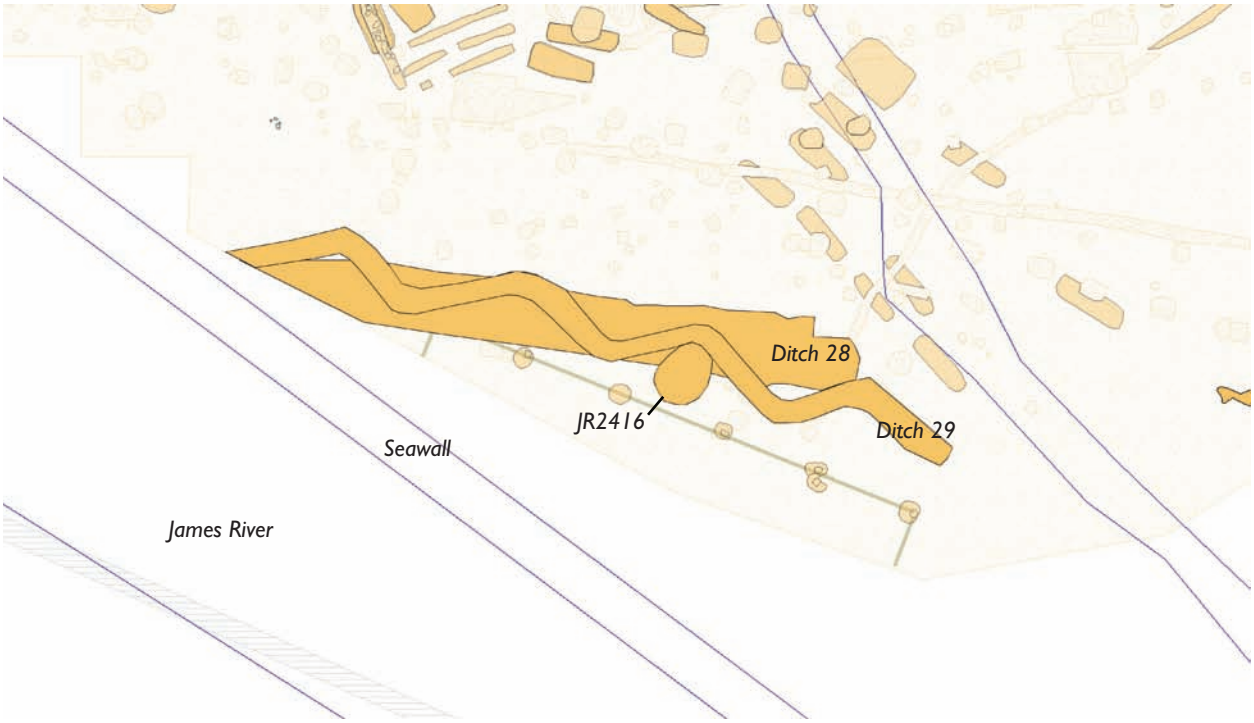

Figure 112. Photo or GIS map of this area

Ditches

Ditch 28, Ditch 29, and Plaster-Mixing Pit (JR2416)

Excavations south of the western end of Structure 172 located a 55'-long section of a 5'- to 6'-wide linear ditch, Ditch 28 (JR2421). The ditch was oriented E/W and its western end was lost to erosion at grid coordinates N: 9889.5, E: 9448.8.

Excavations into Ditch 28 were conducted by placing a series of intermittent 5'-long test sections along the ditch line (JR2407–JR2411). Two fill layers were found throughout these tests. The top (A) layer consisted of brown sandy loam with heavy brick rubble and some cobblestones; the bottom B layer was similar but had few inclusions.[1] The ditch was generally 1'6" deep throughout. The north side of the ditch gently sloped to the bottom, but the south side sloped about halfway down to a 1'-wide shelf before sloping again to the bottom. A small test into what was believed to be the eastern terminus of this ditch, JR2584A, confirmed this and showed that the ditch came to an abrupt end at this point.

Figure 113. Profile of Ditch 28 (facing west)

The majority of Ditch 28 was excavated, including 1' balks initially left between the tests. As this fill was removed, many other features were revealed, including a zigzag ditch, Ditch 29. This ditch was oriented E/W and located directly on top of Ditch 28. Ditch 29 was not identified at first because it had a fill composition similar to that of Ditch 28. It was only after some of the test units had been excavated that it became clear that Ditch 29 disturbed Ditch 28. The zigzag ditch section identified by *Jamestown Rediscovery* archaeologists was 66' long, and another 20' of this same ditch (designated Ditch 93 by the National Park Service) were found in a 1950s excavation to the east of this section, bringing the total length of this segment to 86'.[2] It appears that 150' east of this ditch segment, and on the same axis, is more of the same zigzag ditch, Ditch 9. The space between these segments eventually will be excavated, shedding further light on the zigzag ditches. The only contexts assigned to Ditch 29 were JR2415A, JR2419A, and JR2420.

One test section into Ditch 28, JR2410, uncovered a circular pit approximately 4' to 5' in diameter, which may have been a plaster-mixing pit. The pit, JR2416, disturbed Ditch 28 at the southern section of test

Figure 114. Bisected pit JR2416 (facing east)

JR2410, but was disturbed itself by Ditch 29. Some of the pit's fill may have been removed inadvertently as JR2410A prior to its identification. The pit was tested by bisecting it, with the western portion excavated to its bottom level.

The first fill layer in the pit, JR2416A, consisted of a red/brown loam with brick inclusions. Prior to excavation, it had a center elevation of 13' with a final depth of 2½" to 4" deep. Three sherds of Challis earthenware date layer A to the late 17th or early 18th centuries. This date is reinforced by the presence of five complete English clay tobacco pipe bowls dating ca. 1680–1710 (A/O types 20 and 22), and two dating ca. 1700–40 (A/O type 24).[3] Artifacts with earlier dates are represented by a Green Spring earthenware jar (ca. 1660–80), two sherds of Jamestown earthenware (ca. 1630-50), two shaft and globe wine bottles dating ca. 1660, and two English clay tobacco pipes (A/O types 10 and 13) dating ca. 1640–60 and ca. 1660-80, respectively. Over 700 pieces of window glass were found in this layer, some fragments large enough to be identified as diamond-shaped casement panes. Over 50 pieces of window lead were also recovered from this context, but they as yet have not been analyzed in the laboratory to see if they contain dates. Other architecturally related finds include one clay floor tile, 107 g of flat clay roofing tile, and 8 g of oyster-shell plaster.

Of particular note in this layer is a glass button or mount consisting of lobed white glass surrounding a turquoise piece of glass stamped with a foliate design. Also of interest is the fragment of iron cannon muzzle with an interior diameter of 3". Allowing for windage—the ¼" or more difference required between the diameter of the shot and the bore—the muzzle is from a piece of artillery known as a falcon. Falcons were approximately 7' long, weighed between 660 and 800 pounds, and fired iron shot weighing between 2 ¼ and 3 pounds. The muzzle from JR2416A is full of fissures formed during casting, which probably caused the cannon to blow up during use.

The next layer, JR2416B, was characterized as a 2"-thick layer of medium brown loam fill containing some ash and charcoal. This layer also contained Challis earthenware and A/O types 20 and 24 clay tobacco pipes. As in the previous layer, there were window leads and numerous pieces of window glass. There were 289 g of flat clay roofing tile and 78 g of oyster-shell plaster.

The bottommost layer in the pit, JR2416C, consisting of a thin deposit of oyster-shell plaster (1,782 g), was located mainly on the northern half of the feature. Artifacts were few and were consistent with the dating of the first two layers. These include two fragments of English clay tobacco pipe, seven fragments of window glass, 86 g of flat clay roofing tile, and one piece of lead shot. The pit had a concave bottom that was shallowest on its southern half and deepest on the north, with a bottom elevation of approximately 12'5". The last layer, JR2416C, sealed portions of Ditch 28's fill layers.

Figure 115. Overview of excavation area (facing southeast)

Endnotes

[1] It was later determined that the A layer of Ditch 28 had been contaminated by the fill of Ditch 29.

[2] John P. Cotter, Archeological Excavations at Jamestown, Virginia. Archeological Research Series No. 4. (Washington, D.C.: National Park Service, Department of the Interior, 1958), 12.

[3] A/O Typology is found in D. Atkinson and A. Oswald (1969) "London Clay Tobacco Pipes," Journal of the British Archaeological Association, Series 3, vol. 31, 171–227.

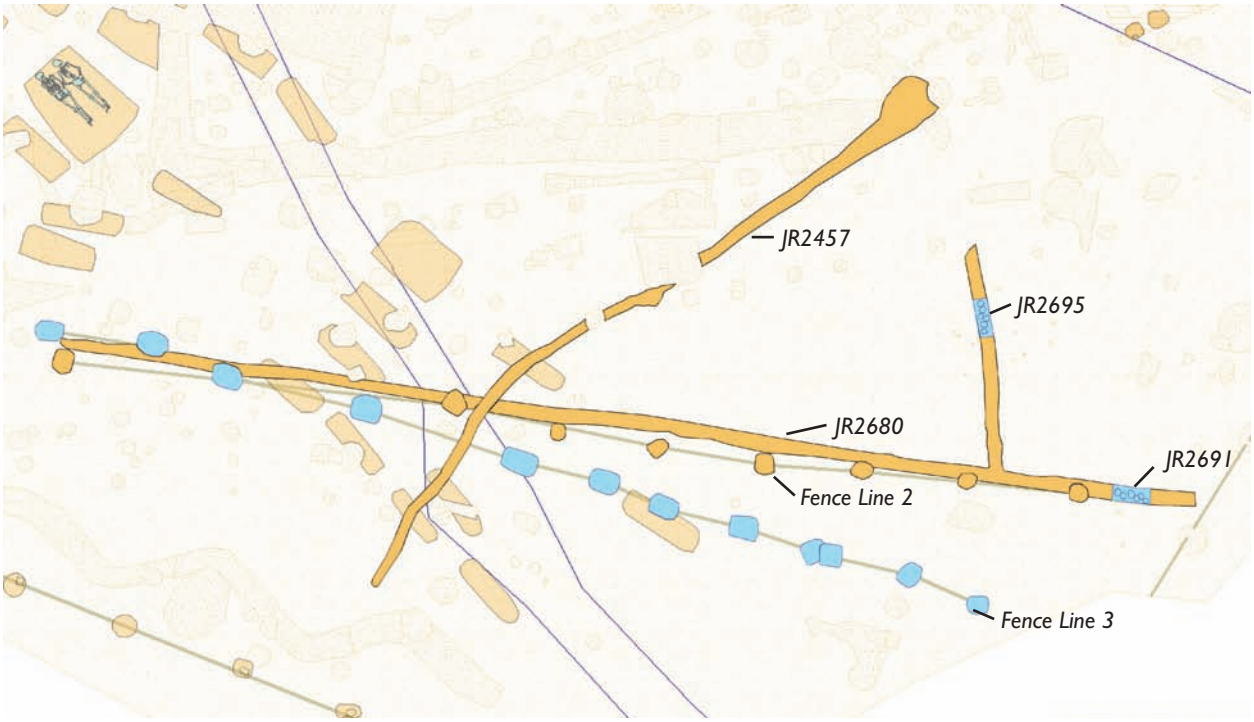

Figure 116. Site plan of slot fences and Fence Lines 2 & 3

Miscellaneous Mid-17th-Century Features

Fence Line 2

In the summer of 2008, removal of plowzone in an area south of Structure 172 revealed a series of postholes, which appeared to be part of a fence line (Fence Line 2) postdating James Fort. The distance between each of the postholes ranged from approximately 8'6" to 9', and the fence line was oriented E/W along the south side of Slot Trench JR2680. Some of the postholes disturbed the slot trench indicating that the fence line postdated the trench. Two of the postholes (JR2650, JR2651) identified in the line were excavated completely. Postholes that remained unexcavated, but which are possibly related to Fence Line 2, include JR2540, JR2553, JR2652, JR2681, and JR2682.

The excavated postholes were 1'6" to 2' in diameter and were 7" deep. The excavated postholes' fill contained heavy brick bits and some mortar inclusions, a Portuguese faience lace-pattern dish, and sherds of Green Spring coarseware, which provided a date of ca. 1660–80.

Fence Line 3

A probable fence line found beneath the plowzone in the possible James Fort market area intersected slot trench JR2680 and Fence Line 2. Eleven postholes (JR2539, JR2441, JR2445, JR2449, JR2653, JR2654, JR2657, JR2660, JR2665, JR2685, JR2701) are associated with this fence line. The line is oriented WNW/ESE, which is close to the same axis as Structure 173, 10' to the north, and the south palisade, 60' to the south.[1] The posts were irregularly spaced, ranging from 3' to 6' apart. Ovoid in shape, the posts were typically 2' by 1'6". One of the posts, JR2654, disturbed burial JR2655 from the probable 1607 burial ground. Two of the postholes, JR2441 and JR2445,

Figure 117. Overall photograph of the fence line, with Fence Line 2 in the foreground (facing northwest)

Figure 118. Overall photograph of Fence Line 3 (facing east)

disturbed the slot trench JR2680. The eastern halves of seven postholes were excavated: JR2449, JR2653, JR2654, JR2657, JR2660, JR2685, and JR2701. All but one of the postholes had clearly defined postmolds. The depths of the postholes were almost identical: 1' to 1'3" deep. Diagnostic artifacts from Fence Line 3 suggest a ca. 1630–40 date. These include a fragment of Dutch delftware wall tile, a spattered manganese delftware mug, Jamestown coarseware, and a fragment of a North Devon gravel-tempered pan. JR2660 was the only posthole with no discernable postmold.

Curving Slot Trench (JR2457)

Excavations in the summer of 2008 revealed an additional portion of a narrow, late 17th- to early 18th-century trench, JR2058, partially investigated in 2005.[2] This new section of the 1'5"-wide trench line, JR2457, ran southwest from the previously identified segment of JR2058 and then curved toward the south. JR2457 was located just south of Ditch 24 and disturbed three graves in the southern portion of the 1607 burial ground. The graves disturbed included JR2552, JR2569, and JR2554. The trench also disturbed JR2680 and ran directly across that slot trench's E/W line.

One posthole related to Structure 145's (mid-19th-century) gun platform, JR2638, disturbed a section of JR2457 just north of grave JR2554. A portion of the trench may have had a 4' extension to the east. However, while this small branch was given the same context as JR2457, it was unclear whether this feature was actually related to the trench. Because JR2457 was disturbed by Ditch 28's northeastern terminus, it was not possible to determine where the trench ended. The test into Ditch 28, JR2421, revealed that it disturbed the trench as it proceeded south towards the river. However, because no evidence of the trench continued beyond Ditch 28, it is possible that its southern terminus was located where the ditch later disturbed it.

Figure 119. Site plan of curving slot trench JR2457, and slot trench JR2680

Figure 120. Site plan of slot trench JR2680

Slot Trench (JR2680)

Removal of Confederate earthwork fill and plowzone to the north of the posts in Fence Line 2 and south of Structure 173 revealed a 1'-wide slot trench (JR2680). The largest section of the trench was oriented E/W and measured 95', with an adjoining 18' segment branching off to the north. In order to verify that the trench continued through an area where it was clearly not as visible, two 2' by 5" sections of subsoil and possible trench fill were excavated to a depth of 5" in areas where the trench was projected to extend. These small tests confirmed the existence of the trench. Two more 3' by 1' tests (JR2691, JR2695) were dug directly into the slot trench in order to determine the physical characteristics of the trench. JR2691 was the test into the segment of the trench running E/W, and JR2695 tested the northern extension.

Both tests (JR2691, JR2695) determined that the trench once held upright, circular or oval timbers, ranging approximately 4" to 6" in diameter, which had rotted away in place. The postmold fill consisted of a greyish-brown, sandy loam with some light inclusions of brick bits. Artifacts in the fill were consistent with a ca. 1630–40 fill date and included a Jamestown coarseware mug, a Portuguese tin-glazed dish, and a Virginia clay tobacco pipe bowl with the characteristic markings of the "Bookbinder school" of pipemaking.[3] Trench fill around the posts contained a mix of brown loam and orange, redeposited subsoil clay. The trench was similar in shape to those of the fort's palisade trenches with straight sides, 5" to 7" deep, and a flat bottom.

Figure 121. Section of slot trench JR2691

Unexcavated features that were disturbed by, or, conversely, that disturbed segments of, trench line JR2680 included graves, postholes, and a paling line. The western terminus of the E/W segment of the trench cut through the southern portion of the 1607 burial ground disturbing two graves, JR2432 and JR2469. Three large posts related to Fence Line 2 and Fence Line 3 (JR2445, JR2441, JR2553) disturbed the slot trench east of where the N/S branch extended north. The trench was also cut by a posthole, JR2462, which related to the Confederate gun platform (Structure 145).[4] Portions of three small- to medium-sized posts, JR2652, JR2681, and JR2682 (Fence Line 2), disturbed the E/W trench near the N/S extension area. Lastly, another 1'-wide paling trench, JR2457, which was oriented roughly NE/SW, disturbed a portion of the slot trench. Previous investigation of a section of JR2457 was labeled JR2058 and interpreted as a trench dating from the late 17th to the first quarter of the 18th century.[5]

Endnotes

[1] William M. Kelso and Beverly Straube, *2000–2006 Interim Report on the APVA Excavations at Jamestown, Virginia* (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 2008), 81–83.

[2] Ibid., 103–105.

[3] Al Luckenbach and Taft Kiser "Seventeenth-Century Tobacco Pipe Manufacturing in the Chesapeake Region: A Preliminary Delineation of Makers and Their Styles," in *Ceramics in America*, ed. Robert Hunter (Milwaukee, Wisconsin: The Chipstone Foundation, 2006), 165–167.

[4] Kelso and Straube, *2000–2006 Interim Report*, 113–114.

[5] Ibid., 104–105.

Figure 122. Site plan of burial

Burials

Ludwell Burial

In December of 2008, at the request of William Harrison, a 12th-generation relative of Benjamin Harrison I (d. 1647), a grave believed to be that of Benjamin Harrison I was excavated in the Jamestown churchyard. This identification was based on a 1901 excavation of that grave by the APVA that recovered brass-tack letters thought to spell "B Harrison."[1] The purpose of the excavation in 2008 was to recover any skeletal remains in the grave, to determine how the APVA excavation was conducted in 1901, and to determine if this was the burial of Benjamin Harrison.

The excavation determined that the individual in this grave was Philip Ludwell II, not Harrison, as previously believed. There had been four episodes of digging in this grave shaft, each disturbing the previous. First, a sub-adult was buried here, followed by a teenage woman, whose burial likely disturbed the remains of the sub-adult. The woman's burial was subsequently

Figure 123. Harrison burial shaft soon after excavations had begun; hole in center is from 1901 excvavations

Figure 124. Copper-alloy tacks lining the perimeter of the coffin lid stain

disturbed by the digging of the burial for Ludwell in 1727, and finally that burial shaft was partially excavated by the APVA in 1901.

During the 2008 excavation, the first step was to remove a horizontal tombstone slab, which was composed of original stone and modern cement composited in 1901. There was no legend on the stone, but there were several words on a raised section of 1901 concrete: "Grave containing 3 Bodies Found 1901." A sign next to the nearby Memorial Church states that beneath the tombstone lie the remains of "Benjamin Harrison I (?–1645–1649). There are three bodies in this grave."

The tombstone was removed with levers, carefully sliding it off the site and onto an adjacent tombstone to the south. Once the stone was removed, a 5'7" by 2'6" rectangular section of the 1901 backfill, JR2741A, was visible. In this fill were several brass tacks not removed by the 1901 excavations, along with disarticulated human remains. After removing 2' of backfill, the outline of a burial shaft, JR2743, was found along with a section of native cultural horizon.[2] Part of the northern end of a second burial shaft was visible on the southern side of the excavated area. At this level the 1901 excavation shaft became smaller and it clearly disturbed the northern half of JR2743. The excavation was expanded 2' to the north in order to expose the complete burial shaft.

It was determined that the 1901 excavations had reached part of the skeletal remains and the coffin of an articulated individual. The right clavicle and the maxilla containing several teeth were the only parts of this individual dislodged by the 1901 work. These remains were recovered from the 1901 backfill, JR2741A. The undisturbed sections of burial shaft JR2743 were excavated once the 1901 backfill was removed.

The burial fill, JR2743A, also contained the disarticulated remains of a sub-adult between the ages of 5 and 7, and a young female of 16 or 17 years of age. Remains of these two individuals were also found in the 1901 backfill.[3] This discovery was not unexpected as the 1901 excavations had recorded "the skeletons of two grown persons and of at least one child."[4] The majority of the young woman's remains appear to have been intentionally placed in a pile on top of the coffin by the 18th-century gravediggers. The action of placing these bones on the coffin suggests that the gravediggers dug through the woman's articulated remains, but set these remains aside with the intention of placing them together in the burial shaft after the coffin was lowered. The remains of the sub-adult, which were spread throughout the fill, were probably initially disturbed when the young woman was buried, suggesting that the sub-adult was likely the first of the three buried there. Furthermore, the young woman and the sub-adult had not been buried in coffins as there were no other coffin nails in the grave fill.

The coffin, JR2743B, was elaborately embossed with brass tacks at 1" intervals along the edges of the coffin lid. Tacks were also found on their sides pointing towards the remains indicating that the sides of the coffin were also decorated. These tacks must have secured leather or some type of fabric wrapping on the coffin. The coffin was hexagonal and held together

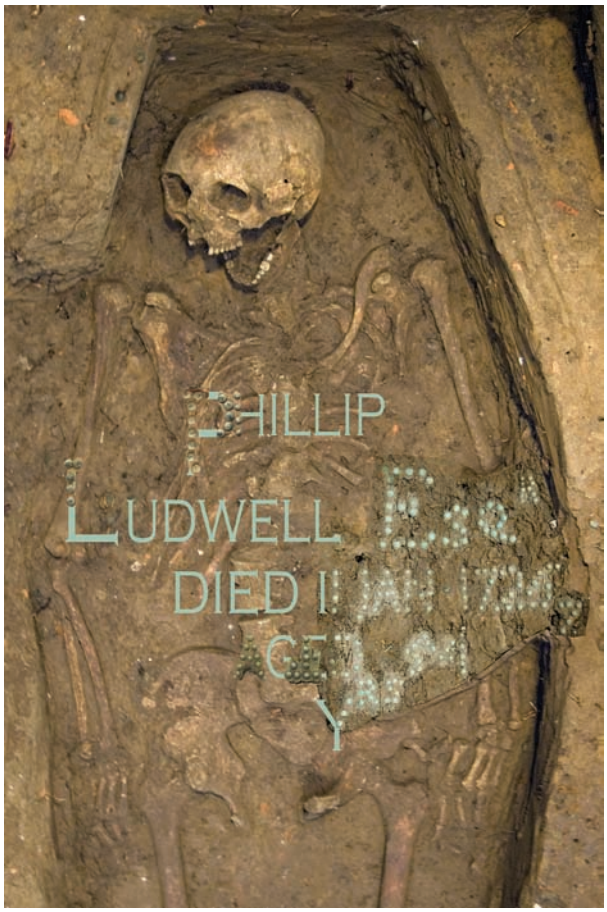

Figure 125. Epitaph of Philip Ludwell II spelled out in copper-alloy tacks. This image is a combination of in situ *tacks, those found in the early 20th-century excavation, and conjectural representation of some missing tacks.*

with hundreds of small iron tacks and a few iron nails; samples of each were recovered. Wood staining from the sides of the coffin was found, along with some wood adhering to brass tacks. Most of the coffin remains unexcavated and will be used to hold the skeletal remains when they are re-interred after analysis.

Brass tacks forming letters and numbers were *in situ* on the northern end of the coffin where the 1901 excavations had not disturbed them.[5] Many of these tacks were still held in their original positions by coffin wood, which had been preserved by the cuperous salts in the tacks. The first row of letters included the abbreviation of Esquire with "ESQ" followed by a small capital "R" to the right and above the "Q." The next row of tacks was the date of death: "1 JAN • 1726" with a "7" to the right of and below the "6." This reflects the death date on the "old" (Julian) and "new" (Gregorian) style calendars. England officially operated under the Julian calendar until 1752, which meant that all days that fell between January 1 and March 24 were listed as belonging to the previous year. Therefore, according to the modern Gregorian calendar, this individual died in 1727.

The next row of surviving *in situ* tacks included a "D" with a space and then "54." This was a survivor of the "AGED 54" part of the epitaph. In fact, among the tacks found and curated in 1901 were an "A" and an "E" of the same style and size letters, as well as what appeared to be part of a "G" attached. The last row had the abbreviation for years, part of a "Y" and "RS." This records that the individual died at 54 years of age.

From information gleaned from the brass tacks it was clear that these were not the remains of Benjamin Harrison, who died nearly a century prior to this date. Documents establish that Philip Ludwell II died on the 11th of January 1726 at the age of 54. Ludwell had the status of "Esquire."[6] Therefore, there can be no doubt that the individual in the coffin was Ludwell and not Harrison. A further five tacks on the same row as the "ESQ" were found about 1' to the south. These must have been part of the name, but not enough remained for verification. The missing tacks from the coffin likely once bore Ludwell's name but were removed during the 1901 work along with a "1" that would have completed the "11" next to "JAN."

The tacks found in 1901 believed to spell "B Harrison" were not of the same style as the tacks found in

Figure 126. Remains of misplaced Phillip Ludwell II's tombstone

JR2743B and did not come from this burial. However, it is possible that they came from the burial to the south where the same 1901 excavation hole appeared to continue. This was not explored because it would have required the removal of another tombstone. There were disarticulated human remains visible in the fill, which may have come from disturbances of the individual or individuals in this adjacent grave shaft. These were not recovered.

Figure 127. Ludwell's skeletal remains with in situ *copper tacks*

An examination of the direction of wood grains attached to the so-called "Harrison" tacks determined that the letters were incorrectly assembled as the wood grains do not run in the same direction. It is not known if Benjamin Harrison is buried in the Jamestown churchyard, but his granddaughter Hannah, wife of Philip Ludwell II, was interred there. Hannah's tombstone is largely intact and is two graves to the south of JR2743.

Ludwell's partially reconstructed tombstone is now located 10' to the south of his actual burial. It likely was laid at that location in 1901 when those excavating the burial ground found the pieces and reconstructed it. The churchyard was in absolute shambles in 1901, and it appears from the following description by Mary Jefferey Galt that the APVA would not have known the original location of many of the ledger stones:

> [W]e did some excavating east of the church . . . these gravestones were 2 or 3 feet below the grass surface. They and the church ruins were under heaps of debris and vegetation, the growth and accumulation of many years. I had from time to time dug among this and found many pieces of tombstones, broken fragments left by vandals.[7]

Analytically, the skeletal remains found in the coffin, JR2743C, have the attributes one would expect: a European male, who could very well have been 54 years old at the time of death.[8] The extended skeleton was well preserved, with the individual's head in the western end of the grave shaft. Two brass straight pins were found on and around the skull. One was found on the mandible and the other on top of the cranium. A copper stain, from what likely had been a third copper pin, was found on the right clavicle, but this bone was dislodged in 1901 and no pin was recovered. These pins may have been part of a face cloth or a chin cloth to hold the individual's jaw shut in preparation for burial. The individual's fourth finger, or pinky finger, appears to have been lost in life with both the right middle and distal phalanx missing. However, many of the fingers were missing the distal phalanx from decomposition. In order to uncover the feet, it was necessary to dig a small tunnel into the eastern end of the excavation shaft. Subsoil was under the skeletal remains. The bones were removed for analysis by the Department of Anthropology, National Museum of Natural History, Smithsonian Institution.

Endnotes

[1] Mary Jeffery Galt, in John P. Cotter, *Archeological Excavations at Jamestown, Virginia. Archeological Research Series No. 4.* (Washington, D.C.: National Park Service, Department of the Interior, 1958), 223.

[2] This refers to the old unplowed strata from the pre-contact period, which is often found near the church where plowing never took place.

[3] Doug Owsley of the Smithsonian National Museum of Natural History, personal communication, 2008.

[4] Galt, 223.

[5] Brass tacks spelling out the name of the deceased and the death date is a practice that started in the latter part of the third quarter of the 17th century (personal communication, 2008, Hugh Wilmott, Sheffield University). This was another indication that the coffin did not contain the remains of Benjamin Harrison, who died in the late 1640s.

[6] Lyon Gardiner Tyler, *The Cradle of the Republic: Jamestown and James River* (Richmond, VA.: The Hermitage Press, Inc., 1906), 133.

[7] Galt, 223.

[8] Owsley, personal communication.

[9] Timothy Riordan, *Dig a Grave Both Wide and Deep: An Archaeological Investigation of Mortuary Practices in the 17th-century Cemetery at St. Mary's City, Maryland*, (Historic St. Mary's City, Historic St. Mary's City Commission, 2000), 2–16.

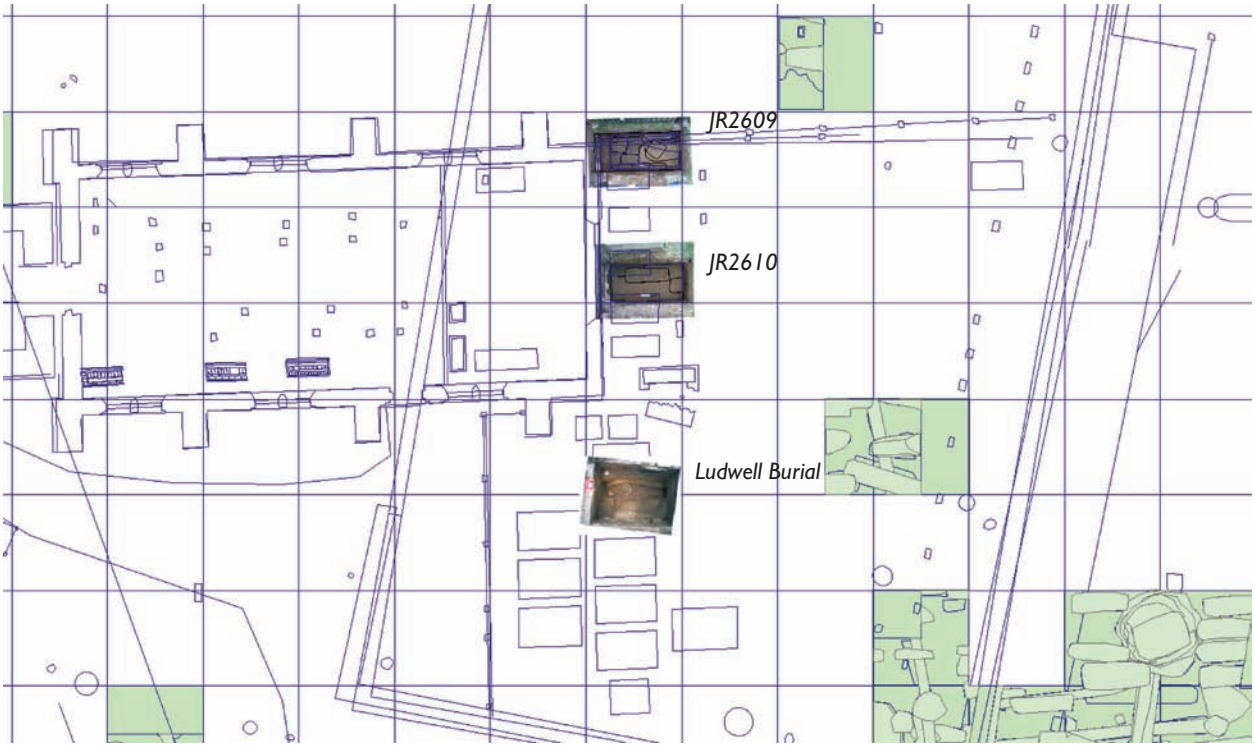

Figure 128. Site plan of excavations on the east end of the Memorial Church

Churchyard Excavations

In 2009 Preservation Virginia (formally APVA) began to move forward with an ongoing tomb restoration project in the fenced graveyard east of the 1907 Memorial Church. Davies Masonry, having done restoration work in this same area, was chosen as the lead contractor and expressed concern that their work might impact subsurface features. In consultation with on-site archaeologists, it was determined that the careful excavation of two units (JR2609, JR2610) measuring approximately 4' by 9' would be sufficient for masons to complete their work and not impact existing cultural resources.

The cultural sensitivity of the church and associated graveyard has long been the focus of archaeological investigations. Between 1901 and 1906 APVA members excavated the ruins of the church site and the grounds around it in anticipation of the construction of the 1907 Memorial Church.[1] Results indicated several iterations of the church as evidenced through at least three successive stone or brick foundations. In addition to architectural features, numerous graves were found and subsequently excavated. After these excavations were complete, the Memorial Church was constructed and soil placed over previously excavated areas. Additional testing has been done around the church prior to the work under discussion. In 1973 Dr. William Kelso excavated two test units around the north and south base of the church tower prior to stabilization work proposed by the APVA. These units revealed an intact builder's trench and possible scaffold holes.[2]

After the inception of the *Jamestown Rediscovery* project, two additional units were excavated within the formalized bounds of the churchyard walls: JR96 and JR98.[3] These were conducted in order to trace the 1607 palisade and both units were successful to that

Figure 129. The excavation area; Properties Director Louis Malon speaks to students about the importance of preservation and maintaining historic properties

end. Each revealed a possible overburden of 1901–06 excavation tailings and post-1861 churchyard landscaping. The slot trench and clear stains of once upright posts of the James Fort palisade were found beneath the more recent landscape layers. An intact topsoil and midden dating to the Middle Woodland period were also found.[4]

Five additional units (JR600, JR714, JR715, JR724, JR770) were excavated in 2000 and 2001 in the eastern portion of the demarcated cemetery of the Memorial Church. Each of these tests was conducted in order to trace the possible 1608 palisade extension that started at the northwest corner of Structure 165 and headed to an unknown location in the north yard of the church. These units, much like the others in proximity to the Memorial Church, encountered rubble and plaster likely representing tailings from the 1901–06 APVA excavations. Total excavation depths ranged to as much as 1'6" and features such as graves, pits, cemetery wall foundations, and possible palisade were encountered after removal of only two layers of overburden.

As such, archaeologists anticipated the units in the area under study to have: (1) little to no original topsoil, (2) rubble and backfill from 1901–06 excavations, (3) 17th-century topsoil, (4) possible graves, and (5) potentially intact midden pre-dating James Fort.

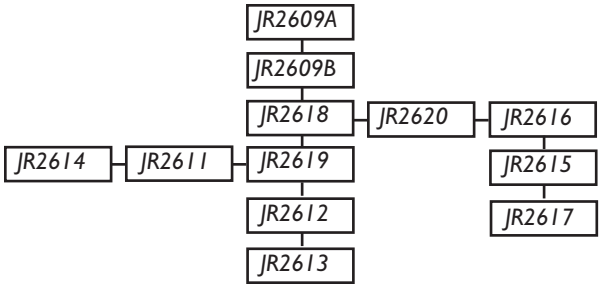

Figure 130. A matrix of features found in JR2609

JR2609

The first unit (JR2609) to be excavated was located near the northeast corner of the Memorial Church, within the delineated cemetery bounds. The unit measured approximately 4' by 8' and was eventually extended a few inches to the west to the limits of the church foundation. The maximum depth of excavation was almost 2'.

Two main soil layers (JR2609A, JR2609B) were identified: organic topsoil and post 1901–06 church excavations spoil. Below those layers, six grave shafts (JR2611, JR2612, JR2613, JR2614, JR2617, JR2619) were found; all aligned E/W with the church, and none were excavated. Small amounts of brick and plaster mottling were evident in the fill in several of the graves, but it was clear that this was due to bioturbation or soft areas where the rubble layers from above had slumped into the feature below. Although no exact age could

Figure 131. View of the Memorial Church foundations (facing west)

Figure 132. Plan of features found in JR2609

be determined for the burials, a matrix was generated showing the superposition of the features in the test.

Two post holes (JR2615, JR2616) were also found containing moderate amounts of plaster and brick debris, suggesting a post-1901–06 church excavation date. The largest of the posts (JR2615) was cut by a smaller post (JR2616) and may represent a fence line coming off the northeast corner of the church that was subsequently repaired. Another possible post was located in the very northeast corner of the test; however, it was too small to make any assumptions about its morphology.

Excavations in the far western end of the unit exposed the 1907 Memorial Church foundation one foot below grade. The base was composed of an oversized footer of brick and portland cement. Fill composed of topsoil mixed with construction rubble (JR2609C) was found beneath this footing. The intact Virginia Indian midden (JR2609D) that had been encountered in tests around the churchyard and delineated cemetery was found below.

JR2610

The second test (JR2610) was located 9' directly south of JR2609. Soils in this unit were relatively similar to those in test unit JR2609: nearly 2'of overburden consisting of post-Memorial Church reconstruction fill, 1901–06 archaeological spoils (JR2610A), and a 2"-thick band of rubble (JR2610B) that may have been associated with the construction or destruction of one of the historic church foundations. Once the fill was removed, at least two possible graves were noted.

One burial (JR2621) measured approximately 4'6" by 1'5" and appeared to have plaster and brick fragments contained within the fill, suggesting this feature postdates the destruction of one of the iterations of the church. The other grave (JR2622) extended east beyond the bounds of the unit with the exposed part measuring 1'6" x 1'3½"

Although it is likely there were more graves, three-quarters of the unit was composed of a disturbed fill from which no shaft or shafts could be discerned. It is possible that this mixed fill marks multiple graves, all superimposed, or potentially a large tomb, or both.

This unit also extended to the foundations of the 1907 Memorial Church. The foundation was made of portland cement and only four courses of brick were found below the ground surface. One notable difference between this section of foundation and the

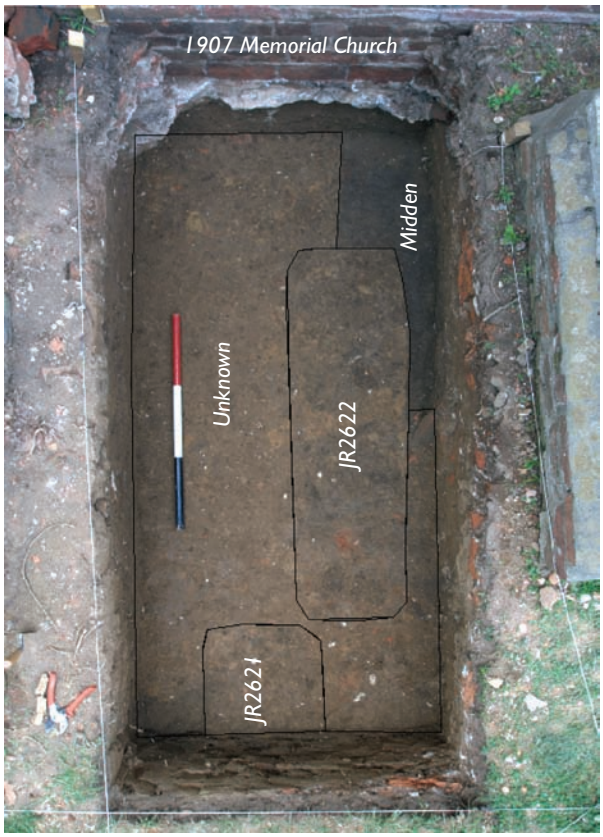

Figure 133. Plan of features found in JR2610

Figure 134. View of Memorial Church foundations and sand mortar band, as indicated by black oval (facing west)

section exposed by test JR2609 was that the fill below the reconstructed wall consisted of a stratified band of rubble, sand mortar, and floor tile fragments. This suggests a post-1901–06 date (construction of the Memorial Church), or, if intact, the possibility of a layer dating to one of the iterations of the historic churches.

From the excavations of these two modest tests, it is clear that the area around the church has a high density of cultural material, some of which may date to the millennia before James Fort. In order to ascertain the relationship between individual graves, determine the structural meaning of postholes, and study intact fill near the Memorial Church, broader, open-area excavations would have to be conducted.

Once the excavations were finished, the masons reconstructed the top of the tombs without impacting the soil layers identified.

Endnotes

[1] Nicholas Luccketti, William Kelso, and Beverly Straube, *1994 Interim Report, Jamestown Rediscovery* (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 1995), 7.

[2] Ibid. 9.

[3] William Kelso and Beverly Straube, *1996 Interim Report, Jamestown Rediscovery* (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 1997), 8.

[4] Nicholas Luccketti and Beverly Straube, *1997 Interim Report, Jamestown Rediscovery* (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 1998), 4.

Figure 135. Site plan of south churchyard area

19th- and 20th- Century Features

South Churchyard Excavations

In the summer of 2009, four and one-half ten-foot-square units (JR2747, JR2748, JR2762, JR2772, JR2777) were excavated along the east wall of James Fort, forty feet south of the church tower. The purpose of the tests was to determine if buildings had ever been located along the fort's palisade wall and street in that area.[1] Open-area excavations revealed an early 17th-century ditch, numerous graves, and multiple postholes thought to be associated with a 19th-century post-and-wire fence surrounding the presumed limits of the church cemetery and a tabletop tomb footing.

Church Fences

Excavations uncovered postholes aligned E/W, which related to several different phases of fences enclosing the church and graveyard. Postholes attributed to this late 19th-century fence were JR2753, JR2756, and JR2761. Each posthole was semi-circular and about 2' in diameter with clay fill. They were not excavated. Concrete bases once supporting the 20th-century iron Memorial Church fence (removed 1999) were also uncovered, all of which cut through the layers of church excavation rubble (ca. 1901), and a post-landscaping material sealing subsoil. The bases (JR2755, JR2760, JR2773) were spaced on approximate 9' centers and supported the posts that spanned 9'-long sections of the 8'-tall iron fence installed in 1907. The fence was built by the Association for the Preservation of Virginia Antiquities in efforts to protect and beautify the church area during Jamestown's 300th Anniversary.[2] The concrete bases were recorded and removed.

Graves (JR2763, JR2764, JR2765, JR2767, JR2774, JR2793, & JR2790)

Seven presumed grave shaft soil stains were also found. All of the graves' outlines were aligned roughly E/W and contained mottled orange clay. The presumed graves were mapped, photographed, and left unexcavated.

Structural Posts (JR2783, JR2785, JR2788, & JR2792)

Four structural posts were also found. Post JR2783 was located on the far eastern side of the excavation area. It measured 2' (E/W) by 2'7" (N/S) and had a clearly defined post mold measuring 6" in diameter. This post cut another post to the west (JR2792), almost entirely obliterating it. No mold or artifacts were found at the surface of the stain. It was not excavated below that level. A well-defined post (JR2785) was found 6" east of a tabletop tomb base (see below). The post measured approximately 2' by 2'7"and had a mold that was 8" in diameter. Excavation of the mold revealed a moderate amount of brick and plaster. Another large posthole (JR2788) was found extending beneath the tomb base. The post measured 2' (E/W) by 2'7" (N/W) and had a clearly defined mold approximately 8" in diameter. The feature was mapped, photographed, and left unexcavated.

Ditch 10 (JR306)

After removal of the overburden, an 18' section of ditch was found running NW/SE through the excavation area. Mapping of the ditch indicated that it was part of a previously found and excavated section of an early 17th-century ditch (JR306). Excavations in 1999 revealed diagnostic artifacts including brigandine plate, copper-alloy aglets, and case bottle glass. Two 2' tests (JR2786, JR2789) were excavated into the ditch fill. The initial test consisted of a tree stump disturbance that also impacted an adjacent grave (JR2764). The tree hole (JR2769) was excavated first, followed by the section of ditch beneath it. Test JR2786 recovered copper-alloy aglets, wrought iron nails, and delft plate fragments.

The second test (JR2789) was excavated approximately 4" from the first test. This tested a 2'-long section of the ditch and was dug to the ditch bottom. Artifacts confirmed the previously established early 17th-century date of the backfill: aglets, copper scrap, a copper-alloy tack, and delft.

Burned Stump (JR2770)

Along the eastern limits of the excavation area the remains of a tree hole with some evidence of burning was found. The stain was mapped and photographed. No artifacts were recovered from the surface of the feature.

Drummond Tabletop Tomb Base (JR2778)

As excavations progressed west, a substantial brick footing was found. This feature, a tabletop tomb base measured 6'5" by 3'6" and was oriented E/W. The base was composed of four courses of whole and fragmented bricks and portland cement. The exterior brickwork consisted of whole bricks in a common bond pattern, while the interior was composed largely of brickbats.

At the top of the brickwork several pieces of slate were found, apparently used by the mason to shim or level the tomb ledger stone. The original stone had left "ghost" impressions in the cement along its outer edges. The fill in the interior of the foundation was composed of loose soil, rubble, and plaster, the removal of which exposed several features at the bottom, including two postholes (JR2782, JR2788), a grave shaft (JR2790) extending partially under and outside the limits of the tomb footing (predating the tomb), and a 20th-century robber's trench (JR2781, JR2787).

The robber's trench was first visible on the interior of the tomb base as a small rectangle (JR2781) in the northwestern end. A large amorphous feature (JR2787) was noted on the exterior, however the two were not initially associated as the interior feature was not as well defined as that on the other side of the brickwork. As excavations progressed, it became clear that the two contexts were one large excavation

Figure 136. Overview of south churchyard excavation area (facing north)

hole burrowing in from the outside to the inside of the footing.

Upon first inspection, this hole was thought to have been dug by workmen before the stone was removed to determine if human remains existed beneath the tomb. However, they found no tomb-related grave shaft. At the bottom of the hole, fragments of candy wrappers were found during the current excavations. Enough of the printing on the wrapper survived to identify it as Bit-O-Honey, a honey- and nut-flavored taffy first produced in 1924. Therefore, the workers dug into the shaft and subsequently moved the ledger stone sometime after that date.[3]

Twenty-six feet north of the footing, the tomb's missing tabletop was found: the ledger stone of Elizabeth Drummond who died in 1699. Inspection of the base of the Drummond stone indicated that this was an exact match with the empty socket evident on the excavated base (JR2778). It first had been moved to Jamestown from Green Spring in April of 1905 by APVA stonemason Mr. William Leal and placed in the churchyard before this second relocation episode.[4] The new tomb location appears to show in the background of a photograph of the visit to Jamestown by President Franklin Delano Roosevelt in 1936. It follows that the relocation of the stone took place after 1924 and at least by the date of the photograph.[5]

Endnotes

[1] Nicholas Luccketti and Beverly Straube, *1995 Interim Report, Jamestown Rediscovery* (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 1996), 13.

[2] *Year Book of the Association for the Preservation of Virginia Antiquities for 1905–1908* (Richmond, VA: Wm. Ellis Jones, 1908), 32, 38.

[3] http://en.wikipedia.org/wiki/Bit-O-Honey (accessed March 01, 2012).

[4] The Association for the Preservation of Virginia Antiquites, APVA Minutes, vol. 2, 4 April 1905.

[5] Richard T. Couture, *To Preserve and Protect: a History of the Association for the Preservation of Virginia Antiquities* (Richmond, VA: The Association for the Preservation of Virginia Antiquities, 1985), 114.